DEHEMS
Development of Higher Education Managemet Systems

Lifelong Learning Programme

# Employability of Graduates and Higher Education Management Systems

## Final report of DEHEMS project

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Employability of Graduates and Higher Education Management Systems (Final report of DEHEMS project)
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# 1 INTRODUCTION

## 1.1 BACKGROUND

Over the last decade those concerned with education and employment have been increasingly seeking evidence of how levels of educational attainment characterise individuals' performances in the labour market. Enhancing the short- and long-term employability potential of young people has become a central developmental priority in the European Higher Education Area (EC, 2011). According to findings of the HEGESCO project (2009), employers still have surprisingly little knowledge of what to expect from graduates, and higher education institutions (HEIs) have a similar low level of knowledge of what employers need. Both aspects are directly linked to strategic issues of enhancing graduates' employability as they improve the quality, governance and societal relevance of higher education, and provide backing for reforms via policy-evidence-based analysis, and support flagship EU initiatives such as Youth on the Move, aiming to increase young people's chances of finding a job, and Agenda for New Skills and Jobs, seeking to improve skill and education matches.

These challenges open up several general questions regarding the future development of higher education: how to balance general and professionally specific subjects and their complementarities, what should be the practical scope of teaching and learning modes or how should HEIs collaborate with employers and get involved with apprenticeships, and how should they validate non-formal learning experiences. Several European actions such as TUNING Educational Structures in Europe[1], Careers after Higher Education (CHEERS)[2], Flexible Professional in the Knowledge Society (REFLEX)[3] or "Higher Education as a Generator of Strategic Competences" (HEGESCO)[4] have sought answers to these questions by comparing graduates in their transition from education to the world of work in a country-comparative fashion.

One of the key conceptual issues in these projects was to learn about the relative impact of higher education programmes on acquired competencies and professional success. Since then, indicators of graduates' transition and early career success have been attracting ever more attention on the policy agenda, accompanied by international surveys such as Education at a Glance (OECD, 2010) or the Programme for the International Assessment of Adult Competencies (OECD, 2011-). The prevailing motive for these attempts is based on the assumption that acquiring a high level of employability-related competencies is the most desirable result of the higher education system.

In this way, the empirical findings from graduate surveys related to career success and the evaluation of HE programmes are expected to hold strong potential for demystifying the real contribution HEIs make to graduates' professional work either by way of generating new knowledge (i.e. the push principle) or providing skills (i.e. the pull principle adjusting graduates to suit employers' needs). The HEGESCO report (Allen et al., 2009), for example, produced several premises for how policy-makers, HEIs, employers and graduates can in general terms foster the development of key competencies.

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[1] http://tuning.unideusto.org/tuningeu/

[2] http://www.uni-kassel.de/incher/cheers/index.ghk

[3] http://www.fdewb.unimaas.nl/roa/reflex/

[4] http://www.hegesco.org/

These graduate career surveys all confirmed that the determinants of professional knowledge, along with general competencies, are not exclusively linked to educational curricula per se but also to work experience, family backgrounds and general societal trends. Moreover, when looking at the jobs held by higher education graduates the key question is not always *if* they get jobs but *why* (Brennan & Little, 2009: 101): *"it is less about the characteristics of the jobs (wages, status, employment sector) and more about what it is that graduates bring to them – their knowledge, competences and dispositions*." This issue varies significantly among fields of study and, accordingly, among the models of career success.

Moreover, and as usually stressed by international comparative surveys, the varieties of professional domains, practical knowledge and training differ not only in their scope but also in their kind (e.g. Abbott, 1988; Burrage & Torstendahl, 1990). The general recommendation found in international surveys to foster the acquisition of competencies such as the need to obtain relevant work experience during higher education, to make higher education more demanding, to forge links with employers, promote HE programmes and establish the link between HE and the world of work, to question problem-based learning etc. might lead to contradictions once applied to a particular field of study.

As the final result of the DEHEMS project (short for: Network for the Development of Higher Education Management Systems), this report, builds and complements these premises on the basis of over 360 interviews in six European countries (Austria, Germany, Italy, Poland, Slovenia and Turkey) conducted in the project, and as well as an analysis of earlier European graduate surveys and other data. All of the results have been included on the project webpage and discussed at two large international conferences in Vienna and Ljubljana[5].

## 1.2 PURPOSE AND GOALS

One of the current policy concerns arsing in the midst of HE developments and implementation of the Bologna Process is the employability of graduates. There is a particular stress on the issue of whether higher education systems are expected to produce readymade skills, or if they should be oriented to preparing graduates for a lifelong career. The assumption in the first option relates to an increase in the practical content of subjects, the applied notion of learning and teaching, and cooperation with employers over theory and classical ex-cathedra learning. Further, in line with several EC policy actions, the REFLEX and HEGESCO projects put a great accent on questions such as "what are the key competencies graduates need to function well in the workplace and in society?", "which actors are mainly responsible for competence development?", "how well do graduates' competencies measure up in the world of work?", or "what path should higher education systems follow to foster the development of competencies?".

The DEHEMS report aims to build upon these issues. It seeks to construct a knowledge platform that specifically addresses the method of optimising the performance and quality assurance of HE systems in the area of graduates' early career success development. In this way, it seeks to identify general patterns of understanding and enhancing career success, with particular attention to these professional domains:

- business and economics;
- education and teaching;
- engineering;

[5] http://www.dehems-project.eu

- science;
- medicine; and
- sociology and political studies.

The DECOWE event (2012-)[6] already opened the issue of what we know about successful measures (higher) education institutions are taking and what is the actual role played by graduates' employability evidence in the management of HEIs, and how do and should (higher) education institutions make use of this information. These questions are being considered as an important starting point of the DEHEMS project and report. It addresses the needs and responsibilities of HE systems to support graduates' careers. The findings and recommendations hold great relevance for the organisation of HE curricula, teaching practices, cooperation with enterprises and students' apprenticeships, integration of research activities into curricula, universities' career centres and the organisation of HE practicums.

Hence, the DEHEMS project's main conceptual goal is to link the determinants and dimensions of graduates' career success in the selected professional domains and fields of study with the expectations, practices and future challenges of HE institutions. The report therefore explores how much HE management systems are evidence-driven, and addresses the following key questions:

*First,* what is the overall idea of HE institutions and management about how their studies take the future professional activities of their graduates into account?

*Second,* what are higher education management systems doing to successfully and systematically help graduates make the transition to work?

*Third,* where do higher education managers and academics see the biggest developmental needs?

*Fourth,* do teaching modes have any impact on the successful employment and work of graduates? What role do practical and international experiences play in graduates' employability?

*Fifth,* what is the role of employment-related guidance services in a successful transition to the labour market?

*Sixth,* do practically-oriented studies prepare graduates better for work than scientifically-oriented study programmes?

*Seventh,* which are differences and similarities among the countries and professional domains?

The methodological steps taken when pursuing answers to these issues are in the following order: conceptualisation of the theoretical and methodological framework and elaboration of the professional domain approach, analysis of international graduates' databases, the completion and analysis of the 360 interviews and integration of the results into the final report.

[6] http://www.decowe.org/

## 1.3 STRUCTURE OF THE REPORT

Chapter 2 provides the theoretical and conceptual background. It focuses on general theories on education, labour market and careers with an emphasis on the theory of human capital, matching theory, and the macroeconomic perspective on education and job matching. It also describes the concepts of employability, professional career and career success. The theoretical and conceptual frameworks are followed by a subchapter on designing a model of graduates' career success which is also applied to the professional domain sections in Chapters 5 and 6. These professional domains are: *business and economics, education and teaching studies, engineering, medicine, science, and sociology and political science*.

Chapter 3 describes the methodology adopted in the DEHEMS project. The chapter is divided into two parts: a description of the quantitative analysis and a description of the qualitative analysis. The quantitative analysis was carried out using three different data sources on graduates and their professional careers: OECD Education Statistics, the Labour Force Survey which was chiefly used when analysing graduates' labour market situation, and the REFLEX/HEGESCO data set. The second part of the chapter – a description of the qualitative analysis – presents the collecting, conducting and analysis of in-depth semi-structured interviews made among individuals from HE institutions and other stakeholders (employers, trade unions, policy-makers etc.).

The main purpose of Chapter 4 is to provide the results on the determinants of graduates' labour market success across the different study domains with the goal of ascertaining similarities and differences among them. The analysis defines the dependent and explanatory variables that were determined on the basis of theoretical considerations and the data availability and sets out the results of job satisfaction and other labour market success factors from different perspectives.

Chapter 5 aims to further portray and elaborate the six professional domains identified through the theoretical and conceptual frameworks (Chapter 2). Each subchapter is devoted to one professional domain and describes study programmes and graduates, study provisions and conditions (including teaching modes, practical training etc.) and the transition to employment on the basis of national reports from the countries included in the DEHEMS project. A special emphasis in the chapter is given to the analysis of the interviews conducted among HE management representatives about graduates' professional careers.

Chapter 6 complements the issues raised in previous chapters, especially in the interviews with HE management (see Chapter 5). The chapter provides a qualitative analysis of the interviews among higher education stakeholders – HE policy-makers, employers, trade unions and student organisations – on the role of higher education institutions in preparing graduates for work and the utilisation of hard evidence of graduates' employability. The main conclusions are outlined in the final chapter.

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# 2 ADDRESSING GRADUATES' CAREER SUCCESS FROM THE HIGHER EDUCATION PERSPECTIVE – THEORETICAL AND CONCEPTUAL FRAMEWORKS

## 2.1 INTRODUCTION

This section addresses those theoretical frameworks identified by the DEHEMS consortium as the most relevant for surveying HE systems and the early transition of HE graduates from education to work. The chapter comprises the following sections.

We start by presenting the *general theories on education and the labour market* which are particularly relevant for explaining the relationship between HE institutions, skill generation and graduates' careers. We start the chapter by presenting the key theories of human capital, credential theories, and search and matching theories from the general and macro perspectives. The section continues with a short general overview of HE graduates' employability studies.

Later, we present the concepts of professional career and career success. From the perspective of general theories on the link between education and work, we identify the *factors influencing a professional career,* distinguishing between non-educational and educational factors. On this basis, we proceed to designing our own model of graduates' career success that is later applied to the qualitative and quantitative analyses.

Finally, we introduce a question that until recently has not been discussed in relation to HE graduates' early careers: *"What HE management should know about graduates' careers?"*. As background information, we provide an overview of strategic planning and resource allocation in HE management and then on quality assurance and accountability. An implicit question here is what do changes in HE graduates' employment have to do with HE system financing and standards.

## 2.2 GENERAL THEORIES ON EDUCATION, LABOUR MARKET AND CAREERS

### 2.2.1 Introduction: The Role of HE Institutions in Generating Skills

The roles and functions of education institutions in society have been surveyed for a long time. While the positive effects on socio-economic outcomes are empirically proven (e.g. see the OECD's publication Education at a Glance), higher education's contribution to the development of domain-specific professional skills is more in question. Moreover, general results of the HEGESCO project (Allen et al., 2009) question what matters more: students' acquisition of work experience during their higher education and life in general as opposed to the requirements of higher education institutions.

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The issue of the extent to which higher education institutions contribute to the development of professional expertise is explained differently by human capital than credentialist theories. Human capital theory says that the education system guarantees a more productive workforce, greater salaries and higher GDP (Schultz, 1961; Becker, 1962). Therefore, the professional benefits the individual acquires in the education system are obvious. Thurow (1975) did not agree. He claimed that productivity depends more on the workplace itself than on the personal characteristics of the individual and their education. Along these lines, signal theory (Spence, 1974) reduces the function of individual education to a signal function reporting the adaptability of the job-seeker to employers: job-seekers with a higher education are presumably more adaptive, more motivated and have greater learning abilities. Certificate theory (Collins, 1979) took a step further. It advocates that the education system plays a role of regulating access to the labour market. Some of these are discussed in more detail in the next sections.

The functional role of higher education institutions in preparing graduates for work has largely also been discussed in the field of the sociology of professions. A controversial role becomes particularly clear when comparing early functionalist approaches (Durkheim, 1957[1898-00], Parsons, 1954) with criticism of ideologist claims (e.g. Larson, 1977). While earlier claims are in line with human capital theories and describe higher education institutions as generators of professional skills, critics have argued that professionally driven educational institutions are a reproductive apparatus that in different ways guarantee monopoly and selection over more privileged work. The implicit base of the analysis is defined by keywords such as professional power or "the project of professionalization" (Macdonald, 1995).

In spite of such controversial views, most scholars today agree that the education system positively impacts the development of individuals' competencies for the labour market. However, the question concerning the scope of this impact remains open, especially when compared with other factors such as social background, gender, ethnic affiliation, external and internal sensitivity to work motivation and other environmental factors.

### 2.2.2 The theory of human capital

In the economic perspective, according to the theory of human capital education and training are treated as an investment process which generates a future flow of income. Investment in education is assumed to exert a positive impact on workers' productivity and in turn on their income (wages). Apart from these benefits, investing in human capital also incurs costs. These costs can take the form of the expenses of studying (fees, costs of accommodation and travel etc.), but also include opportunity cost, that is from the loss of potential income during study – the time spent on studying cannot be devoted to a productive job that generates production and income. It is assumed that these costs are compensated when the knowledge and competencies accumulated in the education process (human capital) generate a sufficiently high rate of return and raise the future flow of income to a level high enough to compensate for all costs incurred.

The theory of human capital originated in the works of Becker (1964) and rests on the assumption of a strong relationship between productivity and wages. The model of Ben-Porath (1967) and the famous Mincer wage equation (1974) show that education and training strongly influence wage formation during the life cycle. Important implications of the Ben-Porath model include the following:

- persons with more schooling tend to also invest more in job training;
- persons significantly engaged in training in one period are more likely to do so again in the future;

- persons with greater ability or better schooling tend to engage in job training more than others with the same level of schooling; and
- with an increase in demand for human capital, we observe an increase in the rate of return on education and on-the-job training (higher in the short run, diminishing in the long run) which are followed by an increase of school enrolments and job training frequency.

These models show that the wage curve is concave with respect to age. Wages are lowest in the initial period of a career and then increase but at a diminishing speed so that initial wage increases are much higher than at the end of a professional career. Theory does not answer directly the question of whether the observed wage path can be attributed only to human capital investments. Since the wage profile is influenced by factors other than just accumulated human capital, it is more an empirical question to what extent the wage path depends on school-based education and formal and informal job training. The human capital theory explains this phenomenon by claiming that in the initial period of a career, investment in education and training are characterised by the highest rate of return both for workers and firms. Workers are young so they can appropriate knowledge more easily and have a long time horizon to take advantage of the results of the investment in the form of a higher expected future income. The same reasoning applies to the firm. Firms investing in workers' training in the initial period of their career can secure a long flow of future benefits resulting from the workers' increased productivity, and hence also higher profits.

Empirical findings confirm that job training investments imply statistically significant wage increases and prove to be profitable (Mincer, 1994). Moreover, it turns out that both the duration and incidence of job training declines with age, which is in accordance with human capital theory predictions of the concavity of the wage curve with respect to age. Mincer also shows that workers who experienced job training had on average 4.4% faster wage growth for the analysed period of time compared to those without training. In the same article, Mincer demonstrates that the wage premium on education, measured as wage differentials of college graduates and high school graduates with 10 years' job experience more than doubled between 1979 and 1988. The argument behind this observation is that the skill-biased technical change, resulting in a relative increase in demand for high skills, was followed by only a minor increase in the labour supply of highly educated graduates. His findings seem to provide strong support for the human capital theory's insights with respect to wage formation and job training.

Murnane et al. (2001) investigate the impact of three dimensions of high school students' skills on their labour market success a decade after their graduation. They use the National Longitudinal Survey of Youth dataset for more than 12,000 male individuals in the age range 14–22 first surveyed in 1979. The authors distinguish the following skills: academic skills, skills in completing elementary mental tasks quickly and accurately, and self-esteem. Their results indicate that all three types of skills play an important and significant role in determining subsequent wages. The striking finding is that the differences in skills are able to explain more than 60% of observed wage differences. Observed increasing education wage premia can be part of the explanation of growing enrolment rates.

The evolution of labour market conditions have 'raised the bar' in terms of accessing the job market. Indeed, in previous decades the job market required cognitive skills and routine and non-routine manual abilities; hence, possessing a high school degree was already a strong indicator of human capital accumulation and a good basis for getting a job. Yet, at present, the requirements for accessing the professions have changed and individual success on the job depends more and more on non-routine analytic and interactive skills (Levy and Murnane). Thus, the choice of university programme and the quality of university training is increasingly important for individual future careers. For example, Freeman and Hirsch (2008)

show empirically that there is a strong relationship between the choice of education type and observed labour market conditions.

### 2.2.3 Education as a signalling device

The theory of human capital postulates a positive correlation between the length of schooling and income, but this theory does not claim the existence of a causal relationship between these two variables. It is often disputable if education plays any role in generating productive skill or knowledge that can directly be used by firms as production input. This observation is a basis for the signalling theory of education. Spence (1973) assumes that education primarily serves as a device to select and filter individuals with potentially higher efficiency and better skills that cannot be directly observed by employers. Natural abilities and skills in this theory are viewed as individual qualities that depend on many factors, but as to which education plays little, if any, role.

According to this theory, students who perform better during an educational career (continue education to a higher level, graduate from a better school, receive higher grades) are assumed to perform better in the labour market in terms of demonstrating higher productivity, a better perception of new skills and are more attractive to employers as candidates for employment and investment in training. Education is therefore only a signal for the employer that a potential candidate is of a better quality. In contrast to human capital theory, the theory of signalling suggests that longer schooling does not add to the productivity of a candidate but only serves to show quality that cannot be observed because of imperfect information. An important insight of signalling theory is that less skilled workers tend to overeducate themselves in comparison to what is the socially optimal level of schooling in order to mimic high ability workers.

Jaeger and Page (1996) use a dataset from a matched sample of the 1991 and 1992 March Current Population Survey for the US labour market that has information on both years of education and diplomas received. According to signalling theory the net effect of diplomas should still be positive after controlling for other education variables like years of schooling. They improve on earlier empirical estimates of returns to education and find that using 'true' information on degree receipt substantially increases estimated sheepskin effects of high school and college degrees as compared to other levels of education completed. Therefore, this might suggest that the signalling role of education is also important.

Dupray (2001) seeks to separate the signalling effect of education on first entry into the labour market and the long-term influence of its human capital component on earnings. Using a multinomial logit selection model, he shows that large firms attach more importance than small ones to the signalling component of education. Therefore, highly educated young people are more likely to be recruited by large companies. Returns to professional experience and education are depreciating faster in large firms than in small ones once the influence of education on the first appointment has been taken into account. The findings support the idea that the signalling impact of education is stronger in large firms than in small ones, which might explain wage inequality among workers endowed with the same amount of education.

With respect to the European Union, Psacharopulos (2009) provides a review on the returns to investment in higher education, which broadly confirms the previously described findings. First of all, the earnings advantage of university graduates has been maintained over time, and that it is increasing in most countries, providing a strong incentive to invest in acquiring further education. In particular, the returns are highest in ‘new countries’ such as the Czech Republic, Poland, Hungary and Turkey, and the lowest in Scandinavian countries such as Denmark and Sweden where the structure of the labour market is more

stable. Moreover, Psacharopulos indicates the existence of a weak but negative inverse relationship between the returns to education and a country's per capita income. The following table provides an overview of current estimates of the relevance of investing in higher education in terms of private economic returns.

The massification of higher education has led to a weakening of the signalling related to an HE degree. As a consequence, other dimensions of this type of education have started to play this role, for instance: the prestige of the HEI, the type of study programme, the mode of studies (full-time or part-time), the domain or even subdomain of study. HE graduates compete for jobs in a more and more demanding market, which tends to strengthen the importance of elements differentiating their abilities, which by their very nature are hardly observable by potential employers. In the DEHEMS project we concentrate on the domain dimension, studying the determinants of graduates' labour market success.

### 2.2.4 Search and matching theory

#### *2.2.4.1 Skill and individual matching – general perspective*

The transition of HE graduates from education to the labour market is characterised by several processes. One of the most appealing is the transfer of knowledge as a result of the information process leaning towards the adaptation of these skills for particular work situations. In this way, the early career of HE graduates is often accompanied by the so-called 'matching' issue referring to the compatibility between the individual, education and professional destination. One can define *horizontally mismatched* as working in a job matching one's own level but not one's own field of education. *Vertically mismatched* relates to the condition of working in a job matching one's own field but not one's own level of education. Inherently the matching problem relates to several theoretical concerns such as labour market segmentation, mobility, professionalization (and professionalism) or seniority.

However, educational matching is not the same as skill matching. Green and Zhu (2010: 751) distinguish between formal and real over-qualification related to the extent of skill (under)utilisation. The first category reflects formal certified knowledge, while the second level reflects actually required skills. In this way, skill matching is a better predictor of job satisfaction and on-the-job search, when controlling for the quality of jobs, than educational mismatches (Allen & van der Velden, 2001).

Verhaest and van der Velden (2010: 2) provide a very relevant overview of over-education, pointing out that a significant proportion of jobs in developed countries is characterised by higher formal education, and more highly acquired skills than the expected ones, as reflected in lower return rates and negative attitudes of workers. These authors (ibid.) developed several hypotheses in which they claim that over-education depends on economic cycles and the structural imbalances they cause, career stages, the quality and selectivity of study programmes, a focus on the production of readymade skills, and labour market protection legislation.

Interestingly, several surveys indicate that formally over-educated workers have slightly higher salaries than workers with a lower and suitable education, and they are less satisfied and exposed to cognitive decline (de Grip et al., 2008). Importantly, skill underutilisation not only has negative economic consequences but also a negative impact on individuals' mental abilities. The authors (ibid.) demonstrated that over-educated workers are more vulnerable than under-educated workers with respect to immediate and delayed recall abilities, cognitive flexibility and verbal fluency.

With respect to the research questions of interest for the DEHEMS project, these considerations suggest *on one side* a strong need for the further analysis of tracer studies focusing on the social and economic consequences of study programmes for HE graduates' careers and, *on the other*, the perception of HE institutions about their own contribution to these aspects.

#### *2.2.4.2 Education and job matching – macroeconomic perspective*

Contrary to the traditional static view of the labour market equilibrium, in reality the labour market is in a constant state of flux (see Figure 2.1). On the side of labour supply, there are various flows of workers between different occupations (within employment, flow 'ee'), between employment and inactivity (flow 'en' – retirement and flow 'ne' – labour market entry from inactivity), employment and unemployment (flow 'eu' – layoffs and flow 'ue' – successfully finding new jobs) and between unemployment and inactivity (flow 'un' – the discouraged worker effect, and flow 'nu' – unsuccessful labour market entry from inactivity). On the labour demand side, there is a constant process of simultaneous job creation and destruction by firms. Firms generate a new flow of vacancies (flow 'ce' and 'cv') that can be matched with workers searching for jobs. The creation of job positions depends on a number of factors, which will be explained later.

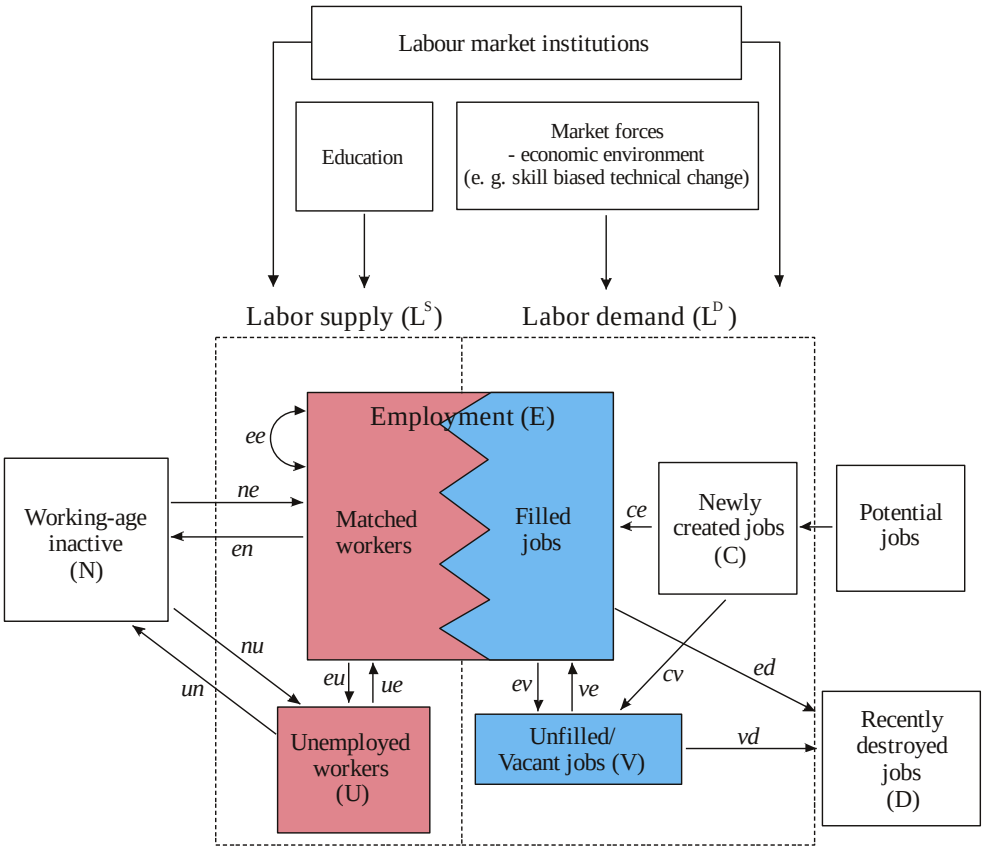
The process of matching jobs and workers is not coordinated and generates costs in the form of resources devoted to recruitment and acquiring information about a candidate's quality on the side of the firm and in the form of gathering information, travel expenses and so on the side of the worker. At the same time, market forces make firms destroy already existing job positions (flow 'ed' and 'vd') which separates workers and firms and generates at least temporary (frictional) unemployment. All these considerations were a basis for the search and matching theory of unemployment (Mortensen and Pissarides, 1994).

The matching process of workers to job positions is analogous to the aggregate production function, but instead of factors of production it utilises workers and vacancies as inputs, and depends on a number of assumptions (labour demand side factors and labour supply side factors). This process can be relatively costly if:

- job vacancies and workers' qualifications are more and more heterogeneous;
- matching technology becomes less effective;
- the costs of gathering information about workers' quality are high;
- the costs for firms of opening a vacancy are high;
- the costs of recruitment and training are high; and
- the costs of hiring and firing are high.

Employment in the labour market is the effect of an interplay between labour demand and supply. The labour demand side is mainly driven by economic forces which affect firms' productivity and profitability. The ability of firms to create job openings strongly depends not only on current profits but also on expectations of the future flow of profits (within a reasonable time horizon). These can be altered by many economic factors like output prices, technology, the prices of inputs, investment decisions, the cost of credit, government policy, exchange rate changes and other internationally transmitted macroeconomic shocks.

*Figure 2.1: Labour market flows and interdependencies between labour demand and supply*




It is worth noting that the demand for labour is demand derived from the demand for final goods sold by the firm. Therefore, changes in the demand for final goods or services will affect the demand for factors of production, including for labour. The actual transmission from a change in the demand for final goods to the demand for factors depends on the nature of technology (degree of substitutability between factors, their prices) and the nature of adjustment costs. It is optimal for the firm to adjust the employment of factors of production in such a way as to minimise the costs of such a decision. It may turn out that when there are high costs of hiring and firing employment will exhibit some kind of inertia, a phenomenon known as labour market hoarding. Employment will increase slowly in periods of economic boom. This is because firms do not want to hire too many workers if the costs of firing them are high. Part of the increase in the demand for labour will materialise in the form of extending hours of work. In the longer term, the number of employed will increase gradually.

On the other hand, if the firm is faced with adverse productivity shocks it should reduce its demand for factors. But in fact when the costs of firing are high, the firm will prefer a reduction of working hours first and only then over time gradually reduce the number of its workers. Recruiting new workers when the costs of training are high can also be very costly so it is optimal to keep too many workers in an economic slowdown and too few in a period of prosperity. The problem of labour market hoarding becomes particularly important during a period of structural changes in labour demand. In fact, one of the key elements of the nature of the contemporary labour market's evolution in developed countries can be labelled skill-biased technical change (SBTC). This phenomenon results in a shift of the labour demand in favour of

high skills. In the short run, this leads to an increase of relative wages (a skill wage premium) of highly skilled workers and an increase in the hours worked. In the long run, the relative employment of highly skilled workers rises, provided that it is accompanied with changes in the labour supply. It is also necessary to underline that firms' behaviour is strongly influenced by labour market institutions as they regulate type of contracts, and the costs of hiring and firing.

The labour supply side is determined by the size of the working-age population, the institutional context of all de iure (explicit) and de facto (implicit) rules which affect people's activity and the education sector. The individual's decision regarding labour supply depends on the value of the alternative cost of work. Unemployment benefits and other non-wage income reduce incentives to supply one's labour. On the other hand, people who have invested more in their education (human capital investment) have more to lose, so their cost of not working is high. This is reflected in a positive correlation between participation rates and education levels.

The important prediction of contemporary labour market economic theory is that it is the labour supply that follows changes in labour demand and not vice versa. For instance, in a situation of SBTC – as the education process (the production of high skills) lags behind changes in labour demand, the labour supply reacts with a delay, but eventually the supply of highly skilled labour increases. That is why in the short run the SBTC can also affect the matching process of workers to vacancies, making it harder to find suitable candidates for jobs.

The theory of search and matching resulted in a new empirical approach to labour market studies. First of all, usually a flow approach is used that stresses the fact of constant fluctuations. Secondly, it is stressed that not only the characteristics of labour supply (age, education, employment experience, gender, search intensity etc.) play a role in determining one's labour market position, but also labour demand factors (sector-specific or firm-specific) are very important. On the side of methodology, empirical studies more and more often use a time-dependence perspective. It is argued that one's current status in the labour market may be in part explained by the time spent in this state and/or previous history (hysteresis). For instance, in the study of current unemployment it is important to take into account the actual time spent in the current state (longer unemployment may lead to higher human capital depreciation, but also to the intensification of search if unemployment benefits diminish over time). Previous labour market history should also be included among the determinants of the current status as this influences the process of human capital formation.

This perspective is important for studying empirical links between schooling history and labour market entry or initial career patterns, which is exactly one of the purposes of the DEHEMS project. Another important aspect is the matching of graduates' skills to employers' needs. The understanding of the professional success of graduates by HE managers is important for curricula formation to make them suitable for current challenges and smoothing the transition of graduates into the labour market. The theory of search and matching postulates that candidates who are better matched to the labour market conditions tend to find jobs much sooner and have higher bargaining power. It is not a priori evident that an HE system finds the problem of matching as its primary concern. The DEHEMS project aims to identify the HEIs' activities aimed at enhancing graduates' employability.

### 2.2.5 Employability

Much of the attention in higher education developments in recent years strongly relates to the issue of graduates' employability. The emerging position of this concept is widespread in national and international science, media and political arenas, particularly in organisations such as the International Labour Organisation, the European Commission, or the Organisation for Economic Cooperation and Development. Even though in this context the concept of employability might be observed as too narrow and limited to graduates' success, which could limit the function of higher education as a direct facilitator of labour market needs, it can hardly be avoided in discussions of competence development.

The concept of employability might be presented as a holistic framework for the integration of different issues in an indicated context related to typologies of competencies, job requirements, labour market segmentation, or determinants of graduates' careers generally and the function of education systems providing skills for the labour market. In this context, definitions of employability usually relate to paradoxes and causalities of:

- employability as individual capabilities versus actual registered employment;
- employability in the context of deprivileged youth in terms of getting a job at all versus the further prosperity of privileged youth (Teichler, 2008: 302);
- employability as a skill-supply phenomenon versus a skill-demand phenomenon as measured in skill shortages versus skill surpluses (Allen & Van der Velden, 2005);
- employability as individual factors (e.g. skills, qualifications, socio-biographic characteristics) versus personal circumstances (e.g. access to resources, work culture, household circumstances) (McQuaid & Lindsay, 2005: 209); and
- employability as the justification of the professional orientation of jobs in which predominant characteristics are distinguished among managerial-organisational characteristics of jobs versus professional characteristics.

As indicated, the concept of employability is not new. McQuaid and Lindsay (2005: 209), for example, give a historical overview of the concept starting from the beginning of the 20th century. In its evolution the concept has moved from a dichotomic, deterministic and mechanical view towards multidimensional humanistic aspirations. This evolutionary perspective of the concepts compares well with the evolution of human resource management concerns – from F. W. Taylor's Scientific Management in 1930 towards newer paradigms focusing on individual needs, motives and network organisations (e.g. Choo & Bontis, 2002) – reflecting the problems and realities of increasingly segmented labour markets. Another evolutionary perspective on employability, in line with the one above, is described by Thijssen et al. (2008: 168-169). They describe phenomena on the societal, company and individual levels as a framework for the identification of general developments. They describe how the concept has chiefly been used historically (ibid.):

- in the 1970s predominantly for resolving problems with school leavers and underprivileged people with political ambitions to attain full employment and cut public losses;
- in the 1980s for restructuring companies with corporates' ambitions to attain efficient human resource management; and
- in the 1990s for individuals as motives for developing successful career opportunities in segmented and ever more flexible labour markets.

Narrowing the issue of employability down to the 'probability of getting any job after graduation' has become insufficient for the development of HE management systems and policies. In order to support the premises of developing new educational programmes, improving modes of learning and teaching and

alumni development, the demand for a broader span of empirical evidence related to HE is inevitable. Hence, the concept of employability should in the context of higher education always be defined as a multidimensional concept explained on the individual level as one's capabilities of retaining a self-rewarding job, in employers' organisations as human resource requirements for fulfilling operational tasks and on the societal level as a system facilitator between (higher) education, the labour market and civil lives.

In this way, the consequences for employability of the utilisation of employability data in HE can in the final context be viewed in a very observable notion related to the quality of jobs.

### 2.2.6 The concept of professional career and career success

#### *2.2.6.1 The professional career*

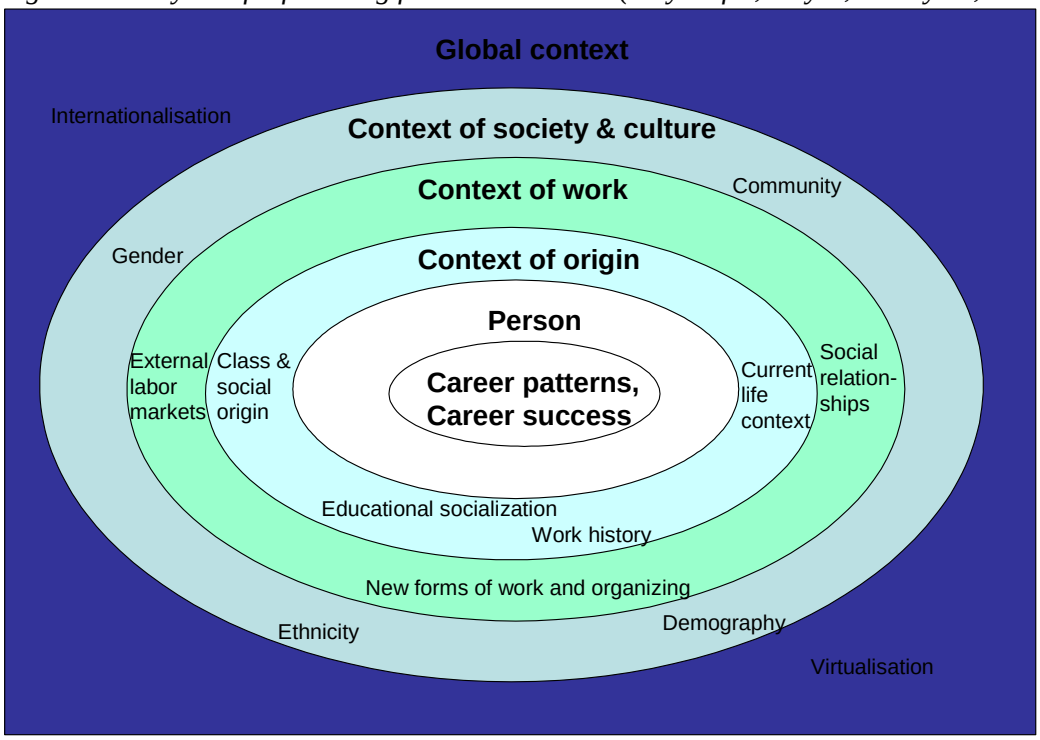
The term "'career' descends from the Latin *carraria*, meaning a carriage-road or road" and can be defined as "'[a] person's course or progress through life'" (OUP, 1989, in Gunz & Heslin, 2005: 106, original emphasis) or regarded as an evolving sequence of work experience over time (Arthur, Hall, & Lawrence, 1989) as well as a "sequence of positions occupied by a person during the course of a lifetime" (Super, 1980: 282). Still, even within this definition variations of what is to be taken into account can be substantial across gender, occupational domains and cultures (Triandis, 1994).

Careers are not only closely linked with context, but also with time (Hall & Nougaim, 1968). A number of prominent stage models of career have been developed, describing typical stages that individuals go through during their careers (Hall & Mirvis, 1996; Levinson, Klein, Levinson, & McKee, 1978; Schein, 1978; Super, 1957), with the implication that these stages stay consistent over time within a relatively stable environment. For individuals, the meaning of careers and success may be different as they move through their career and life stages (Hall, 2002).

Further, a very basic perspective on careers is to distinguish between objective – or extrinsic, observable – and subjective – or intrinsic, interpretative – aspects of careers (see Hughes, 1937) which will be outlined in more detail in the section describing career success (also see secticon 2.2.6.2).

Careers not only comprise individual experiences but are also socially embedded in context. Consequently, analysing careers requires a consideration of context (Mayrhofer, Meyer, & Steyrer, 2007). According to the "onion peel" model (see Mayrhofer et al., 2007: 217), careers will be described based on the different layers of influencing factors and on the proximity they have to the individual. Besides the abovementioned cultural environment and individual influences such as dispositional differences, various layers of external factors influence the course of careers. These include the context of origin, the context of work, the context of society and culture and the global context (see Figure 2.2).

*Figure 2.2: Layers of influencing factors on careers (Mayrhofer, Meyer, & Steyrer, 2005: 16)*




Another career approach related to the development of professional expertise was developed by Dreyfus and Dreyfus (1986). They presented a multi-stage model in which the individual progresses through different stages from novice to expert. Markowitsch et al. (2008) elaborated the model in relation to areas of professional application, work processes and relations of the individual towards work tasks. The underlying question in this model refers to the centrality of tasks in a particular domain and, more importantly, to the issue of whether specific competencies can be developed in the context of generic ones or vice versa.

#### *2.2.6.2 Career success*

Although the term 'success' is widely used in everyday language it needs to be specified for scientific purposes. 'Success' also has a Latin origin, with *succedere* meaning to follow. Originally, what follows can be either 'good' or 'bad'. The term only later acquired its recently dominating positive implication as "the attainment of an object according to one's desire" (Friedman et al., 2000: 27; OUP, 1989, in Gunz et al., 2005: 105). Consequently, 'success' is today ambiguous, it "can either be a consequence or a favourable outcome" (Gunz et al., 2005: 105).

Career success is viewed as "the positive psychological or work-related outcomes or achievements one has accumulated as a result of one's work experiences" (Judge et al., 1995: 486). There has been extensive multi-disciplinary research on career outcomes (Arthur et al., 1989), often differentiating between objective and subjective career success (see e.g. Barrick & Mount, ; Frieze, Moss, & Olson, 1991; Gunz et al., 2005; Heron, 1954; Ng, Eby, Sorensen, & Feldman, 2005). Just like 'career', the term 'career success' equally covers a dichotomy of objective and subjective elements. This distinction is one of the most fundamental in career research and dates back to the early 20th century (Hughes, 1937; 1951) and will be introduced in the following sub-sections.

*Objective/extrinsic career success:* Objective career success denotes components such as income or hierarchical advancement that are directly observable, measurable and verifiable by an impartial third party (see e.g., Gattiker & Larwood, 1988; Judge & Bretz Jr., 1994). Variables in this respect can be salary, salary growth, hierarchical advancement, occupational status or the extent of one's responsibility (see e.g., Forret & Dougherty, 2004). These outcomes are both external rewards of the occupation and objectively visible (see Judge et al., 2007; Seibert & Kraimer, 1999, A1). While Hughes already stated the importance of including other – subjective – aspects in the analysis decades ago, the need to do so has increased significantly since then (Gunz et al., 2005).

*Subjective/Intrinsic career success:* Subjective career success depends heavily on individuals' (re-)construction of career success according to subjective and individualised patterns. It refers to a person's individual perspective and the interpretation and evaluation of what and how s/he experiences their unfolding career (Hughes, 1937, in Heslin, 2005: 114). Subjective career success is mostly operationalised as career or job satisfaction (see e.g., Aryee, Chay, & Tan, 1994; Judge et al., 1995, 1999a) since it is often defined as "individuals' feelings of accomplishment and satisfaction with their careers" (Judge et al., 1995: 2). An important advantage of this personal perspective is the fact that actual attainments are seen in relation to what the individual expected or wished for (Heslin, 2005: 117) and recent studies investigate these aspects (Dries, Pepermans, & Carlier, 2008). Other possible measurements are the work-life balance, perceived employability (De Vos & Soens, 2008), the opportunity to learn new skills or job security (Keng-Howe & Liao, 1999).

*Self-referent and other-referent career success :* Career success is also highly dependent on the point of reference, independently of whether objective, subjective or both groups of variables are taken into account. Outcomes can either be compared to personal standards, values or aspirations (i.e. self-referent) or to the achievements or expectations of other people (i.e. other-referent) (see Gattiker et al., 1988; Heslin, 2005: 118). Table 2.1 summarises the possible combinations of self- and other-referent with objective and subjective criteria of career success.

*Table 2.1: Four categories of career success criteria*

| | **Subjective** | **Objective** |
|---|---|---|
| **Self-Referent** | 1. subjective self-referent criteria<br>e.g. my goal regarding my work-life balance | 3. objective self-referent criteria<br>e.g. my financial aspirations |
| **Other-Referent** | 2. subjective other-referent criteria<br>e.g. my fun, relative to my peers | 4. objective other-referent criteria<br>e.g. own promotions, relative to colleagues' |

Source: adapted from Heslin, 2005: 121.

These criteria appear at first sight to be subjective and in Heslin's (2005: 121) article they actually are. Irrespective of this, this table follows a slightly different logic as only the criteria in the first three boxes require the subject's input. Undoubtedly, subjective self-referent (1) and subjective other-referent (2) criteria are by their very nature based on a personal (subjective) evaluation and objective self-referent (3) criteria presuppose existing individual aspirations (or other references). By contrast, objective other-referent criteria (4) can, but need not, be subjective as a comparison of e.g. the hierarchical advancement of two individuals is directly visible for an external observer. Still, this objective comparison may subjectively be evaluated differently. If, for example, two compared persons have experienced the same promotions, one of the two may nevertheless consider herself/himself unsuccessful because they feel their better performance has not been accounted for.

The importance of social comparison is well documented by the quantity and quality of research done in this field (see e.g. Abele & Wiese, 2008; Festinger, 1954; Heslin, 2005: 119). As pointed out above, a very pragmatic approach to empirically studying career success by comparing the income and promotions of the different persons of a sample group (objective other-referent) also falls into this category, although Heslin's (2005) contribution is aimed more at the subjective evaluation of career success criteria. This paragraph illustrates how important subjective input is for a better understanding of career success.

Lastly, it is important to stress that a very important aspect of career success is related to the level of acquired competencies and their match with competencies required by employers. Competencies are important for individuals as well as for organisations which link them to performance. The aim for organisations to continuously improve their performance has never been greater (Harel & Tzafrir, 1999), resulting from multifaceted challenges from the organisational competitive environment as well as an increased emphasis on inclusivity in strategy formulation within organisations. After McClelland (1973) first proposed competency-based human resources as a critical differentiator of performance, almost every larger organisation nowadays utilises different forms of competency-based human resource management (Boyatzis, 2008). Several definitions of competence exist on which mainly consulting companies practice application e.g. competency assessment and development. Promoted competency-based HR processes are based on the assumptions that it is possible to identify and isolate the behaviours exhibited more consistently by excellently performing employees than averagely performing employees. Once these potentials are identified, training and coaching interventions enable the transmission of these competencies throughout the workforce within organisations. Competencies are seen as the potential to integrate all HR systems if the behavioural standards of excellent performers become the foundation of recruitment, selection, performance management, pay, training and development, and promotions (Klein, 1996: 31).

Also considering an individual's subjective evaluation of their peers and of objective career measurements opens in a positive sense a Pandora's box full of implications regarding the "reciprocal influence of both contextual and individual factors" of career success (Heslin, 2005: 121).

#### *2.2.6.3 Factors influencing a professional career*

As outlined above, different layers can influence career patterns and career success. In the following section, these layers are described in more detail. We focus on non-education-related and education-related factors. This division is important from the perspective of the aims of the project as we are primarily interested in the role played by higher education institutions in facilitating the process of graduates' transition from the schooling system into professional lives. The non-education-related factors are however also very important and need to be controlled for when we study the question of how various education-related factors influence the labour market success of graduates. All these control factors can have an independent influence, keeping all other variables constant (*ceteris paribus* assumption).

***Non-education-related factors***

*Personal and social aspects of career:* The 'inner circle' of factors influencing careers comprises person-related factors, in particular the personality of the respective individual. Personality plays an important role in both academic and everyday life discussions of careers. One of the most mentioned personality trait concepts in the career literature is the "Big Five" personality dimensions – neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (see e.g. Seibert & Kraimer, 2001). Many studies have found that these dimensions have an impact on career success (Fuller & Marler, 2009; Rode,

Arthaud-Day, Mooney, Near, & Baldwin, 2008; Judge & Kammeyer-Mueller, 2007). Relevant groups of variables in this layer can be personality traits, career aspiration, and work orientation/motivation.

*Context of origin:* The context of origin refers to a person's cultural, social, class and educational background as well as their work history (Mayrhofer et al., 2007). Career research in this field has targeted topics such as the degree of social selection and pre-determination of careers (Blau & Duncan, 1967; Hartmann, 1996; 2001; both in Mayrhofer et al., 2007), influences of class and social origin (see e.g. Schoon, Martin, & Ross, 2007), educational socialisation (Cook, 1996), socio-economic status and the family's structure (e.g. Bronnfenbrenner, 1979), the effects of mentoring (Whitley, Dougherty, & Dreher, 1991) or inter- and intragenerational mobility. However, it is not all about the past and about socialisation. The current-life context (see e.g. Higgins & Duxbury, 1992) often directly affects decisions and opportunities-to-be and thereby careers altogether (Mayrhofer et al., 2007). The personal life situation depends on e.g. age (van der Heijden, Schalk, & Veldhoven, 2008), marital status (Friedman & Greenhaus, 2000; Judge, Cable, Boudreau, & Bretz, 1995), but the social perception of this situation is equally important (ibid.).

*Context of society and culture:* In the context of society and culture, four major issues influencing careers have to be mentioned: gender (see e.g. Cook, 1993), ethnicity and minorities, community (see e.g. Veiga, 1983), and overall demography (see e.g. Reitzle, Körner, & Vondracek, 2009). Although society and culture also influence the context of origin and thereby indirectly affect careers, for careers only the direct effects are relevant. The question to be addressed here is: Which opportunities or restrictions for careers does the context of society and culture provide?

In addition, cultural beliefs can lead to pre-described career patterns and also influence the subjective evaluation of what/who is considered 'successful' (Hofstede, 2001). Although cultural differences have to be accounted for within a distinct culture, there may well be a set of values that is common to many 'successful' persons. In this respect, values such as ambition – a strong need for achievement and determination, a positive approach to live or a strong dedication to the job – can be mentioned (Cox & Cooper, 1989: 244).

*Work-related aspects of career:* The context of work encompasses issues such as job characteristics, work-related social relationships (see e.g. Higgins, 2001, but also external labour markets, new forms of working and organising (see e.g. Khapova, Arthur, & Wilderom, 2007) and the economic and institutional environment (see e.g. Heinz, 2000). This layer of the 'onion' is particularly susceptible to impacts from other areas, e.g. general trends from the global context. Although the borderline may not be clear-cut at first sight, one has to distinguish between how the global context affects work and the oblique consequences for careers. It may well be argued that in this 'onion' picture all the layers are linked to each other; still, each context has its distinct effects on careers, directly.

*Global context:* As a consequence of the internationalisation (see e.g. Baruch, 2004) and virtualisation of work practices (see e.g. Jensen & Westenholz, 2004), career opportunities and career paths have changed significantly (Mayrhofer et al., 2007). It is obvious that global 'trends' affect careers both directly in the form of changing work environments and indirectly through a possible adaption of perspectives and underlying social views.

***Education-related factors***

It is claimed that early labour market experience significantly influences workers' career paths having an impact on their employment chances, employment characteristics and wages. In this respect, labour mar-

ket entry is crucial both for microeconomic efficiency and the efficient allocation of resources in the economy from a macroeconomic point of view.

Successful entry into the labour market after graduation is thought of as a sign of good coordination between the education sector (supply of competencies) and labour market requirements (demand for skills). Matching efficiency as suggested by the *job search and matching theory* approach is a crucial factor determining unemployment rates and unemployment (search) spells. Therefore, a smooth transition from education into the labour market significantly influences the unemployment rates of the young people. This, in turn, has an impact on the process of human capital formation in the economy and prevents early human capital depreciation. Successful entry into the labour market also has important implications for wage formation during the life cycle. Empirical investigation seems to strongly confirm a negative effect of prolonged unemployment spells after graduation on wages earned much later during a professional career. Last but not least, a smooth transition from the education system into the labour market facilitates the process of adjusting human resources to various macroeconomic shocks and strengthens the overall macroeconomic efficiency of the economy.

Many empirical studies have demonstrated that education-related factors are key determinants of labour market success. It is claimed that education plays an important role in acquiring human capital, improving labour productivity and hence determining one's future income path (*human capital theory*). On the other hand education may be regarded as a signalling device which allows employers to acquire information on the productivity of potential workers: when the quality of workers cannot be directly observable, a higher education level and/or graduation with a better diploma may be thought of as a signal of a greater ability to learn, willingness to make effort etc. (*signalling theory*).

#### *2.2.6.4 Relevance of career approaches for the DEHEMS project*

Career and career success are relevant concepts in order to measure the effects higher education (systems) has on graduates. While higher education research approaches the area more from a macro perspective, career research provides additional insights by looking at outcomes at the level of individuals, i.e. the objective and subjective career success of graduates. Career success can be seen as the result of one's individual employability and is therefore of particular relevance for the DEHEMS project that examines the influence of higher education systems on employability. However, it is important to note that higher education is by far not the only factor influencing graduates' careers. Therefore, other factors as well as an integrative model were presented in order to contextualise any possible effects of higher education. This is relevant for DEHEMS because the project addresses higher education systems and, thus, only selected elements of the presented model.

## 2.3 DESIGNING A MODEL OF GRADUATES' CAREER SUCCESS

Much of the empirical work related to the transition from education to the world of work has been done by the OECD. In particular, in 2005 and 2006 the OECD's Network B developed a framework for transition systems defined as "the social institutions and processes through which a society provides its members to make the transition from the education system to the employment system" (van der Velden, Wolbers, 2008: 13), focusing on proportions of school-level completion, the level of acquired competencies, the share of school leavers and quality of employment, to mention just a few. In this context, the authors (ibid.

12-13) presented models from individual[8] and societal perspectives. The central features of both models relate to skill, job and educational matching. However, the individual perspective model stresses personal, job, organisational characteristics and managerial practices, while the macro model produces a further elaboration of education, transition and employment system traits. Both models emphasise societal and economic conditions.

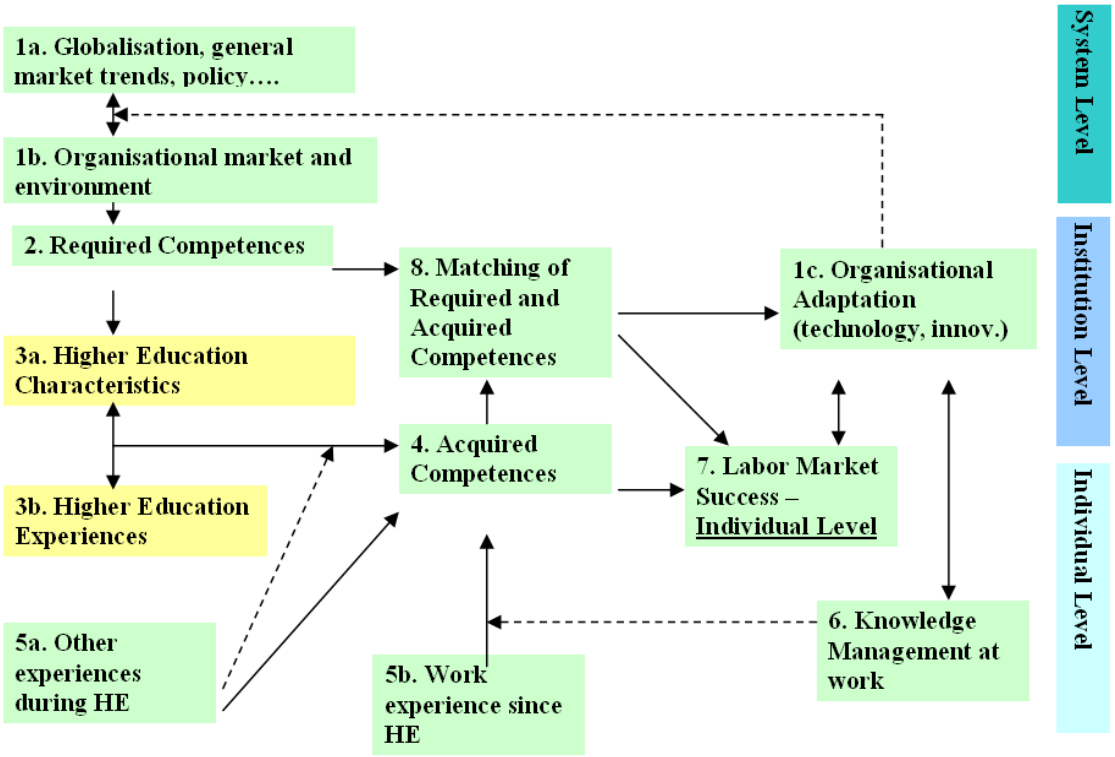
Another model addressing the transition from higher education to the labour market has been conceptually designed by Svetlik and Pavlin (2009). The model is placed in the framework of system theory (Jung, 2007) with the accent on a dynamic equilibrium. The system in question is a labour market system composed of the interrelations between demand and supply, resulting in certain wages and other indicators of success, and reacting to environmental challenges (Addison & Siebert, 1979).

The set of relations starts with the global competitive pressure which both shapes and is shaped by the environmental challenges faced by individual organisations. Organisations respond to these challenges by way of adaptations in terms of a trade-off between price and quality, re-organisations and innovations. Organisational adaptations lead to changes in the composition and level of required competencies. Different adaptations lead to the raising or lowering of the demand for various competencies at various proficiency levels.

According to the standard curriculum development procedure, we can expect that the required competencies will be an important basis for the elaboration and adaptation of teaching programmes/courses which aim at matching the competencies students acquire with those required by organisations. In addition to the curriculum, HE institutions can respond to demands from the world of work by developing and adapting various modes of teaching and learning. At this point, one should also include the transfer of endogenously created knowledge at universities, which does not always correspond to job requirements but is conveyed to students and helps them develop their competencies.

[8] Elaborated by the Report of the Task Force on Transition into Employment of the Canadian Labour Force Development Board (CLFDB, 1994).

*Figure 2.3: Transition from Education to the World of Work – A System-Level Comparison*




Source: Svetlik and Pavlin (2009); conceptual draft paper.

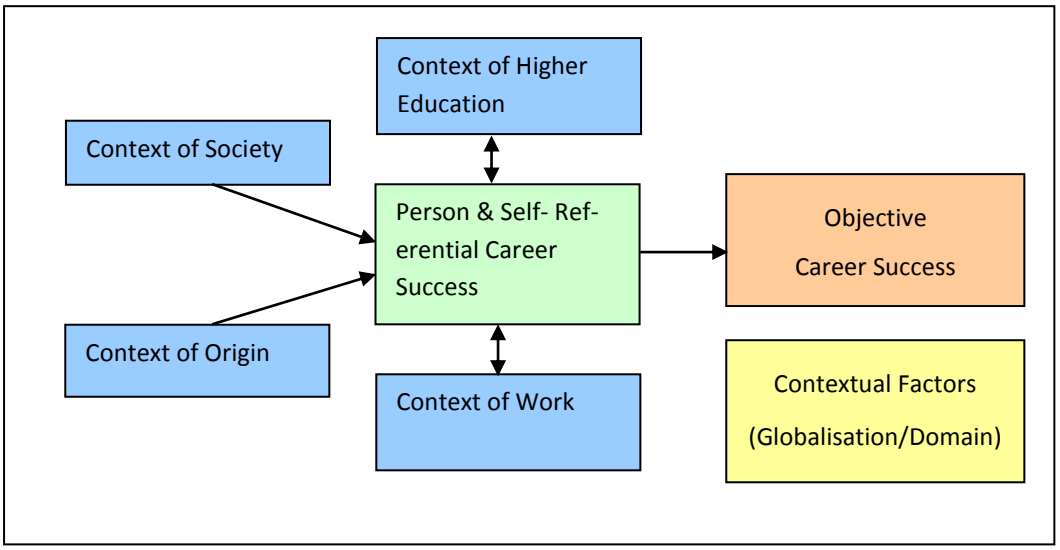
In combination with the time and energy individual students put into learning, the characteristics of the HE system influence the types and levels of competencies graduates acquire. However, these effects are likely to be modified by other experiences of students while at university, for example internships, other paid work, and participation in student associations or university politics. Of course, competence development continues after graduation and also depends significantly on work-related experiences after completing studying. The effect of work experience of competencies will depend largely on the nature of work tasks related to knowledge management and learning at work. These knowledge-management activities also affect and are affected by the strategies organisations apply to adapt to the demands of their environment. Acquired competencies in relation to other factors contribute to the individual's labour market success.

The relationship between required and acquired competencies shows how well-balanced the labour and training 'markets/systems' are. If required competencies exceed acquired ones they may contribute to individuals' satisfaction at work and could directly influence other dimensions of labour market success, at least to some extent. However, skill mismatches may impede the ability of organisations to use their technologies and to innovate, forcing them to seek out other organisational adaptations. At the same time, such a reserve of skills represents an investment in human resources, which is becoming a driving force of innovation (Estevez-Abe, Iversen, Soskice, 2002). One could also investigate the relations between the successes of individuals and organisations.

Different conceptual developments have been made during the DEHEMS project. The prevailing logic presumes that different influencing factors determine the career success of a particular individual and people generally. Both components of influencing factors and career success are multidimensional. This step of operationalization on the individual level is presented in Figure 2.4. The model distinguishes between individual success facts and related subjective concepts in terms of individual attributions related to career

facts. In this way, influencing factors are composed of four main components (Demeter, Chudzikowski & Pavlin, 2010), namely the *context of origin* refers to a person's cultural, social, class and educational background as well as their work history (Mayrhofer et al., 2007), the *context of higher education*, referring chiefly to teaching and learning modes and organisational characteristics, the *context of work* encompassing issues such as job characteristics, work-related social relationships, labour markets, new forms of working and organising, and the *context of society and culture* that involves societal and biographical data.

*Figure 2.4: Conceptual model of career success*




Source: Demeter, Chudzikowski, & Pavlin (2010); conceptual contribution to the DEHEMS project, draft document.

Another model discussed within the DEHEMS project considers three main components, namely: a) contextual factors; b) determinants within the jurisdiction of graduates and HE institutions; and c) components of LM success.

*Table 2.2: Conceptual proposal within the DEHEMS project*

| **Contextual factors** | **Determinants within the jurisdiction of HEI management** | **Components of LM success** | |
|---|---|---|---|
| *Country*<br>*Professional Domain*<br>*Economic Cycle*<br>*Local Determinants*<br>*Demographic data*<br>*Social Background* | *Learning modes*<br>*Teaching modes*<br>*Study success*<br>*Vocational orientation*<br>*Practical orientation*<br>*Study-related experiences*<br>*Selection*<br>*Study workload*<br>*International scope* | **Status**<br>*Prestige*<br>*Income*<br>*Contractual arrangement* | ***Job Satisfaction*** |
| | | ***Autonomy*** | |
| | | **Content & Acquired competencies**<br>*Utilisation of Knowledge*<br>*Creativity* | |

Source: Adjusted according to Schomburg, Janson, & Pavlin (2010).

The above table is designed so that it holistically follows the logic of the CHEERS, REFLEX and HEGESCO item structure. In its further development, it incorporates and distinguishes among:

- *the determinants of graduates' LM success* (past education and work experiences, type of HE qualification and study, educational characteristics, modes of teaching and learning, international experiences, study success); and
- the components of LM success (status, skill and qualification matching, autonomy, innovation and satisfaction).

The components of LM success have been further tested by Principle Factor Analysis in the case of the HEGESCO and REFLEX data sets. Following the developmental premises within the DEHEMS project, this model will be used on a domain basis and further operationalized in Chapter 3.

## 2.4 CONSIDERING AND SELECTING PROFESSIONAL DOMAINS FOR THE DEHEMS SURVEY

The flow of knowledge from (higher) education to the world of work can be viewed as future professionals' preparations for understanding new situations, recognising which areas of knowledge are relevant to a particular situation, focusing precisely on the knowledge needed for a particular decision or action, and having the capacity to transform previously acquired explicit knowledge to suit the new situation prior to or during performance (Eraut 2006: 49). In this context, the key questions relate to the extent to which curricula should be structured by scientific disciplines or by professional areas, whether HE should focus on the professional domain or also try to shape a student's personality and whether HE should produce readymade skills or prepare students for a lifelong career (Teichler, 1996: 155).

In this way the typologies of HE institutions are predominantly described in relation to the world of work. Hence, the linkage between both domains can be described in this way (Pavlin and Svetlik, 2008):

- *blank initiation* – referring to the situation in which an HE institution produces new certificates for graduates without bothering to consider how the graduates fit into the sector or the established professional profile. In this case, the HE institution can develop or not develop professional standards distinguishing the »emerging« graduates from competitive ones;
- *transformative initiation* – relating to the adaptation of established educational programmes. Because of the broad scope of competencies, the education institution does not wish to or cannot deal very much with the performance of practical or situational forms of particular job settings – however, the linkage with the world of work is more a matter of image. This is in fact related to the *»outsourcing« of practice to employer organisations* while the development of professional competencies actually starts with their entry to the labour market; *or*
- *professional establishments* – representing the most prominent form of co-operation. Due to good protection of the professional area, a very focused form of professional knowledge transfer can occur in such circumstances. This situation is above all characteristic of the most professionalised university profiles in which a profession establishes university learning centres, learning companies or hospitals.

In higher education science and in particular academic fields, numerous other typologies have been developed. Macfarlane (1995), for example, in the case of the business and economics field of study elaborates how classifications address five types of identity issues, namely epistemological, academic, institutional,

doctrinal and professional. The better known Biglan model has a three-dimensional classification scheme combining faculty orientation with academic subject areas (Roskens, 1983). On a similar basis, Neumann (2009: 497) differentiates between the hard-pure category (e.g. natural sciences and mathematics), soft-pure (the humanities and the social sciences), hard-applied (e.g. medicine) or soft-applied (e.g. social work). Following Neumann, this typology importantly determines the main premises of the curriculum, assessments and prevailing cognitive purpose. Another known typology has been developed by Kolb (1981). This author classifies the natural sciences as abstract and reflective, the social sciences as concrete and reflective, science-based professionals as abstract and active, and social professions as concrete and active.
A similar typology has been considered within the DEHEMS project. The selection of professional domains has mainly been determined in study fields to some extent also taking into consideration the distribution of graduates in the REFLEX and HEGESCO data, and above all encompassing the variety of study field types.

*Table 2.3: Types of HE study domains*

| | **Vocational Orientation** | | **Academic Orientation** |
|---|---|---|---|
| | **Unregulated Domain** | **Regulated Domain** | |
| **Social Sciences and Humanities** | *Business and Economics* | *Education and Teaching Studies* | *Sociology and Political Studies* |
| **Science and Engineering** | *Engineering (incl. Civil Engineer)* | *Medicine and Pharmacology* | *Life Science (incl. Mathematics, Computing)* |

Source: Schomburg, Janson and Pavlin (2010). DEHEMS project.

In the next sessions this report incorporated data analyses, a review of secondary sources, interviews and panel studies mainly classified by the study domains listed above. Before this, we turn our attention to HE management systems.

## 2.5 WHAT HE MANAGEMENT SHOULD KNOW ABOUT GRADUATES' CAREERS? CONCEPTUAL AND THEORETICAL PERSPECTIVES

### 2.5.1 Strategic planning and resources allocation in higher education management

#### *2.5.1.1 Introduction*

Within higher education institutions, the planning function has emerged since the post-WWII period, following some evolutionary phases analogous with those of other types of firms (Cope, 1982). At the beginning of the 1980s, George Keller, in one of the first systematic contributions on this topic, claimed that higher education in the United States had gone into a revolutionary period. In the new context conditions, colleges and universities had to adopt a more active and change-oriented managerial style: "The era of laissez-faire campus administration is over. The era of academic strategy has begun" (Keller, 1983: 26).

During the last three decades, those conditions have been revived within European universities, sparking off debates, studies and experiments about the usefulness of planning and control systems faced with the

institutional peculiarities of European higher education institutions (Clark, 1998; CRE, 1998; Tabatoni, Davies, Barblan, 2000). In a prestigious work of the 1970s, Cohen and March (1974) report on interviews given by the administrative staff of some universities, observing that the importance of planning and control systems is hardly ever denied. The authors assert that universities have *financial and academic plans*, but in the best hypothesis "it is a matter of what various departments wish for a gift". The authors reach the conclusion that there is a lack of empirical evidence not only about the real implementation, but also about the usefulness of planning and control systems in the peculiar academic context.

Colleges and universities are described as *organised anarchies* where the rationality of management and control processes is dominated by informality, the instability of the participation, the chance of a meeting between problems, opportunities, decision-makers, and solutions. Other studies substantiate that it is not only a matter of a lack of organisational conditions or interest in a rational approach to the university management, but there are *some intrinsic limits of planning models* (Keller, 1983).

Since the 1980s, planning experiences have increased and this has contributed to the development of strategic approaches to university management. At the end of the 1990s, a study conducted in the UK (HEFCE, 2000) asserted the centrality of strategic approach to rethink the university's mission and way of being in order to create a widespread *entrepreneurial attitude* in terms of risk taking, orientation towards the future, a focus on students, and the satisfaction of stakeholders' needs.

Peterson (1997) describes *"contextual planning"* as the strategic approach to university management which is developed by overcoming the critical points of strategic planning. The approach to university strategy has to be intentional, but strategy does not appear analytically elaborated in programmes and action plans from the start and has to be converted into a detailed strategic plan.

In fact, each strategy has its life cycle (Normann, 1977): at first, it emerges as an '*entrepreneurial idea'*, as a vision that induces coherent decisional processes, especially learning by doing. Only when the strategic design appears steady and definite enough can *formal planning* offer its contribution in terms of strategy rationalisation and validation by means of '*documentation of the strategic plan'*.

#### *2.5.1.2 Performance management system*

Universities can activate a *performance management system* for different reasons that are linked to different meanings of control:

- *Revision of the initial strategy* when the continuous monitoring of the external and internal environments makes it evident that the hypotheses on which it has been built are weakening (strategic premises control). According to the expression of Newman (1975), it is a matter of controlling the march direction, that is to say of activating ex ante control mechanisms (feed forward), trying to anticipate the implications that changes can produce on the way to pursuing predetermined objectives.
- *Activation of ex post control mechanisms (feedback)*, aimed at verifying that implementation processes are aligned with the plan and are producing the desired results (strategy implementation control), as asserted by Lorange (1977).

Research studies carried out within companies (Amigoni, 1982; Lorange, Scott Morton, Ghoshal, 1986) highlight that strategic control cannot be considered as an activity for top management only or as a simple control of the strategic plan defined by top management. *Also other managers exercise strategic manage-*

*ment functions:* coming into daily contact with problems related to products/services, technologies, clients' needs, suppliers' and competitors' offers, codifying change signals, finding new solutions, and so starting strategic learning paths.

In fact, in taking their decisions operational unities can create the conditions to realise positive or negative far-reaching strategic changes, able to deeply and permanently affect the company's performance, also beyond an intentional strategic design. These assumptions on the development of control systems, which essentially referred to companies, are shown to be particularly applicable to traditionally decentralised organisations like universities.

It is possible to assume *two dimensions of performance measurement and management:*

- *The control of deviations between the intentional strategy and realised strategy*; deviations can be caused by both implementation problems of the plan and the presence of spontaneous initiatives outside the plan.
- *The comparison between the achieved results (performance) and realised strategy*, which enters into the merits of the adequacy of both intentional planning processes and organisational learning processes typical of spontaneous strategies.

The two dimensions of control are based on different premises:

- The former dimension has a prevailing *organisational nature* since it implies a behavioural approach aimed at analysing the organisational, social and individual variables that determine alignment or misalignment between the strategic vision, objectives and organisational behaviour.
- The latter dimension has conversely an *economic nature* and concerns the quality of the realised strategy, that is to say the effectiveness of strategic management processes, both intentional and spontaneous, in terms of performance.

Performance management can be viewed as economic management control over what to measure and how to do it, in order to allow the greatest effectiveness and precise observation of the results produced by the strategy. However, performance measurement has some strong behavioural implications as well.

In one of the first works on the organisational dimension of control systems, Flamholtz (1980) proposed a *psycho-technical system of measurement* which intends to produce some predefined psychological functions (behavioural) by means of the process and the output of the measurement. The organisational behaviour is the result of the measurement so the planners of an organisational measurement system must have an idea of the desired behavioural issues that their systems intend to produce.

#### *2.5.1.3 Funding and resources allocation*

Faculties and departments, as the main responsibility centres of a university, have a twofold order of responsibility: academic and economic. The *academic responsibilities* are related to the realisation of the specific missions defined by the unities according their own vision of the endogenous development of disciplines and its change to meet the interests of external and internal (central strategies) social interlocutors of the university. The *economic responsibilities* depend on the decision-making devolutions of the economic process and consequently on the chosen model of economic governance.

Both the forms of responsibility can be similar in span and depth, but not necessarily coincident. Academic responsibilities are defined so that operational units have full control of the main technical phases of

research and teaching processes (admissions, curriculum and research agenda design, discovery, settlement, and diffusion of scientific knowledge etc.), while economic responsibilities can be defined by focusing on the concentration or decentralisation of the decisions about resources.

In the first case, universities reveal themselves as a federation of independent unities from the academic viewpoint, but strongly integrated from the economic and financial viewpoint. In the second case, the operational unities have autonomy both in terms of 'academic affairs' and 'financial affairs'.

Usually the resource allocation distinguishes two components: a strategic component and an operational component of functioning which reflects the workload required by the realisation of a given qualitative and quantitative level of programmed outputs. As far as the strategic component is concerned, the allocation criteria reflect outcomes and impacts produced by the structures, defined coherently with the strategic objectives set by the governance bodies of the university as the foundation of the institutional mission.

Then, it is a component with prevailing aims of teaching and research incentives and it can consider similar incentives defined by the academic system. Governance bodies act as 'interpreters' of social expectations affording incentives to operational units in order to optimise the return on the image and financial resources for the university.

The incentive objectives can be various, but in practice resources should be focused on a few objectives such as the improvement of degree rates and placement in the work environment, the impact of research on economic and social development, and the ability to attract external funds. By their nature, these performance dimensions are less objective, with long-run implications, and subject to the influence of some unmanageable factors.

### 2.5.2 Quality Assurance and Accountability

#### *2.5.2.1 Transparency, academic responsibility, and assessment*

Accountability is the acknowledgment and assumption of responsibility for the actions, products, decisions and policies of the HEI, encompassing the obligation to report, explain and be transparent and answerable for resulting consequences. The increase in autonomy and responsibility of each HEI requires the development of the following *assessment systems* (Frazer, 1995):

- *Institutional assessment*, which is the widest form of external assessment, including all aspects of autonomy (statutory, organisational, financial and academic).
- *Study courses assessment*, which is a form of external assessment related to the policies of student entry, study programmes and teaching methods.
- *Research assessment*, which is the external assessment concerning the design, realisation and diffusion of research results.

Assessment systems can concern different dimensions of performance like efficiency, effectiveness, quality, and equity. In general, all of these aspects and dimensions are integrated within a wide concept of quality management system. Educational quality can be defined as the "conformance to mission specification and goal achievement – within publicly accepted standards of accountability and integrity" (Bogue and Hall, 2003, 14).

*Quality management systems* can be framed to satisfy different aims, be related to different objects, and utilise different methodologies for different objects and purposes. A useful scheme of classification is representing by the following points:

- *Quality assurance:* the internal system of policies and processes directed to assure the maintenance and improvement of the quality of academic activities.
- *Quality assessment:* the external process of examination and judgment on teaching and learning or research quality.
- *Quality audit:* the process of external observation aimed at guaranteeing that an institution has adopted an effective system of quality assurance.

In a diachronic perspective, we can identify four stages in the evolution of quality management: inspection, statistical quality control, quality assurance, and strategic quality assurance (Garvin, 1988). In particular, for our research purposes we observe that the *quality assurance system of HE curricula and management* can be defined by means of the following criteria (Brennan and Shah, 2000):

- *Actors and levels involved:* internal, at different levels.
- *Object of evaluation:* HE curricula and management.
- *Modality and frequency of evaluation:* for example, by means of key performance indicators (KPIs), interviews with different stakeholders (students, employees, employers etc.) or peer review. Modalities can be different if the evaluation is viewed as a continuous process of planning-action-measurement-evaluation in a perspective of continuous improvement or as an occasional, cyclical, *una tantum* or with fixed maturities event.
- *Purposes of evaluation (Trow, 1994).*
- Support in order to encourage learning processes based on self-assessment.
- Evaluation to provide elements useful for the decision-making process.

In terms of purposes, an *internal supportive review* can be conducted by universities, academic units or individuals in order to improve the quality of their activities and induce a learning process in the assessed subjects.

In the case of an *internal evaluative review*, the same activities of evaluation can be used to express judgment and make decisions. In general, subjects that are evaluated are different to decision-makers. Usually the results of these assessments are related to the decisions on resource allocation and have particular behavioural implications.

*The main approaches to quality assurance*, presented in the approximate chronological order of their emergence, are:

- Accreditation (the test of goal achievement and improvement)
- Rankings and ratings (the test of reputation)
- Outcomes (the test of results)
- Licensure (the test of professional standards)
- Programme reviews (the test of peer review)
- Follow-up studies (the test of client satisfaction)
- Total quality management (the test of continuous improvement)
- Performance measurement (systems of accountability)

A strategic vision of quality requires an integrated and systematic approach to quality assurance.
The quality assurance system has a relevant impact on HE management in terms of both institutional policies and structures and of culture, reputation and image faced with public opinion.

#### *2.5.2.2 Accountability and incentive systems*

The incentives related to a performance assessment can take various forms: monetary, formal status recognition, attribution of the capacity to exert influence. According to the level of performance assessment, incentives can be recognised for each individual and/or organisational unity. Westerheijden (1990) suggests there is an intrinsic contradiction between *performance assessment and concession of incentives* with a high potential like those related to the funding of academic units.

If the results assessment is associated with bonuses and penalties from the financial viewpoint, it is possible to introduce perverse mechanisms of symbolic and opportunistic utilisation of the assessment tools. Trow (1994) takes a similar view by claiming that the link between the *funding and assessment* of an academic unit is likely to lose valuable opportunities of learning, self-criticism, and continuous improvement. The underlying assumptions are that the prime aim of a performance assessment should be to develop the learning capacity of academic units and the control systems of universities might be focused on activities of self-assessment (quality assurance) and auditing (quality audit) rather than on assessment activities in a strict sense (quality assessment).

The introduction of formal processes of *"self-assessment and auditing"* ensure that academic units work as cybernetic systems (Birnbaum, 1988; Garvin, 1993) which try to correct themselves through the monitoring of performance indicators (an increase in student drop-out rates; a fall in the rating of the research activities etc.) that activate feedback circuits regarding key problems. The main role of institutional (rector, administrative director) and academic (principals and directors) leadership then becomes to promote adequate learning mechanisms, to check their effective functioning, and to substitute them when the speed of changes makes problems outdated and the key to the interpretation of management (Paletta, 2002).

The demonstration by academic units having activated effective self-adjustment mechanisms constitutes a 'weak' form of accountability which is substantially different from a 'strong' meaning connecting self-assessment to a subsequent moment of formal performance assessment. In the former case, the assessment is 'supportive', while in the latter it is executed "with the aim to judge" (Trow, 1998) and sparks off coherent processes of resource allocation with bonuses and penalties.

*Those who hold the latter view wonder: if the assessment is not linked with bonuses and penalties, why would anyone take it seriously?* In this case, the performance assessment can be conducted with methods that have a different potential for behavioural incentive. On one hand, *zero-based budgeting* represents a method with a high potential for incentive since every year the allocation criteria again put under discussion the historical allocations and one restarts from zero; in other terms, the whole funding is allocated on the basis of one (or more than one) of three methods (input, output, outcome/impacts) with the consequence that, for example, drastic reductions in student numbers are reflected by the funding system with a strong penalisation of structures.

### 2.5.3 Development of perspectives on the HE managerial system in relation to graduates' careers

In the last few decades, the external changes and specific characteristics of the institutional and competitive context have highlighted the conditions of uncertainty and risk that universities face around the world. The recent reforms that promoted new public management (value for money, decentralisation, accountability) and the current world economic crisis have led to, also within the university system, a decreasing

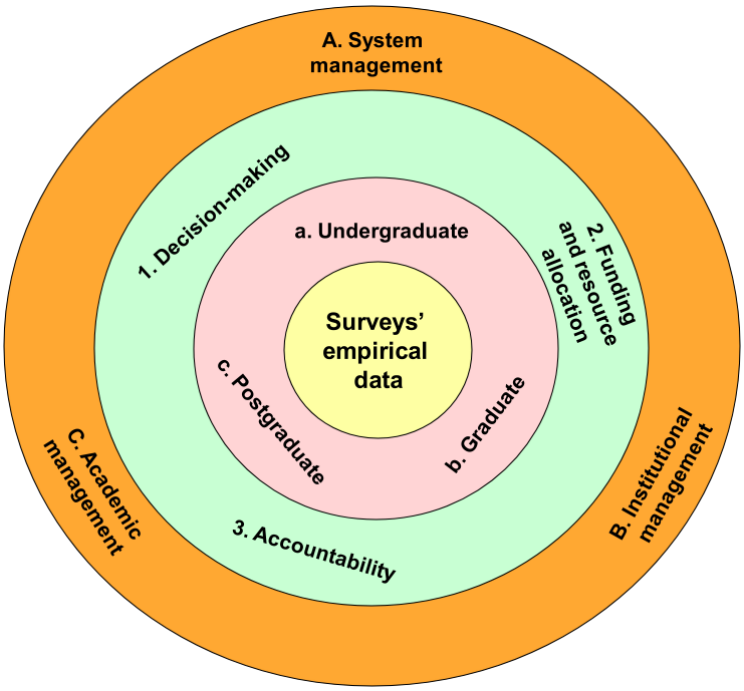
dynamic of available resources. Moreover, this trend has increased the competition to attract students, prestigious faculty, potential donors and other public and private financial resources. Following the previous mentioned conditions, the expectations of modern society regarding universities as levers of economic development based on knowledge have created a paradox of "doing more and better with less resources" (Bok, 2003).

Starting with those assumptions, this section analyses the managerial development of the university towards models of strategic management. Universities, even if in different times and ways, and starting from diverse stages, have identified in the development of their management and leadership a fundamental condition for sustainable growth of the organisation (Shattock 1999). More precisely, the introduction of new systems for strategic management of the university has been considered a priority among leaders (Paletta 2004; Martin et al. 2009). They contemplate an idea of investment in managerial culture necessary to dynamically understand the mission, promote the vision and shared values that state directions and make the organisation accountable despite their traditional weak links (Weick, 1976; Cohen & March, 1974).

Successful institutions promoted a governance philosophy able to combine the traditional academic values of pluralism, freedom, innovation, decentralisation and participation with a new managerial paradigm based on the growth and diversification of funds (competitive effectiveness), and on the efficient distribution of the available resources (efficiency). Strategic planning, budgeting, performance measurement and accountability represent the managerial references for the new governance. The aim is to pursue conditions of economic balance (revenues higher than costs) and patrimonial solidity for the continuous development of the university's mission in the long run (Clark 1998).

For this reason, we need to consider the determinants of student success in terms of not only the students themselves (user), but also from the point of view of the university (a co-producer of learning). Therefore, HE management issues (points a), b) and c) of the key research questions) will need to be addressed in the follow-up field work of the DEHEMS project (analyses, interviews and workshops). Figure 2.5 shows the conceptual framework that we have adopted in order to realise these research objectives.

*Figure 2.5: Conceptual framework for studying HE management systems and graduates' employability*




The improvement of HE quality, efficiency and the competitiveness of student employability (undergraduate, graduate and postgraduate) requires some changes to HE management systems. These changes are:

In terms of the different instruments of HE management (medium circle):

- Decision-making (strategic planning)
- Funding and resource allocation (budgeting)
- Performance measurement and accountability (transparency, academic responsibility, assessment)
- At the different levels of HE management (large circle):
- System management (UE, State, Region, Local community etc.)
- Institutional management (University, Campus etc.)
- Academic management (Faculty, Department, Institute etc.)

In order to analyse the role of the university as a context for student success, we need to get inside the 'university black box' with a dual purpose:

*Firstly*, to analyse which actors within the university system actually control the determinants under the jurisdiction of the HEI (the type of HE qualification; study behaviour; study workload; international experiences variables). The answer to this question depends on the degree of centralisation/decentralisation of governance of both the national university system and within each university. This implies that if we want to know the role of such variables, then we should know at what level these decisions are taken at the national level and within individual universities.

*Secondly*, to investigate each of the "Determinants Under the Jurisdiction of HEI Management". One possible way to operationalise the determinants is that you have to consider the process of teaching-learning-placement and the relevant stages of the same. A rational way to consider this process would be as follows:

1) Study programme characteristics (curriculum, orientation etc.)
2) Selection policies, reception and orientation for students entering
3) Teaching and learning modes
4) Study-related experiences
(apprenticeship or internship experience, international study opportunities...)
5) Support services to students (financial aid to students, placement services, housing etc.).

These five steps allow us to explore how universities – in different countries and different domains – make decisions, allocate resources and exercise accountability. In particular, for each stage we should investigate these issues:

- Who decides (the teacher, board of studies, faculty, university, state)?
- How are decisions taken (individually, collectively, by an executive body or tyrannically etc.)?
- Who are the influential actors in the decision-making process (higher hierarchical levels, stakeholders outside the university etc.)?
- Which information is used in the decision-making process? (individual perceptions, formal assessment activities etc.) Are there formal accountability systems that follow the decision-making process and results? (reporting, evaluation, auditing etc.)
- Do the accountability systems – if in place – also imply consequences for the structures (termination of a study programme, financing and budgeting) and the people (individual incentives for the effectiveness of teaching, career and remuneration of teachers etc.)?

For each internal process, HEI management defines the objectives that are measured and monitored by means of Key Performance Indicators (KPIs). The internal processes group activities together that can be realised by different subjects within various bodies at different levels (system, institutional, academic). Activities, objectives and indicators can differ from one professional domain to another (in our report these are Business and Economics, Education and Teaching, Medicine, Engineering, Natural Sciences and Sociology and Political Studies). Processes/activities, objectives and indicators could also vary within the various countries involved in this research project.

### 2.5.4 Research objectives of the DEHEMS project

Important objectives related to HE management systems in our research relate to the usability of the surveys' empirical data within management systems, through the measurement and monitoring of Key Performance Indicators concerning various internal processes related with graduates' success. In the following, we will describe some general aspects of three managerial functions: strategic planning, budgeting and resource allocation, accountability.

These objectives can be summarised in the following conceptual questions, which are elaborated in more detail in the following key sections: (a) how does HE management take employability data and surveys into account; and (b) how should/could HE management take it into account /How much is and should it be evidence-driven?

The operationalisation of the five processes holds dual significance for the research objectives:

Firstly, on one hand, it allows us to compare the views of students (Reflex and Hegesco data and surveys) with indicators of the activities of universities. For example, with regard to the question: "Did you acquire

any study-related work experience during higher education", a possible indicator of performance is offered by the university concerning apprenticeship and internship opportunities.

Secondly, on the other side it provides performance indicators (data on users and university activities) to investigate if and how these indicators are used in the three managerial functions analysed: strategic planning, budgeting and resource allocation, accountability.

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# 3 METHODOLOGY ADOPTED IN THE DEHEMS PROJECT

## 3.1 INTRODUCTION

Research activity carried out in the framework of the DEHEMS project has focused on providing answers to three key questions:

- What are the determinants of graduates' (early) career success and how do study domains differ in this respect?
- How does higher education (HE) management take data and surveys on graduates' employability into account and how do study domains vary in this respect?
- How should HE management take this data into account, to what extent should educational policy be evidence-driven and how do study domains differ in this respect?

Each of the questions requires different information, a different type of data analysis, and a different approach to formulating conclusions. Project activity has been organised in three work packages, each of which uses a different type of methodology, matching the research tasks and the specifics of each research question. The previous chapter outlined the theoretical background to the empirical analysis. In this chapter, we present the data sources and methods used for analysing the information.

The chapter has two main parts. After a brief introduction describing the preparatory phase for the key project research activities, the two types of methods used in the project are described. First, we present the processing of the analytical (quantitative) data and describe the research activities mainly carried out under WP5. This part of the research activity was focused on answering questions about the determinants of graduates' labour market success. Second, we describe the qualitative analysis and chiefly refer to the different types of interviews carried out under work package 6 and work package7.

Thinking in the Western world is characterised by a basic dichotomy: "There is an uneasiness that has spread throughout intellectual and cultural life. It affects almost every discipline and every aspect of our lives. This uneasiness is expressed by the opposition between objectivism and relativism, but there are a variety of other contrasts that indicate the same underlying anxiety: rationality versus irrationality, objectivism versus subjectivity, realism versus antirealism. Contemporary thinking has moved between these and other related extremes" (Bernstein, 1983: 1). Based on Cartesian dualism which sharply distinguishes between the physical as external reality and thinking as the internal world, this division is reflected in two basic paradigms of scientific thought and methods: the objective, deductive and what is often called quantitative and the subjective, interpretative and frequently labelled qualitative paradigm. This is not the place to give a more extensive description of these two paradigms (Lamnek, 1988; Lueger, 2000). However, their basic characteristics can be mentioned briefly.

- From a subjective, interpretative point of view the world is not simply given as an objective reality. Rather, it is subjectively constituted and socially pre-interpreted, formed by the observation schemes of individual actors. In this process, objective and subjective meaning can be differentiated. Subjectively, the actors themselves attribute meaning to their own actions. On the other side, action can be linked with meaning without referring to the psyche of the actor through the obser-

vation of observers (Soeffner, 1989; Schütz, 1981). Given this background, the methods used within this paradigm usually have to meet specific criteria like openness, communicativity, contextuality or search for meaning (Lamnek, 1988).

- From an objective, deductive perspective, the focus is on the world as a 'given' entity that can be looked at and analysed without referring to subjective interpretation. Archetypically, this view is reflected in the approach of natural science which strives for universal laws and the testing of hypotheses via quantitative, experimental methods. Critical rationalism presupposes an objective reality, i.e. truth. Through a collective effort called science, this truth can be approached more and more. Critique becomes crucial in this approach as it is essential for the core elements like intersubjectively checking results and methods (Popper, 1972; Scholtz, 1991). The methods used in this paradigm have to meet criteria like a connection with theory, an objective research process, an operational definition and the isolation of relevant measures, a rational explanation, and the primacy of falsification (Friedrichs, 1973).

As mentioned, these two paradigms are frequently equated with the use of so-called quantitative and qualitative methods. It is true that specific methods have been developed for both of these paradigms that can be used solely within one of these basic approaches. However, there is a substantial overlap of methods that can be used in both paradigms. For example, certain types of text analyses not only use frequency counts of phrases as a major criterion to determine the specific meaning of a text, but they can also be used in deductive as well as interpretative research (Gerson, 1985). Therefore, it is not possible to clearly assign all methods to only one of the paradigms.

In essence, the DEHEMS project is rooted in the objective paradigm. Although using elements of qualitative research like interviews and analytical techniques to extract core categories from material, it assumes that there is an objective reality 'out there'. This reality can be researched and, hopefully, generalised.

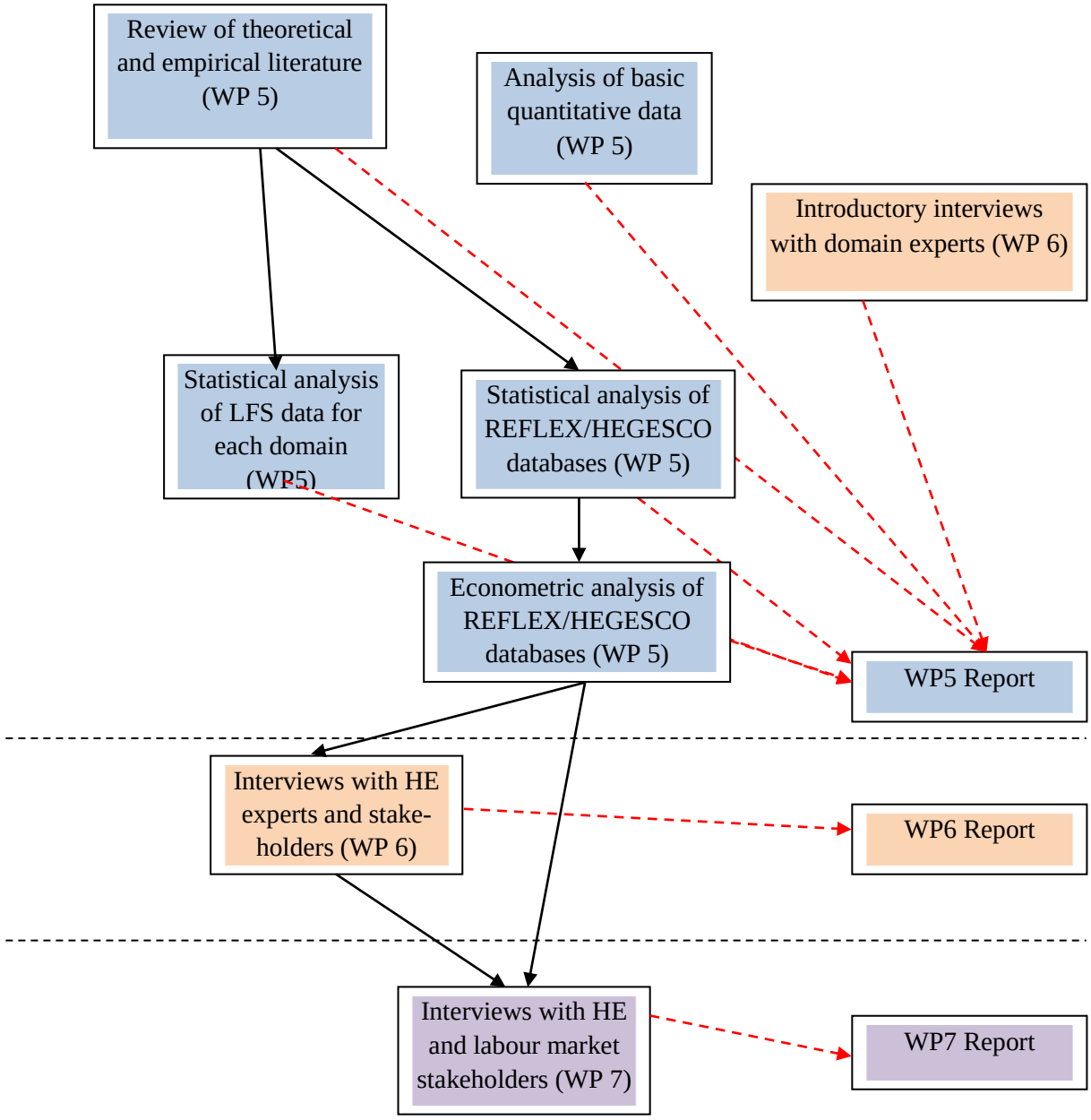
Combining the two approaches leads to a significant synergy effect. In the first stage, basic analysis of the literature and qualitative data leads to the forming of hypotheses. Subsequently, in a second stage these hypotheses are subjected to statistical and econometric procedures. Econometric modelling was used since it allows for extending an easy-to-see correlation analysis into an assessment of the relevance of certain variables for career success in terms of a causal relationship. This is particularly important for forming recommendations for HE management systems. Analytical findings give a better insight into the studied problem if they are enriched and supplemented by the commentary and interpretation of experts and stakeholders. This took place in the third stage.

Overall, the methodology used for carrying out the DEHEMS project aims consists of three major elements. They include:

- a literature review and basic analysis of the qualitative and quantitative data;
- a statistical and econometric analysis of the quantitative data from the REFLEX/HEGESCO and LFS databases; and
- an analysis of the qualitative data gathered through in-depth semi-structured interviews with HE stakeholders of different types.

Each of the elements has its own limitations so their combination has been particularly fruitful and synergistic. The sequence and interrelationship of the different elements of the methodology are presented in Figure 3.1.

*Figure 3.1: An outline of the methodology of the DEHEMS project*




The first stage of research activity undertaken in the DEHEMS project was a general description of each of the chosen study domains. This part of the project mainly focused on the institutional context of the HE sector in six countries and was based on legal documents, official information provided by HE institutions and public institutions, empirical literature, and expert knowledge.

For the whole project, the spectrum of higher education was divided into six different study 'domains' for further operationalization:

- Business and economics (BUS)
- Education and teaching studies (EDU)
- Engineering (ENG)
- Sciences including physical sciences, mathematic and statistics, computing and IT (SCI)

- Medicine and pharmacology (MED)
- Social sciences: sociology, political science (SOC).

Key issues addressed in the initial stage of analytical work related to the identification of study fields covered by the chosen domains, the types of institutions offering those professional domains and acquiring a quantitative overview of each professional domain (number of programmes, number of students, number of graduates, degree of feminisation). In the initial stage, the study programmes were reviewed, with particular attention to the impact of the Bologna Process. A lot of attention was paid to the influence of stakeholders and their role in formulating the content of teaching programmes and their realisation. Finally, the process of the transition between education and the labour market was reviewed. The national domain reports prepared upon the completion of these research tasks have been a basis for key project research activities related to the quantitative and qualitative data analyses.

The remaining part of the chapter describes the key elements of the adopted methodology, focussing on the quantitative and qualitative analyses.

## 3.2 QUANTITATIVE ANALYSIS

### 3.2.1 Datasets

Analyses carried out under WP5 used three main quantitative data sources. These were:
- OECD Education statistics;
- the Labour Force Survey dataset (2008 survey); and
- and the combined REFLEX/HEGESCO dataset.

OECD Education statistics were used in the introductory stage to provide researchers with key features of the education specifics of each domain. They were useful in the formulation of detailed research questions (considering the specifics of each domain), to plan the quantitative and qualitative analyses and provide the background to further research activities. The data included information on the shares of different domains in the total student population, its distribution for different sub-domains, the degree of feminisation of the domains and their sub-domains and trends in recent years.

#### *3.2.1.1 The Labour Force Survey as a data source for the analysis of graduates' labour market situation*

The EU Labour Force Survey (LFS) is a large sample survey conducted among members of private households. It provides detailed data on employment, unemployment and inactivity (on an annual and quarterly basis).

The data can be broken down into many dimensions including age, gender, level of education, and distinctions between permanent/temporary and full-time/part-time employment. Generally, it covers people aged 15 and over in the EU, the European Free Trade Association (EFTA) – except Liechtenstein – and Candidate Countries[9].

[9] Based on: http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/introduction accessed 29.02.2012.

The LFS sample size is about 1.5 million people every quarter. The sampling rates in each country vary between 0.2% and 3.3%. The LFS is now a continuous quarterly survey. Initially, after 1983, its results covered one quarter per year only (usually in spring), but from 1998 to 2005 it underwent a transition to a continuous survey – interviews are distributed across all weeks of the year – designed to give reliable quarterly results[10].

National statistical agencies are responsible for selecting the sample, preparing the questionnaires, conducting the direct interviews among households, and forwarding the results to Eurostat in accordance with a common coding scheme. The methodology of the LFS is based on a few principles that allow the collected data to be used for comparisons between countries. Key principles include: using the same concepts and definitions, following the International Labour Organisation's guidelines, using common classifications: NACE(rev1), ISCO-88(COM), ISCED, NUTS and recording the same set of characteristics in each country.

The LFS dataset may be used for extremely vast types of analyses. The assessment of graduates' labour market situation is only one of them. This database offers a lot of useful information concerning the labour market position of graduates, including job characteristics, the job search process etc., as well as their personal characteristics.

However, it should also be noted that the LFS dataset has several disadvantages. Although it contains numerous variables referring to employment, they are limited solely to objective measures of employment characteristics. There are no subjective measures of employment satisfaction, or the match between actual employment and earlier graduates' expectations. The LFS does not contain any information on the educational process (apart from the year of graduation). Therefore, there is no possibility of illustrating any link between the characteristics of the education process and the labour market situation.

In the DEHEMS project the 2008 dataset was used. The total LFS 2008 sample used for the analysis in DEHEMS consisted of data for 28 countries (27 EU member states and Iceland) and included more than 4 million observations. Since the aim of the research in the DEHEMS project is to analyse the graduates' labour market situation, the first task in the analytical procedure was to choose the population to be taken into account for further statistical analysis. Among the different characteristics four were taken into consideration: education attainment, age, year of graduation and status of student or apprentice. Generally, the population of interest included higher education graduates who had graduated up to five years before the survey and were not continuing their education. Technically, the following criteria were used for the sample selection:

- tertiary education level (ISCED level 5a, 5b, 6);
- an age lower than 35 years;
- graduation in 2003 or later; and
- not being currently (at the time of the survey) a student or an apprentice.

Adopting the above criteria restricted the population of interest to 93,547 persons in all 28 countries included in the LSF database. As for the members of DEHEMS, the numbers of cases were the following:

- Austria – 2,942
- Germany – 980
- Slovenia – 2,349

[10] Ibid.

- Italy – 10,011
- Poland – 6,429
- Turkey – 0 (Turkey was not included in the available dataset).

The other issue regarded the definition of study domains in accordance with the DEHEMS criteria and the feasibility of the LFS data. Aggregating the social sciences' field of study appeared to be the key problem (the LFS uses the aggregated category for ISCED 300, while DEHEMS distinguishes between "business and economics" and "sociology and political sciences"). Therefore the LFS analysis has been restricted to just five domains:

- business, economics, sociology, political science (ISCED=300);
- education and teaching (ISCED =100);
- engineering (ISCED =500);
- medicine and pharmacology (ISCED =700); and
- life science (life sciences, mathematics and IT) (ISCED =400).

The procedure of operationalizing the domains allowed for the final sample to be extracted that was used for the statistical analysis. As for DEHEMS countries (without Turkey), it consisted of 14,428 observations, while the total sample (for all 28 counties) included 61,182 people.

*Table 3.1: Structure of the 2008 LFS sample used for statistical analysis of the graduate population*[11]

| | **Business, economics and social sciences**[12] | **Education** | **Engineering** | **Medicine** | **Science** | **Total** |
|---|---|---|---|---|---|---|
| **Austria** | 553 | 281 | 502 | 288 | 153 | 1777 |
| **Germany** | 236 | 90 | 132 | 121 | 76 | 655 |
| **Italy** | 3281 | 384 | 1262 | 943 | 726 | 6596 |
| **Poland** | 2292 | 668 | 525 | 215 | 638 | 4338 |
| **Slovenia** | 615 | 206 | 320 | 130 | 91 | 1362 |
| **Remaining countries** | 19054 | 5497 | 8482 | 7578 | 5843 | 46454 |
| **Total** | 26031 | 7126 | 11223 | 9275 | 7527 | 61182 |

Source: Own calculations based on the 2008 LFS data.

[11] The LFS data don't include Turkey.
[12] Further breakdown of the subdomains was not possible.

#### 3.2.1.2 The REFLEX/HEGESCO dataset

The key data source for the quantitative analyses of the DEHEMS project was a combined dataset resulting from two large-scale surveys carried out within the REFLEX and HEGESCO projects. Both sources were used in different analyses (including the REFLEX and HEGESCO reports). However, this is the first time that a domain perspective has been adopted for graduates' studies with the use of these datasets.

Both surveys were based on the same methodology (developed by the REFLEX network). The REFLEX project was carried out between 2004 and 2007 in 16 countries: Austria, Belgium-Flanders, the Czech Republic, Estonia, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. The HEGESCO project was carried out two to three years later in five additional countries: Slovenia, Turkey, Lithuania, Poland and Hungary. In each country in both the REFLEX and HEGESCO projects, a representative sample of graduates was drawn from ISCED 5A who obtained their degree five years prior to the time of the survey (in most REFLEX countries this was the 1999/2000 academic year, in the HEGESCO countries the 2002/2003 academic year). Data collection for REFLEX took place in 2005 and that for HEGESCO in 2008. The combined dataset included 45,354 observations. The questionnaire sent to sampled graduates by mail focused on educational experiences before and during higher education, the transition to the labour market, characteristics of the first job, characteristics of the occupational and labour market career up to the present, characteristics of the current job, characteristics of the current organisation, an assessment of the required and acquired skills, an evaluation of the educational programme, work orientations, and some socio-biographical information.

Information on the study field allows the domain of study (according to the definitions adopted in the DEHEMS project) to be assigned to each respondent. The numbers of observations for each domain are presented in Table 3.2.

*Table 3.2:Structure of the REFLEX/HEGESCO subsample used for the statistical and econometric analysis*

| | **Education** | **Science** | **Engineering** | **Medicine** | **Social sciences** | **Business and economics** | **Total** |
|---|---|---|---|---|---|---|---|
| **Austria** | 237 | 188 | 267 | 75 | 180 | 397 | 1344 |
| **Germany** | 118 | 188 | 405 | 112 | 78 | 236 | 1137 |
| **Italy** | 84 | 329 | 559 | 269 | 288 | 538 | 2067 |
| **Poland** | 146 | 88 | 218 | 31 | 145 | 289 | 917 |
| **Slovenia** | 411 | 192 | 309 | 222 | 127 | 940 | 2201 |
| **Turkey** | 253 | 283 | 475 | 37 | 91 | 690 | 1829 |
| **Non-DEHEMS countries** | 3911 | 2760 | 5100 | 1883 | 1520 | 5508 | 20682 |
| **Total** | 5160 | 4028 | 7333 | 2629 | 2429 | 8598 | 30177 |

Source: Own calculations based on the REFLEX/HEGESCO data.

### 3.2.2 Methods used in the quantitative data analysis

#### *3.2.2.1 Statistical analysis of the LFS data: Graduates' labour market situation*

To describe the graduates' labour market situation several LFS variables were used. From the labour market perspective, labour market status (according to the ILO definitions) was a key characteristic. Using these variables, the graduates were divided into three groups: employed, unemployed, and economically inactive persons.

For the population of employed graduates, different information of their employment characteristics was analysed. It included:

- professional status: self-employed with or without employees, employee, family worker;
- economic activity of the employer (NACE);
- professional occupation (one-digit level of the ISCO classification); and
- permanency of the job.
-

For the population of unemployed graduates, three characteristics were taken into account:

- the fact of the existence of previous employment experience;
- the duration of the search for employment; and
- the fact of being registered at a public employment office.

All the variables were discrete. Therefore, the statistical analysis was based on the analysis of frequencies: for each domain and each country (five DEHEMS countries and the rest of the sample treated as a baseline) the number of observations for each category of a given variable was calculated. Then the structure for each country and/or each category was calculated. Comparing the structures of the particular countries to the baseline values allowed the drawing of conclusions on domain- and country-specific characteristics.

#### *3.2.2.2 Statistical analysis of the REFLEX/HEGESCO dataset*

Although the LFS has been a very informative data source on differences in the employability of graduates of different domains and personal characteristics, the lack of information on the education process has not allowed the drawing of any meaningful conclusions on the determinants of labour market success and the role of education-related factors. This drawback has been overcome by using the REFLEX/HEGESCO dataset.

First, a statistical description of the key variables was undertaken. For the discrete variables it was mainly a description of the frequencies and structures, analysed in a comparative perspective for each domain (comparing the DEHEMS countries among themselves and each the DEHEMS country with the EU average). For the continuous variables, basic distribution characteristics were calculated (mean, median, standard deviation etc.). In some cases, correlations between the variables were also checked.

#### *3.2.2.3 Econometric analysis of the REFLEX/HEGESCO dataset*

Statistical analysis of two-variable correlations allows for an assessment of the relationships between variables. However, it does not provide any indication of a causal relationship: the correlation of two variables may result from their relationship with yet a third (unobservable) variable. That is why the key element of quantitative analysis consisted of the econometric modelling of the determinants of labour market success.

If it is additionally based on a theoretical basis, it allows for testing hypotheses on the relationships between the variables, controlling for all other variables in the model.

In the case of the analyses in the DEHEMS project, the econometric procedure included several stages. These were:

- preparing the dataset;
- choosing dependent variable(s) – on the basis of the research questions and theoretical considerations;
- choosing explanatory variables – on the basis of the research questions and theoretical considerations;
- choosing the appropriate functional form of the model and the best estimation procedure;
- diagnostic tests; and
- the interpretation of the results.

After merging data from those two data sets and removing problematic observations, the integrated dataset included 43,311 observations for all REFLEX and HEGESCO countries. The dataset consisted of 533 variables, in most cases of a binary or discrete type. While elaborating the data, several problems and difficulties were found.

In many cases, the same type of information is given in many country-specific variables (due to differences in institutional settings between countries). Average grade is an example of this problem, with different grade systems in place in different countries. To overcome such problems, relative measures were used instead of absolute ones.

Estimating a domain-specific model for every country was hardly ever possible due to the low number of observations in some domains. Therefore, it was decided to focus on the domain perspective and use country dummies only as a control variable (to capture any country-specific influence on the dependent variable).

In the case of some variables, the share of missing values was significantly higher than for other variables. For such cases particular attention was paid to deciding whether to include the variable in the model.

The data elaboration process included several steps. The first consisted of processing each of the variables potentially useful for the analysis. The "no answer" and "not relevant for this country" etc. observations were treated as missing values and were re-coded. In several cases where original variables seemed to contain too detailed information, new variables were created as a result of an aggregation of several variables' values.

The key problem with the HEGESCO/REFLEX dataset is the number of observations available for a single country and domain. In response, the only sensible approach was to estimate all models separately for each domain, but the same thing could not be done for individual countries.

With the dataset ready, the econometric modelling phase followed. The first task in the construction of the econometric model was theoretical research and the identification of dependent and explanatory variables. With the REFLEX/HEGESCO dataset, the literature review helped identify almost 60 independent and almost 30 dependent variables. Preparation of 30 separate econometric models for each domain would be too detailed and meaningless in the context of the DEHEMS project's objectives. To resolve this problem, a Principal Component Analysis (PCA) (Jolliffe, 1986) was carried out.

The main objective of PCA is to reduce the number of variables for analysis. This is done by finding a relatively small number of components which are linear combinations of the original variables. PCA is based on an analysis of correlations and its key idea is to group variables together that behave similarly and transform the dataset from a large to a relatively small number of variables by reducing the dimensions. This process keeps as much information as possible from the original data variability. Of course, losing some information is a cost, but it is compensated by the increased readability and usefulness of the data. Identified components generally do not have a direct numeric interpretation, but allow us to identify variables of key significance for each of the factors. PCA is a useful tool if a mathematical solution is theoretically interpretable, which is true for the REFLEX/HEGESCO dataset case. A detailed list of originally chosen dependent variables and the process of the reduction of its number to the group of variables used in regression is discussed in Chapter 5. The PCA procedure resulted in six complex variables being chosen. The expert assessment of the values of factor loadings for particular variables allowed for naming them with interpretable labels. These were:

- job satisfaction (referring to general indicators of job satisfaction);
- appropriateness (referring to the level of matching between graduate's education/skills and their job);
- challenge (referring to career developmental opportunities);
- job security (referring to employment status and security);
- independence (referring to creativeness and autonomy in work); and
- work-life balance (referring to the ability to reconcile professional and personal life).

As for independent variables, they included all theoretically identified variables in the database that could potentially influence graduates' labour market success. The list of variables included 50 items that can be divided into several categories. These were:

- social and demographic characteristics;
- characteristics of previous education experience (at secondary level);
- type of study at the tertiary level;
- programme characteristics and teaching modes;
- a graduate's behavioural characteristics during their study period;
- spatial mobility and work experiences during and after graduation;
- characteristics of the job and employer; and
- country of origin.

A detailed list of the explanatory variables included in the regression analysis is provided in Chapter 5.

The next step in the econometric analysis was to choose a functional form and conduct a regression analysis. Since the classical model of linear regression was used, the least squares method was adopted. All in all, 36 regressions were performed – one for each dependent variable (each of six factors) and domain. To reduce the number of models, the "stepwise" procedure (automatically discarding variables in order from the highest level of insignificance) was applied. For control purposes, in order to verify the correctness of the PCA, regressions using the key variables from the original REFLEX/HEGESCO dataset were also carried out. The results were consistent with the output of regressions performed on synthetic factors.

In the final stage, standard diagnostic tests were carried out. The problem of heteroscedasticity and omitted variables was tested. In most cases, the functional form was found to be appropriate. When the Ramsey test was negative, an attempt to improve the functional form of the equation was made. In the case of a failure, logit models were used (with a necessary transformation of continuous dependent factors to a bina-

ry variable). In such a case, a maximum likelihood estimation was used. All statistical and econometric analyses were performed using the STATA 11 Statistical package.

## 3.3 QUALITATIVE ANALYSIS

As indicated above, DEHEMS builds on earlier projects (e.g. HEGESCO, REFLEX, CHEERS) which generally approached the topic from (1) a quantitative perspective and (2) focused on graduates. Therefore, one of the major goals of the DEHEMS project was to complement this with (1) qualitative data from (2) the perspective of higher education institutions (HEIs) and higher education stakeholders.

Qualitative data were collected through in-depth semi-structured interviews with experts from different fields in HE management. While both data collection and analyses were carried out similarly in the course of WP6 and WP7, the two work packages addressed slightly different target groups. WP6 refers to data from interviews with individuals from HE institutions. On the other hand, the main qualitative data sources for WP7 were higher education stakeholders, i.e. persons 'external' to HE institutions.

### 3.3.1 Data collection

#### *3.3.1.1 Sampling*

***Sampling technique***

Based on preceding analyses of the different HE systems as well as particularities of each domain in the respective countries, representative institutions were selected (governance and accreditation institutions, employers, trade unions or industry associations, student organisations, as well as HEIs and their relevant subunits such as faculties or career centres) in order to approach knowledgeable experts in each institution.

For the first contact, a standard letter including a description of DEHEMS and its goals was sent to selected institutions. This was followed up by a telephone call that served the main purpose of gaining additional information about who would be the most suitable person to interview within the chosen institution.

In WP 6 either a '3 x 2'approach, i.e. 3 interviewees per 2 institutions, or a '2 x 3'approach, i.e. 2 interviewees per 3 institutions, was chosen depending on the country and domain specifics. This helped us address people in different positions as they could provide different and relevant insights for answering the project's research questions. In contrast to this, WP7 targeted a wider array of institutions and directly approached particular people at specific positions (see below for the details).

Each partner then submitted a list of proposed interviewees from the respective country to the lead partner. This list included a description of the chosen institutions as well as a detailed explanation of the experts' position, knowledge and experience. This so-called 'road map' served both to internally explain the selection of interviewees to other project partners (particularly the lead partner) and to externally justify the sample composition. Also, it provided an opportunity for the respective lead partner to assure that the sample was comparable across all participating countries.

After possible changes to homogenise the sample composition, the suggested list of interviewees was approved by the lead partner. This was followed by a telephone call and/or e-mails to fix a date for a personal meeting to conduct the interview.

***Sample size***

In total, 240 interviews were conducted in WP6 with at least six in each of the six domains and in each of the six countries. Hence, WP6 had a strong focus on study domains, whereas WP7 allowed for the particularities in each country while still maintaining the basic distinction between the domains. In WP7, 92 different experts were interviewed including HE generalists, HE governance or policy makers (at least five per country), domain-specific employers (at least five per country), trade union or industry representatives (at least three per country), and student organisation representatives (at least one per country).

Looking at the different partner countries in detail, the number of semi-structured interviews that were conducted is as follows (Tables 3.3, 3.4):

*Table 3.3:Number of interviews among individuals from HEIs by domain and by country*

| | **Education** | **Science** | **Engineering** | **Medicine** | **Social sciences** | **Business and economics** | **Total by country** |
|---|---|---|---|---|---|---|---|
| **Austria**[13] | 8 | 6 | 6 | 6 | 6 | 8 | 40 |
| **Germany**[14] | 6 | 6 | 6 | 7 | 8 | 6 | 39 |
| **Italy**[15] | 6 | 6 | 6 | 6 | 6 | 6 | 36 |
| **Poland**[16] | 6 | 6 | 6 | 6 | 8 | 8 | 40 |
| **Slovenia**[17] | 6 | 6 | 7 | 6 | 6 | 6 | 37 |
| **Turkey**[18] | 6 | 6 | 7 | 6 | 6 | 6 | 37 |
| **Total by domain** | 38 | 36 | 38 | 37 | 40 | 40 | 229 |

[13] AT: All interviews conducted face-to-face, by two different interviewers (and two assistants for taking notes, when not recorded), [38] interviews recorded.

[14] DE: 32 interviews conducted face-to-face and 7 via telephone, three different interviewers; 38 interviews recorded.

[15] IT: All interviews conducted face-to-face.

[16] PL: All interviews conducted face-to-face, by three different interviewers; 8 interviews were recorded.

[17] SI: 27 interviews conducted face-to-face, ten via telephone, by one interviewer; 27 interviews were recorded.

[18] TR: All interviews conducted face-to-face, by four different interviewers.

*Table 3.4: Number of interviews among HE stakeholders by expert type and by country*

| | **HE generalists, HE governance or policy makers** | **Domain-specific employers** | **Trade union or industry repre-sentatives** | **Student organi-sation repre-sentatives** | **Total by country** |
|---|---|---|---|---|---|
| **Austria**[19] | 6 | 5 | 3 | 1 | 15 |
| **Germany**[20] | 6 | 7 | 2 | 1 | 16 |
| **Italy**[21] | 6 | 5 | 3 | 1 | 15 |
| **Poland**[22] | 6 | 6 | 2 | 1 | 15 |
| **Slovenia**[23] | 6 | 6 | 2 | 1 | 15 |
| **Turkey**[24] | 6 | 6 | 2 | 1 | 15 |
| **Total by expert type** | 36 | 35 | 14 | 6 | 91 |

***Interviewee selection strategy in WP6***

Consistent with the recommendation of the proposed draft, for each domain the most representative institutions were selected. In all partner countries, the HE management units responsible for curriculum design, quality control, career/alumni services, research strategy, curriculum implementation, or research activities were identified. Consistently, each selected interviewee met one of the following criteria:

- a HE manager who is responsible for curriculum design, quality control management, or research strategy, e.g. a programme director;
- a full-time member of academic staff who is an expert in the domain, knows the organisational practice and has long experience in research and/or teaching; or
- a career/alumni services expert.

In this process of selecting the interviewees, the focus was on people who have knowledge of and experience in the specific domain rather than their position or job title (e.g. if a new programme director with little experience had been appointed it made sense to interview the former director even if they no longer occupied an official position).

***Interviewee selection strategy in WP7***

As indicated earlier, WP6 exclusively addressed persons within an HEI in order to obtain insights about how the HEI views the situation. WP7, on the other hand, aimed to contrast these findings with a different perspective and therefore focused on experts external to HEIs. Therefore, stakeholders with different backgrounds were interviewed, including student and employee representatives, relevant employers and professional associations. The other target group of interviewees were HE generalists and policymakers (e.g. HE experts from ministries or supra-university federations) with trade union, industry or employer association representatives occupying a twofold position as stakeholders and as policymakers.

[19] AT: All interviews conducted face-to-face, by three different interviewers, 15 interviews recorded.
[20] DE: 6 interviews conducted face-to-face and 10 via telephone, by two different interviewers; 15 interviews recorded.
[21] IT: All interviews conducted face-to-face.
[22] PL: All interviews conducted face-to-face, by three different interviewers, 1 interview recorded.
[23] SI: Nine interviews conducted face-to-face, six via telephone, by one interviewer; 9 interviews recorded.
[24] TR: All interviews conducted face-to-face, by four different interviewers, 0 interviews recorded.

#### *3.3.1.2 Conducting the interviews*

Altogether the database consists of 320 interviews with an average duration of approximately 45 minutes. In the respective partner countries, the administration of semi-structured interviews was processed differently. In Slovenia, one interviewer conducted all the interviews, in other partner countries teams of 2 to 4 interviewers did this job. With few exceptions (see Tables 3.3, 3.4), interviews were conducted face-to-face and usually at the interviewee's office in order (1) to facilitate finding an interview date quickly and (2) to make the interviewed expert feel at ease and to talk openly.

Due to time and other limitations, some of the interviews were conducted by telephone. With few exceptions, experts agreed to have their interview tape recorded with a digital voice recorder. This helped us gather a detailed verbatim record without additional effort, a record that worked as a source to clarify any ambiguity/uncertainty of memory by listening again to the passage in question. This also provided a source for citations from the interviews.

As is recommended for expert interviews, the interviewers were well-informed about the HE context in the respective country and domain so that the interviewees would accept them as knowledgeable interlocutors. This led to more in-depth conversations while making it necessary during the analysis to account for contextual factors that sometimes were not explicitly mentioned in the interview.

The interview setting allowed for enough flexibility to let the interviewees express themselves quite openly. At the beginning, the interviewer asked an open introductory question in order to loosen up the situation, allowing the interviewee to position him- or herself and share their thoughts. In the case of a respondent deviating from the main topic, more detailed questions were asked. It was experienced by some interviewers that interviewees from HEIs provided more relevant information without detailed questions as compared to the interviewed employers and other stakeholders.

Two different interview guidelines were developed for WP6 and WP7 by the respective work package leaders. These interview guidelines were subsequently adapted in the other partner countries. Efforts were made to follow the similar theme lines in all the partner countries when the interviews were conducted in the local languages. Although there was no identical matching between the locally adapted interview guidelines used in the partner countries, extensive discussions at partner meetings and individual coordination activities helped safeguard consistency across the countries.

The interviews were conducted in the local languages[25]. To manage the gap between the respondents of various partners, a summary of the main findings of each interview was prepared in English. Verbatim transcripts in the original language were not used for further analysis as they would not be understood in other countries and a thematic analysis was considered more relevant.

### 3.3.2 Methods used in the qualitative data analysis

#### *3.3.2.1 Coding and summarising individual interviews*

As quickly as possible after conducting the interviews, the interviewer(s) wrote and submitted English thematic summaries to the lead partner. The length of the summary was set at roughly 800 words. These

[25] However, in a few cases interviews were also conducted in a different language. For example, in Austria one interview was conducted in English as German was not the respondent's first language.

summaries covered the major themes of the interview and provided useful quick insights. These summaries were developed only for internal use, serving as an intermediate step in the analysis process. In the earliest phases of the data collection these summaries helped to further improve the interview guidelines. Later, they helped all partners to keep track and 'get a feel' for ongoing DEHEMS project activities in partner countries. In addition, this step supported a self-imposed project discipline for documenting.

As per the project plan, two or more researchers worked together in pairs to assign codes. This was considered especially important while analysing the first interviews. Once the set of codes was established, the coding was done by individual researchers. In this regard, each partner wrote summary reports in English based on the analysis for each domain. To further establish inter-rater reliability within each country's dataset, additional efforts were made such as such as double-checking, proof-reading, and discussion of possible interpretations by other researchers.

#### *3.3.2.2 Supporting tools*

To effectively handle the data analysis, an integrated coding scheme including the main categories for data analysis was developed. These categories were first created deductively based on themes identified in a test phase and during first interviews and then supplemented with country-specific categories, to incorporate country particularities. In general, codes were provided to be applied to the data (i.e. to fit findings into general categories) while a process of creation or induction was restricted to country specifics.

NVivo software was used for coding the interviews. It helped to share coding schemes and to support project documentation.

Because the interviews often resembled in-depth conversations among experts, some contextual information was assumed as 'common knowledge' by the interviewees. The interviewers then would have been ill-advised to address such implicit information in order to maintain a trustful and fruitful conversation atmosphere. Hence, such contextual factors that were not explicitly mentioned during the interview were accounted for (1) in a separate section of each interview summary and (2) in a list of bullet points for each domain (WP6) or country (WP7). This context information was then used in the next step of the analysis.

#### *3.3.2.3 Project-level analysis*

Based on the individual summaries, contexts as well as background information about the respective country and domain, the next step of the analysis consisted of an analysis for each domain across all countries (WP6) and an analysis for each country across all domains (WP7). The findings will be related to the core research questions for the project and will be presented in subsequent chapters.

## 3.4 CONCLUDING REMARKS

This chapter describes the methodology applied in the DEHEMS project. As outlined above, different research questions require different methodological approaches and these differences were taken into account when choosing research methods. On the one hand, quantitative methods were used to analyse existing data, originating from earlier projects and secondary sources, in order to answer questions about the determinants of graduates' labour market success. On the other hand, the newly collected data from inter-

views specifically conducted for and during the course of this project required a more qualitative approach. By applying this mix of methods this project provides a look at higher education from different perspectives at the same time.

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# 4 DETERMINANTS OF GRADUATES' LABOUR MARKET SUCCESS ACROSS DOMAINS: A COMPARATIVE ANALYSIS

## 4.1 INTRODUCTION

This chapter describes the results of the study on the determinants of the graduates' labour market success across different study domains. The outline of the methodology adopted in this study has been described in the methodological chapter of the report. Basically, it uses regression analysis and the REFLEX/HEGESCO dataset to find evidence of statistical relationships between different respondents' characteristics (in terms of their social background, educational history characteristics, employer characteristics) and several measures of their labour market success. The main goal of the analysis is to find similarities and differences between domains of study.

The remainder of the chapter is organised as follows. The next section presents the procedure of selection and processing of variables denoting labour market success (a description of the dependent variables). Then the explanatory variables that were selected are discussed. The following part documents empirical findings on the determinants of different labour market success indicators in different domains of study. The chapter ends with conclusions where the main findings are summarised. In the final part, an attempt is made to create a typology of domains of study based on their characteristics in terms of graduates' educational paths, their labour market experience and determinants of labour market success.

## 4.2 DEPENDENT VARIABLES

Traditionally, labour market success (not only for graduates) is understood in terms of performing work for payment. Using this conventional and simplified approach one would simply need to look at the fact of whether a respondent has a job (at the microeconomic level) or at the aggregated employment rate (at the macroeconomic level). This traditional approach to measuring labour market success, although still useful, is however insufficient to describe various aspects of the term "success" and it is necessarily subjective in nature. Given differences in individuals' preferences and complex characteristics of modern employment contracts, one can observe different aspects of what is called 'success'. Further, the idea of success can be related to the socio-biographic background of individuals, their values and beliefs but also to the economic context (the business cycle effect). Beside the fact of having a job, other aspects of success that can be taken into consideration are as follows:

- types of employment contracts (short-term employment contracts do not give the appropriate level of security, although they may make entry to the labour market at least possible );
- employment stability (frequent job changes prevent the accumulation of job-specific human capital and they can be potentially treated as a bad signal about a candidate's productivity and adaptability for the next employer);
- wage levels (low wages provide a low return to education and decrease the incentives to acquire human capital through both formal education and on-the-job training);

- the possibility of human capital accumulation (knowledge gained through work experience is a valuable asset in itself);
- extent of the utilisation of the skills and knowledge acquired during one's education (whether it allows one effectively use the skills and knowledge provided by the HEI and to develop them via job experience);
- the possibility of personal development (important for the subjective perception of overall development);
- career prospects (starting with a low position but with open possibilities might be more beneficial for long-term labour market success than having a relatively high position from the oustet and then facing some form of glass ceiling);
- the degree to which an actual job matches a graduate's expectations (important for the subjective perception of satisfaction); and
- general satisfaction (work-life balance, which gives enough time for spending with one's family and enough income to enjoy the consumption of a variety of goods and services).

The complexity of the notion of labour market success makes it a very difficult object of empirical research. For a comprehensive study of the problem, we need a multi-dimentional dataset offering information on workers' preferences, expectations, educational history, job characteristics etc. The REFLEX/HEGESCO dataset is an exceptional example of the data source containing information on many aspects of labour market success. Table 4.1 presents the variables of the REFLEX/HEGESCO questionnaires that were used as proxies to measure labour market success in our study. The table also includes short descriptions of the variables (definition and/or values). In most cases, these variables are taken directly from the original dataset. In some cases, they needed some kind of processing (e.g. the aggregation of different value levels). Table A1 in the Appendix presents basic descriptive statistics of the variables from Table 4.1.

*Table 4.1: The components of labour market success*

| **Variable** | **Description/values** |
|---|---|
| Type of contract (*contract*) | 0: fixed term, 1: self-employed, 2: full-time contract |
| Job security (*security*) | The extent to which job security applies to current work – 1 (not at all) to 5 (to a very high extent) |
| Job autonomy (*auton_apply*) | The extent to which job autonomy applies to current work – 1 (not at all) to 5 (to a very high extent) |
| Earnings (*feel_earn*) | The extent to which high earnings apply to current work – 1 (not at all) to 5 (to a very high extent) |
| Social status (*soc_stat*) | The extent to which social status applies to current work – 1 (not at all) to 5 (to a very high extent) |
| Years of higher education most appropriate for the current job (*need_hiedu*) | A continuous variable |
| Field of study most appropriate for this work (*field*) | 0: completely different than possessed, 1: own or related |
| Utilisation of knowledge (*util*) | The extent to which knowledge and skills are utilised in the current work – 1 (not at all) to 5 (to a very high extent) |
| Demand for more skills (*morethanhave*) | The extent to which the current work demands more knowledge and skills than can actually be offered – 1 (not at all) to 5 (to a very high extent) |
| Opportunity to learn new things | The extent to which the opportunity to learn new things applies to |

| | |
|---|---|
| (*learnnew*) | the current work – 1 (not at all) to 5 (to a very high extent) |
| Good career prospects (*career*) | The extent to which the current work has good career prospects – 1 (not at all) to 5 (to a very high extent) |
| Professional role (*profrole*) | The extent to which professional colleagues rely on me as an authoritative source of advice: 1 (not at all) to 5 (to a very high extent) |
| Innovativeness (*innov*) | The extent to which I'm playing a role in introducing innovations into the organisation (a product or service, technology, tools or instruments, knowledge or methods) |
| Own deciding (*autonomy*) | The extent to which I'm responsible for deciding how I do my own job – 1 (not at all) to 5 (to a very high extent) |
| Supervision (*supervision*) | How closely is the performance monitored by one's own supervisor – 1 (not very closely) to 5 (very closely) |
| New challenges (*challenges_apply*) | The extent to which the current work offers new challenges – 1 (not at all) to 5 (to a very high extent) |
| Work satisfaction (*satisfaction*) | The extent to which a respondent is satisfied with their current work – 1 (very dissatisfied) to 5 (very satisfied) |
| Choosing the same programme again (*choice*) | Would you choose the same study programme at the same institution? – 1: Yes, 2: No, a different study programme at the same institution, 3: No, the same study programme at a different institution, 4: No, a different study programme at a different institution, 5: No, I would decide not to study at all |
| *Difrleisurefam** | Divergence between one's own valuation and the actual realisation of work features related to leisure time and combining work and family duties |
| *Difrpushpower** | Divergence between one's own valuation and the actual realisation of work features related to earnings, career prospects, social status, doing something important for society, new challenges |

* Note – The last two variables were created using scoring coefficients after factor analysis of measures of the divergence between the importance of a given job feature and its actual realisation. Those features referred to the importance of: autonomy at work, job security, high earnings, new challenges at work, good career prospects, enough time for leisure activities, social status of the job, the chance to do something important for society, a good chance to combine work with family tasks.

Because of the large number of potential explained variables, the strategy adopted in the modelling stage was to reduce the number of dependent variables. Out of all possible methods, Principal Component Analysis (PCA) (Jolliffe, 1986) was chosen. PCA is a way of identifying patterns in data and expressing the data in such a way as to highlight their similarities and differences. The main advantage of PCA is that, once these patterns in the data are found, the data are compressed by reducing the number of dimensions, without much loss of information. This is done by finding a relatively small number of components which are linear combinations of the original variables. The number of factors used in further analysis is determined by the eigenvalues (if higher than one the total variance is explained by a single component). PCA returns a mathematical solution which is not always interpretable. Possible corrections to obtain sensible results and their interpretation are done by a researcher.

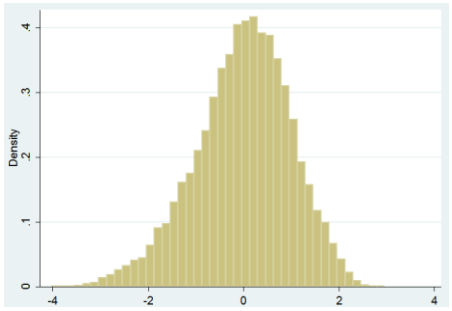
In the analysis of the REFLEX/HEGESCO dataset the PCA methodology was used twice. First, it was involved in the creation of new variables describing the discrepancy between an actual job's characteristics and respondents' expectations (J1 section A and J1 section B of the REFLEX/HEGESCO questionnaires, see the note below Table 4.1). The procedure allowed for replacing 10 variables with two synthetic

factors. On the basis of the PCA procedure results, they were labelled as *difpushpower* (the divergence between one's own valuation and the actual realisation of work features related to the level of earnings, career prospects, social status, doing something important for society, new challenges) and *difleisurefam* (the divergence between one's own valuation and the actual realisation of work features related to leisure time and combining work and family duties).

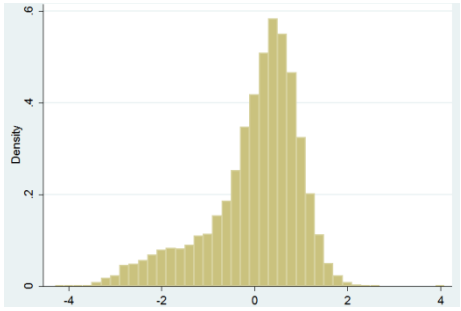
All components (listed in the first column of Table 4.1) were used in the factor analysis in order to find composite factors describing labour market success. The number of factors was determined by the standard criterion of eigenvalues greater than unity. As a result of the PCA procedure, six factors were selected. The eigenvalues and factor loadings are presented in the Appendix in Tables A2 and A3. Factors were labelled on the basis of the values of the factor loadings related to given component variables. The subjective assessment of the strength of the impact of particular variables on the value of each factor resulted in the following labels being assigned to each of six factors:

- *job satisfaction*, with the highest correlation with high earnings, social status of the job, the opportunity to learn new things, career prospects, new challenges faced at work, job satisfaction, a match with expectations;
- *education appropriateness (matching education and skills)*, with the highest correlation with variables capturing years of education and field of study most appropriate for the job, utilisation of knowledge and skills, and the fact of whether a respondent would choose the same programme again given such a possibility;
- *job as a challenge (career development opportunities),* with the highest correlation with: variables capturing the innovative character of the job, the extent to which the current work demands more knowledge and skills than the respondent can offer;
- *job security (employment status and security)*, with the highest correlation with variables capturing job security and the type of employment contract;
- *independence (creativeness and autonomy of work)*, with the highest correlation with variables capturing the extent of freedom in deciding how to do one's own job, the level of performance monitoring and work autonomy; and
- *work-life balance*, with the highest correlation with variables capturing the discrepancy between the desired leisure and the actual features of one's current employment.

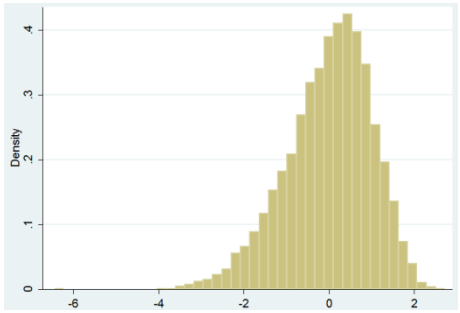
*Figure 4.1: Histograms of six index variables of labour market success*



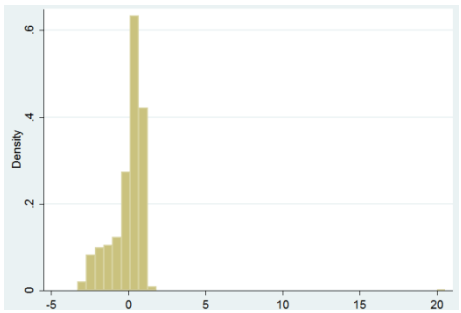

(a) Job satisfaction



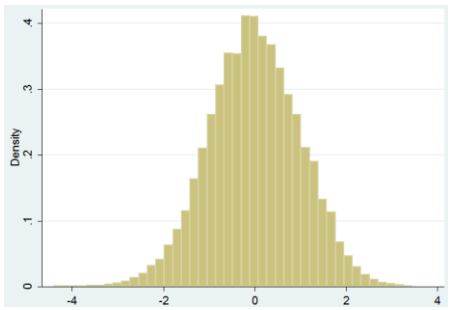

(b) Appropriateness of education



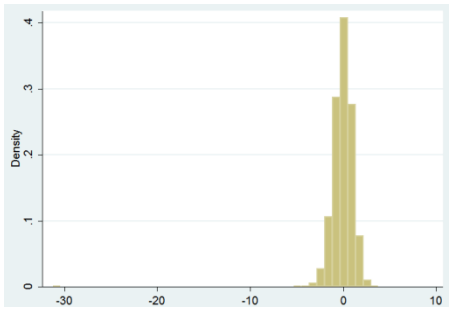

(c) Job as a challenge




(d) Job security




(e) Independence




(f) Work-life balance

Source: Own elaboration based on the REFLEX/HEGESCO data.

After these six composite variables were generated, they were standardised to have a zero mean and unitary standard deviation. This feature is very convenient for regression analysis where many of the explanatory variables are dummies. The estimated value of the parameter for a given dummy variable shows the influence of a discrete change in the dummy variable on the standard deviation of the variable being explained, for instance "job satisfaction". Let us use an example to explain the interpretation of the estimated parameters: a value of +0.11 for the variable *Gender* (where 0 denotes women and 1 denotes men) in the

business domain would lead to the conclusion that men have a statistically higher value of job satisfaction by 0.11 of the standard deviation than women (controlling for all other characteristics in the model). The distribution of six factors is presented with a histogram in Figure 4.1 and descriptive statistics for each dependent variable for all study domains is available in the Appendix (Table A4).

## 4.3 EXPLANATORY VARIABLES

The next step of the analysis was to choose the explanatory variables. They were determined on the basis of theoretical considerations, a review of the empirical literature on the determinants of graduates' professional success and the information available in the HEGESCO and REFLEX databases.

The explanatory variables included in the regression analysis may be divided into eight groups describing different characteristics of graduates. Some of variables were included in order to check their impact on graduates' labour market success (a causal relationship based on theoretical considerations). The others were included just as control variables (co-incidence without a clear causal relationship).

The first group included basic **sociobiographic characteristics** such as the respondent's gender, number of the respondent's children (with 0 meaning a lack of children, 1 – one child, 2 – two children and 3 – three or more children), country of origin (with seven categories, coding six DEHEMS countries and all the remaining countries in the sample), the level of the graduate's parents' education (coding the highest level of education of either of the respondent's parents) and the fact of whether the respondent is living alone or sharing a flat (with parents, flat mates, a partner etc.).

The second group of variables included the **respondent's study process characteristics**. These were variables coding the study process duration, the type of study programme (part-time or full-time studies), the study programme's characteristics in terms of providing access to a PhD programme (bachelor or master programme), the fact of pursuing an additional HE programme during studies and characteristics of the education programme obtained before undertaking HE (general secondary education or vocational secondary education). In most cases, the variables describing the respondents' study process were derived from the database in a straightforward manner. However, particular attention was paid to the division between first- and second-cycle studies. Due to the large differences between the countries, different types of diplomas were divided into two broad categories: those giving access to PhD programmes and those not giving such access.

The third group of variables included a respondent's **study programme characteristics**. Since, unlike the issues covered in the previous paragraph, it is not realistically possible to collect any hard evidence data on graduates' programme characteristics, the information in this section was based on the graduates' subjective assessment of their study programme. The following dimensions were included:

- the extent to which a study programme has been a good basis for the graduate's personal development;
- the extent to which a study programme has been a good basis for performing the graduate's current work tasks;
- the extent to which a study programme has been a good basis for starting work;
- the extent to which a study programme was academically prestigious;
- the extent to which a study programme may be considered to be known by employers;

- the extent to which a study programme may be considered to be demanding;
- the extent to which a study programme may be considered to be a broadly focused programme;
- the extent to which a study programme may be considered to be a vocationally-oriented programme; and
- the extent to which students enjoyed freedom in shaping their study programme.

For each question, a respondent assessed the given programme characteristic by choosing a number from 1 ("Not at all") to 5 ("To a very high extent").

The following group of independent variables was closely related to the previous one. It included descriptors of the **teaching modes** used during the study period. The values of the variables were based on the graduates' assessment and their answers to questions on the extent to which different teaching models and tools were emphasised in the study programme. For each question, a respondent assessed the given programme characteristic by choosing a number from 1 ("Not at all") to 5 ("To a very high extent"). The respondents assessed the use of the following teaching modes:

- multiple choice exams;
- lectures;
- oral presentations;
- written assignments;
- problem-based learning;
- having the teacher as the main source;
- theories and paradigms;
- internships and work placements;
- research projects; and
- group assignments.

The fifth group of questions referred to the graduates' **personal attitudes** to the studies during their academic career. The questions included not only an answer to the question on the average grade, but also questions on the effort put into the study process (striving for the highest marks or extra work put into studies above what was required). In the case of an average grade, due to the differences between the types of grading systems in the different countries a question on the relative grade was used ("How do you rate your grade compared to other students who graduated from your study programme?").

The sixth group of variables described the graduates' **international mobility experience** during the study period and after graduation. It was described with four dummy variables coding the fact of spending time (at least one month) abroad:

- during the study period for study purposes;
- during the study period for work purposes;
- after graduation for study purposes; or
- after graduation for work purposes.

A similar set of data described the graduates' **experience with work** before and during the study period. Four dummy variables coded the fact of having had any work experience:

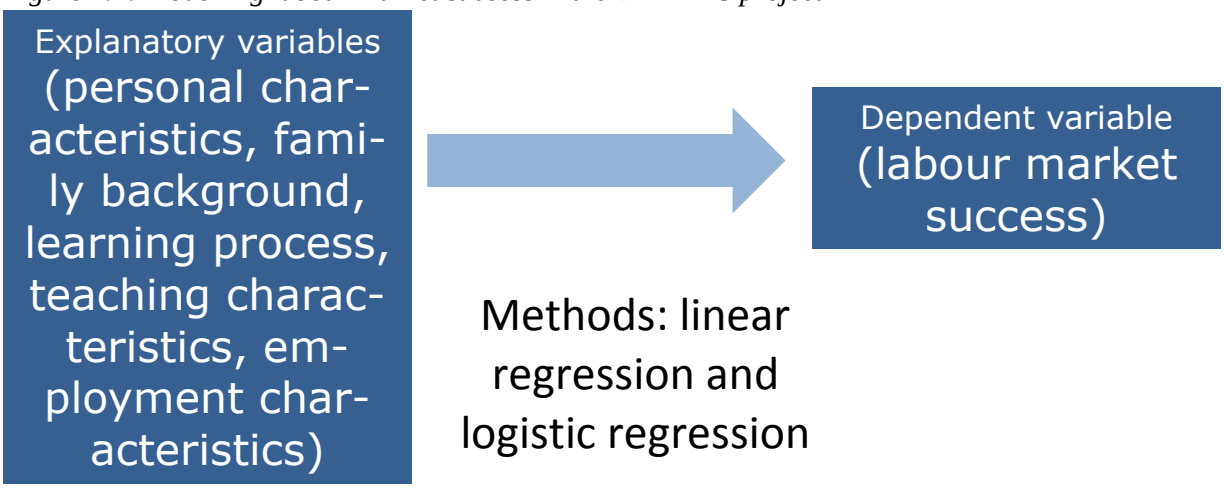
- before the higher education period with a job not related to later studies;
- before the higher education period with a job related to later studies;
- during the higher education period with a job not related to the study programme taken; or
- during the higher education period with a job related to the study programme taken.

The final set of variables included in the regression of the graduates' labour market success indicators referred to the **current job characteristics**. They included:

- four questions on the level of competence required by the current job (in the aspect of analytical thinking, coordination of others' work, teamwork, and language skills), where the respondent chose from one of three answers: from 1 ("Low") to 3 ("High");
- four questions on the firm's characteristics:
  - does the organisation compete mainly by price or by quality?
  - how strong is the competition in the market in which the organisation operates?
  - is the job considered to be stable?
  - a question about wthether the organisation had been undergoing a serious change since the respondent had started working there (a major change in work tasks, reorganisation, a merger or takeover by another firm, large-scale layoffs of personnel, relocation to another region).

All in all, the set of explanatory variables consisted of 48 variables that were used in the regression of six dependent variables described in the previous section. Descriptive statistics of these variables are presented in the Appendix in Table A5.

*Figure 4.2: Modelling labour market success in the DEHEMS project*




Source: Own elaboration.

## 4.4 ESTIMATION PROCEDURE

Having chosen the dependent variables and explanatory variables, regression analysis was carried out. Despite efforts aimed at reducing the number of dependent variables (without losing information contained in the dataset), the regression procedure consisted of the estimation of six models with each of six synthetic dependent variables indicating different aspects of labour market success. In the regression analysis a classical model of linear regression was used and the least squares method was adopted. The estimated functional form was as follows:

$$y_{ij} = \beta_{ij1}x_{ij1} + \beta_{ij2}x_{ij2} + \beta_{ij3}x_{ij3} + \cdots + \beta_{ijn}x_{ijn} + \varepsilon_{ij}, \quad \text{for} \quad i = 1, \ldots, 6, \; j = 1, \ldots, 6.$$

where:$y_{ij}$– dependent variable ($j$-th labour marker success factor – obtained from the conducted Principal Component Analysis, for each $i = 1 \dots 6$ domains),$\beta_{ij1}, \dots, \beta_{ijn}$– set of coefficients to be ed,$x_{ij1}, \dots, x_{ijn}$– set of explanatory variables, $\varepsilon_{ij}$–random error.

In total, **36** regressions were performed – **one for each dependent variable (each of six factors) and for each study domain**. To 'reduce' the models (to retain only statistically significant variables), the 'step-wise' procedure (automatically discarding variables in order from the highest level of insignificance) was applied.

In the final stage, standard diagnostic tests were carried out. The problem of heteroscedasticity and omitted variables was tested. In most cases, the functional form was found to be appropriate. When the Ramsey test was negative, an attempt to improve the functional form of the equation was made. In the case of a failure, logit models were used (with a necessary transformation of continuous dependent factors into a binary variable). In such a case, a maximum likelihood estimation was used. All statistical and econometric analyses were performed using the STATA 11 statistical package.

## 4.5 REGRESSION RESULTS: A COMPARATIVE APPROACH

The results are presented in the following manner: for every group of explanatory variables, we report the list of variables that have a significant influence on the dependent variables. We focus on the significance and direction of the relationship without paying much attention to the actual value of the parameter. This approach is adopted comparatively for all domains. In order for the message to be clear, each paragraph describing a group of explanatory variables is divided into two parts, the first one describes the impact of the explanatory variables on job satisfaction, while the other sums up the findings on the influence of independent variables for the other labour market success factors described above. The special role of job satisfaction is related to the fact that it was found to be the key indicator of labour market success (it had the highest eigenvalue in the PCA procedure).

The following description includes different expressions referring to the relationship between the explanatory variables and labour market success factors. It is said that a particular variable impacts on, determines, influences, increases etc. another variable. We use it to keep the description short, although it should always be kept in mind that the regression results show **a significant correlation between those variables keeping other characteristics under control.** In many cases, this may mean a potential causal relationship, but that is not always the case.

### 4.5.1 Sociobiographic characteristics

#### *4.5.1.1 Job satisfaction*

According to the DEHEMS project's goals, its key aim was to describe the differences in labour market success factors across domains. However, before we move on to the domain differences, it is interesting to notice differences in the level of labour market success variables between countries. Generally, working in Slovenia and in Italy is on average associated with lower job satisfaction when compared to those who work in non-DEHEMS countries (keeping other characteristics under control, as noted above). On the

other hand, job satisfaction for those working in Poland is higher than in non-DEHEMS countries. This may be linked to the relatively rapid increase in salaries, and with the high rate of economic growth in that country.

Taking a closer look at the differences in job satisfaction between domains, it can be seen that living in Poland positively determines job satisfaction factors in Education and Science. Meanwhile, living in Italy or Slovenia is a negative predictor for job satisfaction in Science and Engineering.

Currently, there is a lot of emphasis on gender equality in both society and the labour market. However, the findings of this study contradict the thesis that gender plays a meaningful role as a determinant of labour market success. In particular, it was not generally confirmed that women enjoy a lower probability of achieving labour market success than men. Only in one study domain (Business), do men appear to have greater job satisfaction compared to women. In other domains, gender is not a significant predictor of job satisfaction. Moreover, having children is not significant in most cases, but in the Business domain having three or more children positively determines the job satisfaction factor.

Parents' education in general cannot be treated as a significant job satisfaction predictor. Only in two domains (Medicine and Sociology) does parents' higher education (ISCED5+6) positively determine job satisfaction. In the analysis it was also considered whether the fact that a respondent lives alone or shares a flat (with parents, flat mates, partner etc.) is significant for labour market success. It was found that only in the Business domain does living with one's parents negatively determine job satisfaction, and it was deemed non-significant in all the other domains.

#### *4.5.1.2 Other labour market success factors*

As for the other factors of labour market success, we present only the most interesting results. First of all, an important role is played by the country of origin. The fact of working in Slovenia, Turkey and Poland is generally associated with a stronger match of education and skills (relative to non-DEHEMS countries). Career development opportunities are statistically higher if a respondent works in Austria, Germany, Slovenia and Turkey, but lower in the case of Italian residents. On the other hand, employment status and security are relatively lower for respondents from Germany and Slovenia. Finally, creativeness and autonomy at work are lower in Italy, Poland, Slovenia and Turkey compared to non-DEHEMS countries.

Unlike job satisfaction, in the case of career development opportunities gender seems to be a significant predictor of labour market success. In the case of this factor, being a man increases the chances of labour market success in all domains except for Science. In the case of Engineering and Education, it also increases one's employment status and job security. On the other hand, being a man is associated with a lower level of creativeness and autonomy at work in Business, Education and in Medicine.

A higher level of parents' education positively impacts the extent of the matching of one's education and skills in the current job in the domains of Science and Engineering. Moreover, in Engineering, the higher education of one's parents' is also associated with a better work-life balance.

### 4.5.2 Study process characteristics

#### *4.5.2.1 Job satisfaction*

A very important conclusion of the analysis is that the study process characteristics are mostly not significant for the current satisfaction at work. However, there are some exceptions. In Science, vocational education gained at the secondary level decreases later job satisfaction, while in Medicine it has a positive impact. In the Engineering domain, part-time studies decrease job satisfaction in later stages. In Sociology being a graduate from a programme providing direct access to doctorate-level studies strongly and positively increases job satisfaction. This might be related to the fact that (which is result from other studies) relatively many graduates continue their education at PhD level in this domain, which may give higher job satisfaction than starting a typical business career.

#### *4.5.2.2 Other labour market success factors*

Although the variables from this group hardly had any impact on job satisfaction, they greatly affected the remaining labour market success factors. In the Education domain, a study programme providing access to doctorate studies strongly negatively determines the job security variable. The completion of a parallel higher education programme has a similar effect. As for creativity and autonomy at work, being a graduate of a vocationally-oriented higher education programme has a positive impact on Education graduates' labour success.

In the Science domain, the completion of a vocational secondary education programme negatively influences one's employment status and job security, along with study programmes providing access to doctorate studies, which have the same negative impact. However, a programme providing access to PhD studies positively impacts the matching of education and skills.

As for the Engineering domain, job security is negatively determined by taking an extra higher education programme and the study duration. However, together with one's vocational secondary education these variables positively determine the declared job creativity and autonomy.

Medicine is a very specific field of study as in this domain the achievement of extra qualifications (completion of vocational secondary education programmes and additional higher education programmes) in most cases increases all determinants of professional success. As for the type of study programme, one providing direct access to doctorate studies has a positive impact on the appropriateness and level of challenge at work but negatively influences job security and independence.

In the Social Sciences domain, a programme providing direct access to doctorate studies is extremely impactful on professional success. Even though, as was previously noticed, it positively impacts job satisfaction, it negatively influences the work-life balance. The completion of vocational secondary education has a positive impact on creativeness and autonomy in the current work.

In the Business domain, secondary vocational or additional higher education as well as a longer study duration positively impact the feeling of independence in the current work. The completion of a programme providing direct access to a doctorate has a positive influence on one's career development opportunities and work appropriateness, but a negative one on employment status and security.

### 4.5.3 Study programme characteristics

#### *4.5.3.1 Job satisfaction*

In the perspective of the empirical application of this analysis' results, the role of study programme characteristics in determining labour market success is a key issue. This is one of the few aspects analysed in the study that – at least to some extent – are under control of HEIs' management. In fact, some of the study programme characteristics were found to be important and strong predictors of job satisfaction. Moreover, the significant determinants are different for each study domain.

In the Education domain, respondents reported a higher level of job satisfaction if they perceive their study programme to be a good basis for their personal development, which goes along with the fact that they were flexible in composing their own programme. However a highly negative effect on current satisfaction in work stems from the fact that a programme was regarded as demanding.

A study programme which is regarded as a good basis for performing the current work tasks increases job satisfaction in Science. On the other hand, the vocational orientation of studies is associated with lower job satisfaction. The completion of a programme which was perceived as academically prestigious or a good basis for personal development has a positive impact on job satisfaction in the field of Engineering.

In the Medicine domain, the study programme characteristics have a strong impact on job satisfaction compared to other domains. Study programmes which are regarded as demanding and are perceived as a good basis for starting work strongly increase one's job satisfaction. Job satisfaction is statistically lower when respondents declared their programme to have been broadly focused.

In Social Science, the key programme features supporting job satisfaction are employers' familiarity with the programme content and the fact that it is regarded as demanding. Thus, this finding goes hand in hand with the results of the qualitative research done in the DEHEMS project which indicate that the labour market in this domain is extremely tough. Employers' familiarity with the programme can possibly be treated as a signalling device while a demanding programme could be used as a screening technique by employers recruiting new candidates for jobs.

In Business, the most important positive predictor of job satisfaction is employers' familiarity with the content of the programme. Similarly, respondents who reported that their study programme has been a good basis for performing their current work tasks achieved higher job satisfaction.

#### *4.5.3.2 Other labour market success factors*

In all study domains, assessing the study programme as a good basis for performing the current tasks is positively related to the level of appropriateness of the education for the performed tasks. In the case of the Business domain, appropriateness is also positively influenced by whether the programme was regarded as prestigious.

Study programmes seen as offering a good basis for personal development seem to be related with a lower level of job security and creativeness and autonomy at work in Medicine. On the other hand, they seem to increase job security in Sociology.

Study programmes regarded as demanding decrease creativeness and autonomy at work in the field of Education. At the same time, in Engineering demanding programmes decrease job security, career development opportunities, and a feeling of independence in one's current work. Taking this into consideration, it seems that in this domain more practically-oriented programmes (less demanding but being a good basis for performing current tasks) lead to higher levels of labour market success factors.

To sum up, study programme characteristics have been found to be extremely interesting predictors of different aspects of labour market success across domains. In particular, it is worth noting that in many cases they seem to be positively correlated with some aspects of career success while being negatively correlated with other dependent variables. This is most evident in the Medicine domain where variables which increase job satisfaction (the fact that the programme is a good basis for starting work and is regarded as demanding) negatively influenced the matching of education and skills and perceived employment status and security. Similarly, in Medicine when a programme is regarded as a good basis for personal development it strongly negatively impacts the later possibility of having a job with a high level of creativity and autonomy.

### 4.5.4 Teaching modes

#### *4.5.4.1 Job satisfaction*

The impact of the variables concerning teaching modes on job satisfaction significantly differs between domains. For example, in Sociology, Engineering and Science teaching modes variables remain insignificant in most cases. Meanwhile, in the Education domain some of them seem to be important: intensive use of written assignments and group assignments or regarding the teacher as the main source of information are positive predictors of job satisfaction. However, in this domain a focus on theory and paradigms has the opposite effect. In Medicine, a large number of lectures and projects or problem-based learning negatively influence job satisfaction (in fact the high number of lectures is a strong negative predictor of all analysed labour market success factors). The only factor with a positive impact on job satisfaction is the intensity of the use of internships and work placements as a teaching mode. Finally, in the Business domain a great number of group assignments has a positive impact on professional success factors, while too many oral presentations determine job satisfaction negatively. The results seem to indicate a strongly positive role for more interactive modes of teaching and reducing traditional methods like lectures.

#### *4.5.4.2 Other labour market success factors*

Internships and work placements have a positive impact on the match of education and skills in the domains of Education, Engineering, and Sociology, while a negative influence is revealed by too great a number of multiple choice exams in the domain of Business and too much theory and paradigms in the domain of Medicine.

As for career development opportunities, teaching modes do not have any significant influence on any domain (with the exception of Medicine). Employment status and work security are negatively impacted by the high number of internships and work placements in the Education domain.

Variables concerning the teaching modes significantly determine the work-life balance in the domains of Education and Sociology. In Education, studies where the teacher was the main source of information strongly and positively determine the compatibility of private life with work. In the Sociology domain,

graduates who reported a large share of group work during their studies now face a less satisfying work-life balance.

Independence at work is strengthened in Science and Sociology by the high extent of the use of theories and paradigms. This could arise from the fact that studies based on theoretical knowledge very often shape critically and independently thinking people. On the other hand, studies based on the theory and paradigms are often preparing students to carry out research or managerial tasks – activities with a higher level of independence.

### 4.5.5 Personal attitude

#### *4.5.5.1 Job satisfaction*

It is difficult to generalise the results on the impact of different study attitudes on specific professional domains. However, it may be said that high grades (compared to the average), striving for the highest possible marks and extra work (above what was required to pass the exam) decrease job satisfaction. This negative impact is particularly strong in the field of Medicine. High grades increase job satisfaction only in the field of Business. It is not easy to explain this observation. One hypothesis may point to the alleged link between attitude during the education period and expectations for a later professional career. It may be expected that students who exert much effort in their studies have high expectations of their future career. Potential disappointment may lead to lower job satisfaction. The reverse relationship in Business may be a signal that this is the only domain where labour market awards intensive work during education, when a high average grade distinguishes a given candidate from others in the recruitment process.

#### *4.5.5.2 Other labour market success factors*

The study results show that study behaviour hardly has any impact on other indicators of professional success in the domain of Education. Achieving higher grades than average during one's studies strongly decreases career development opportunities in Medicine and the work-life balance in the domain of Sociology, although it increases the work-life balance in the Business domain. Striving for the highest possible marks is a negative predictor of job security in Science but positively determines the work-life balance in Sociology and the challenging level of current work in the Medicine domain. Working more than what was required to pass exams decreases most of the labour market success factors (other than job satisfaction) in the field of Business.

### 4.5.6 International mobility experience

#### *4.5.6.1 Job satisfaction*

Generally, an experience abroad cannot be treated as a significant predictor of job satisfaction. In fact there is a positive correlation between labour market success factors and mobility but, when controlling for other variables, the results are not significant. This correlation can be explained by the fact that those who travel abroad possess many characteristics that appear to be positive determinants of their labour market success. Therefore, mobility experience is not a significant determinant of their success. Nevertheless, we found that spending time abroad after graduation for work purposes in fact increases job satisfaction in the Business domain. However, it decreases job satisfaction in Medicine and Engineering.

#### *4.5.6.2 Other labour market success factors*

When it comes to other labour market success factors, spending time abroad also has hardly any impact. In the Engineering and Medicine domains, spending time abroad during one's studies for study reasons negatively impacts on later job security and the work-life balance. On the other hand, creativeness and autonomy at work is increased in Science by travel during studies as well as after earning a diploma. It can be said that out of all studied domains in the DEHEMS project only in Business does spending time abroad generally positively determine later labour market success factors.

### 4.5.7 Experience with work

#### *4.5.7.1 Job satisfaction*

Similarly to international mobility, experience with work has relatively little influence on job satisfaction in all domains. The only exception is the Science domain where work experience slightly increases job satisfaction.

#### *4.5.7.2 Other labour market success factors*

In the case of factors other than job satisfaction, in most cases work experience is insignificant for labour market success. Study-related work experience increases career developmental opportunities in three domains (Education, Science, and Engineering) and increases matching education and skills in two domains (Medicine and Business).

It should be noted that in the Business domain, study-related work experience increases the appropriateness of education and skill matching and has a slight influence on career development opportunities and creativeness and autonomy at work. However, in Science study-related work experience has a positive impact on the level of challenges and job security.

### 4.5.8 Current job characteristics

#### *4.5.8.1 Job satisfaction*

Based on the findings of the econometric modelling we can sum up that the characteristics of one's current work relatively strongly determine their professional success. Some of them have a positive impact on job satisfaction regardless of the study domain. For example, the high extent of the use of analytical thinking at work is strongly correlated with high job satisfaction. A similar relationship has been found in case of speaking and writing in a foreign language. The requirement of coordinating activities positively predicts job satisfaction in all domains but Education, and the requirement of working productively with others results in greater job satisfaction for graduates of Business, Medicine, and Engineering.

For the professional success not only do the characteristics of the performed tasks have an impact but so too do the characteristics of the market environment of the organisation. Working in a firm which competes mainly by quality gives greater job satisfaction in all analysed domains except for Education. How-

ever, working in an organisation prospering in a market with strong competition gives higher job satisfaction only in the Science domain and decreases job satisfaction in Medicine and Engineering.

#### *4.5.8.2 Other labour market success factors*

When analysing labour market success factors other than job satisfaction the impact of the fact that the current job requires an ability for critical thinking, an ability to coordinate activities and an ability to speak and write foreign languages is no longer positive. In the majority of domains, the requirement to write and speak foreign languages decreases the work-life balance (a possible explanation is the fact that speaking foreign languages is often associated with travelling abroad, which can possibly interrupt family life).

If the current job requires an ability for analytical thinking, then the matching of education and skills with job requirements and career developmental opportunities are higher in Engineering and Business. On the other hand, working in an organisation where analytical thinking is required decreases the work-life balance in these two domains.

When it comes to the characteristics of organisations where respondents work, in the Business, Engineering, Science, and Education domains, if the organisations operates in a stable market, the employment status and security of the respondents is relatively higher. However, the stability of the market environment decreases creativeness and autonomy at work, particularly in the field of Engineering.

Working in an organisation which operates in a market with strong competition positively influences career developmental opportunities in Engineering and Medicine, but at the same time it decreases the work-life balance. In all domains, aside from Medicine and Sociology, in the case of serious changes at the respondent's workplace, the level of challenge associated with the job is significantly higher. However, as one might expect, it negatively impacts the work-life balance, particularly in Medicine and Business.

## 4.6 GRADUATES' LABOUR MARKET SITUATION ACCORDING TO THE LFS: A CROSS-DOMAIN COMPARISON

The LFS data confirm conclusions from the analysis of the other data sources, namely that fields of study differ in terms of feminisation: it is the highest in the case of Education and Medicine (with more than three-quarters of labour force members aged 30 years or less[26] being women). On the other hand, Engineering and Science are domains dominated by men, with the share of men among graduates being almost 76% in Engineering and 55% in Science.

From the labour market perspective, labour market status (according to the ILO definitions) is a key characteristic. It allows us to distinguish groups of employed, unemployed, inactive persons among the population of interest.

Generally, in five DEHEMS countries the employment rate among the graduates of five analysed domains differed from 76.3% in Business and Social Science up to 86.3% in Engineering, with the coefficient of variation not exceeding 5%. Graduates in Engineering were also characterised by the lower share of inac-

[26] The precise definition of the population under analysis was included in the methodological chapter.

tive persons in the total population (6.6%). The share of the unemployed was found to be the highest in the case of Business and Social Science.

For the population of employed graduates, different information about their employment characteristics was analysed. The most important areas included:

- professional status: self-employed with or without employees, employee, family worker;
- occupation (one-digit level of the ISCO classification);
- economic activity of the employer (NACE sector); and
- permanency of the job.

Generally, most graduates (84.8% on average) work as an employee, with 14.3% working as self-employed. These shares do not vary much between domains, except for education where more than 94% are working under an employment contact.

As for the occupation of the graduates, generally the majority of them work as professionals (almost 44% on average) or technicians (28%). This structure is typical for Education, Engineering and Science. However, in the case of two domains we observe a different structure: in Medicine graduates are divided between professionals and technicians almost equally (with a slightly higher share of the latter category), while in Business and Social Science graduates find a job mostly in three groups of occupations, including professionals (32.2%), technicians (29.3%) and clerical support workers (20.2%). Other professional groups have a minor share in graduates' employment.

As for the economic activity of the employer, in the case of two domains (Education and Medicine) a strong concentration of graduates is observed. In Education, more than 57% of graduates work in "Education" and 12.1% in "Human health and social work" with other NACE sections having significantly smaller shares of graduates' employment. A similar situation is observed in Medicine, where almost three-quarters of graduates find job in "Human health and social work" and more than 10% in "Trade; repair of motor vehicles". Graduates of Engineering work mainly in "Manufacturing" (31.1%) or "Professional, scientific and technical activities" (22.8%) or "Construction" (12.2%). Graduates of the other domains (Science and Business and Social Science) are more dispersed among different sectors of the economy. Science graduates work mainly in "Information and communication" (17.7%), "Manufacturing" (16.5%) and "Education" (15.6%). In contrats, graduates from the domain of Business and Social Science work in "Professional, scientific and technical activities" (15.5%), "Public administration and defence; social security" (13.9%) and "Trade; repair of motor vehicles" (13.4%).

Finally, the permanency of graduates' jobs was also examined. Generally speaking, 69% of them have a permanent job. However, some differences between domains occur: in Engineering the share reached 78.5% while in Education it was 60.7%.

- For the population of unemployed graduates, three dimensions were taken into account:
- the duration of their search for employment;
- the fact of being registered at a public employment office; and
- the reason for becoming unemployed (dismissal or leaving a job).

Among the unemployed graduates, almost half of them (49%) declare they had been searching for a job for less than 6 months, while a little more than one-third had been searching for employment for more than 12 months. Fields of study differ substantially in terms of the time spent searching for a job. In Education and Engineering, the share of graduates looking for a job for less than 6 months is substantially

higher than the average: with two-fifths of the unemployed graduates looking for a job for more than 6 months.

At the same time, graduates of Education and Science are more often than average registered in a public employment office: in each domain of study the share of the unemployed registered at an employment office exceeds 50%. On the other hand, in Engineering and Medicine unemployed graduates usually look for work while not being registered and not receiving any benefits or assistance.

As for the reason for becoming unemployed, the majority of the unemployed graduates have never been in employment (56.6% on average) with the share ranging from 46.7% in Education to 62.8% in Engineering. Among those who have some employment experience, three-quarters had been dismissed or had lost a job as a result of an employment contact coming to an end. Only 10.6% of the unemployed graduates declared they became unemployed because they voluntarily quit. The share of this group in the total population of the unemployed ranges between 7.5% in Engineering to 15.2% in Education.

*Table 4.2: Graduate population in the LFS by domain of study: Labour market status*

| | **Business**[27] | **Education** | **Engineering** | **Medicine** | **Science** | **Total** |
|---|---|---|---|---|---|---|
| **Gender** | | | | | | |
| Male | 35.0 | 16.3 | 75.9 | 24.3 | 54.9 | 41.6 |
| Female | 65.0 | 83.7 | 24.1 | 75.7 | 45.1 | 58.4 |
| **Labour market status** | | | | | | |
| Employed | 76.3 | 84.0 | 86.3 | 85.0 | 82.7 | 80.7 |
| Unemployed | 10.1 | 7.0 | 7.1 | 5.8 | 9.0 | 8.6 |
| Not active | 13.6 | 9.0 | 6.6 | 9.2 | 8.4 | 10.7 |

Source: Own elaboration based on LFS 2009 data.

[27] Business domain from LFS data includes also the domain of social sciences.

*Table 4.3: Employed graduate population in the LFS by domain of study: Key characteristics*

| | BUS[28] | EDU | ENG | MED | SCI | Total |
|---|---|---|---|---|---|---|
| **Professional status** | | | | | | |
| Self-employed | 15.7 | 5.3 | 16.7 | 13.8 | 14.4 | 14.3 |
| Employee | 83.3 | 94.2 | 82.8 | 84.8 | 85.0 | 84.8 |
| Family worker | 1.0 | 0.6 | 0.5 | 1.4 | 0.7 | 0.9 |
| **Large group of occupations** | | | | | | |
| Managers | 7.6 | 2.1 | 6.2 | 1.3 | 4.8 | 5.6 |
| Professionals | 32.2 | 54.7 | 54.4 | 45.7 | 55.7 | 43.6 |
| Technicians | 29.3 | 26.5 | 21.4 | 46.4 | 20.5 | 28.4 |
| Clerical support workers | 20.2 | 7.5 | 3.7 | 1.5 | 6.6 | 11.6 |
| Service and sales workers | 6.7 | 5.0 | 2.3 | 3.2 | 6.6 | 5.2 |
| Agricultural workers | 1.3 | 1.0 | 0.4 | 0.7 | 0.6 | 0.9 |
| Craft and related trades | 0.8 | 1.2 | 10.1 | 0.6 | 2.2 | 2.8 |
| Plant and machine operators | 1.1 | 1.7 | 1.1 | 0.1 | 2.0 | 1.2 |
| Elementary occupations | 0.8 | 0.4 | 0.4 | 0.6 | 0.9 | 0.7 |
| **Economic activity sector** | | | | | | |
| Agriculture | 1.6 | 1.1 | 0.5 | 0.8 | 1.0 | 1.1 |
| Mining and quarrying | 0.3 | 0.1 | 1.1 | 0.0 | 0.6 | 0.4 |
| Manufacturing | 11.6 | 4.3 | 31.1 | 2.4 | 16.5 | 14.1 |
| Electricity, gas | 0.7 | 0.4 | 2.3 | 0.0 | 1.3 | 1.0 |
| Water supply | 0.4 | 0.2 | 0.7 | 0.1 | 1.7 | 0.6 |
| Construction | 1.8 | 1.2 | 12.2 | 0.7 | 1.0 | 3.6 |
| Trade; repair of motor vehicles | 13.4 | 5.5 | 7.5 | 10.7 | 13.5 | 11.0 |
| Transportation and storage | 3.3 | 1.2 | 2.3 | 0.2 | 1.2 | 2.2 |
| Accommodation and catering | 2.0 | 1.0 | 0.5 | 1.0 | 1.8 | 1.5 |
| Information and communication | 4.9 | 1.5 | 7.2 | 0.1 | 17.7 | 5.9 |
| Financial and insurance activities | 12.5 | 1.8 | 1.1 | 0.2 | 3.1 | 6.4 |
| Real estate activities | 1.1 | 0.0 | 0.6 | 0.0 | 0.1 | 0.6 |
| Professional, scientific and technical activities | 15.5 | 1.9 | 22.8 | 1.7 | 9.3 | 13.0 |
| Administrative and support service activities | 3.5 | 1.8 | 1.0 | 0.4 | 1.4 | 2.2 |
| Public administration and defence; social security | 13.9 | 5.9 | 3.8 | 2.0 | 8.1 | 8.8 |
| Education | 5.4 | 57.2 | 3.9 | 3.1 | 15.6 | 12.0 |
| Human health and social work | 4.6 | 12.1 | 0.6 | 74.8 | 4.2 | 13.2 |
| Arts, entertainment, recreation | 1.7 | 2.1 | 0.2 | 0.5 | 0.7 | 1.2 |
| Other service activities | 1.7 | 0.7 | 0.8 | 1.1 | 0.9 | 1.3 |
| Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use | 0.1 | 0.2 | 0.0 | 0.1 | 0.2 | 0.1 |
| Activities of extraterritorial organisations and bodies | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 |
| **Permanency of the job** | | | | | | |
| Permanent job | 69.3 | 60.7 | 78.5 | 65.5 | 64.5 | 69.0 |
| Temporary job | 30.7 | 39.3 | 21.5 | 34.5 | 35.5 | 31.0 |

Source: Own elaboration based on LFS 2009 data.

Note: BUS = Business, EDU = Education, ENG = Engeneering, MED = Medicine, SCI = Science.

[28] Business domain from LFS data includes also the domain of social sciences.

*Table 4.4: Unemployed graduate population in the LFS by domain of study: Key characteristics*

| | BUS[29] | EDU | ENG | MED | SCI | Total |
|---|---|---|---|---|---|---|
| **Duration of job seeking** | | | | | | |
| Less than 6 months | 42.1 | 62.3 | 59.4 | 52.6 | 55.3 | 49.0 |
| 6-11 months | 17.9 | 17.5 | 13.0 | 20.6 | 12.7 | 16.7 |
| 12 months or more | 40.1 | 20.2 | 27.6 | 26.8 | 32.0 | 34.3 |
| **Registration at a public employment office** | | | | | | |
| Registered and receiving benefits or assistance | 6.2 | 10.6 | 5.8 | 9.1 | 6.8 | 6.8 |
| Registered but not receiving benefits or assistance | 44.6 | 50.4 | 35.6 | 35.4 | 50.7 | 43.8 |
| Not registered but receiving benefits or assistance | 0.1 | 0.0 | 0.0 | 1.0 | 0.0 | 0.2 |
| Not registered and not receiving benefits or assistance | 49.1 | 38.9 | 58.6 | 54.6 | 42.6 | 49.3 |
| **Reason for entering unemployment** | | | | | | |
| Never in employment | 56.3 | 46.7 | 62.8 | 62.0 | 53.9 | 56.6 |
| Last employment more than 3 years ago | 0.8 | 1.9 | 1.6 | 0.0 | 1.4 | 1.0 |
| Last employment less than 3 years ago, dismissed or end of contract | 33.1 | 36.2 | 28.2 | 26.1 | 30.8 | 31.8 |
| Last employment less than 3 years ago, voluntarily quit | 9.8 | 15.2 | 7.5 | 12.0 | 14.0 | 10.6 |

Source: Own elaboration based on LFS 2009 data.
Note: BUS = Business, EDU = Education, ENG = Engeneering, MED = Medicine, SCI = Science.

## 4.7 CONCLUSIONS

Summing up all the regression findings, it can be stated that significant differences are found in the determinants of professional success across study domains. These differences refer both to the statistical significance of particular variables and to the sign of the coefficients. The reasons for this diversity are a key issue when answering the research questions of the DEHEMS project. One of the possible answers links differences in career success determinants to the dissimilarities in the characteristics of the labour markets where graduates from different domains of study search for work. Differences in labour market conditions reflect various aspects of labour demand such as employers' requirements, working conditions, workers' rotation etc.

Despite all the detected differences between study fields, it is evident that certain domains have some similarities. In order to confirm the presence of certain common traits between domains, a *k*-means clustering procedure was carried out. This clustering procedure confirmed that there are three groups of graduates – similar in terms of their broadly defined educational experience and labour market success factors. One group is made up of graduates of Science, Engineering, and Medicine (which may be labelled analytical domains). The other group includes graduates of Social Science and Business. Education graduates constitute a distinct group. The table below presents the results of the clustering procedure.

[29] Business domain from LFS data includes also the domain of social sciences.

*Table 4.5: Typology of study domains according to the determinants of labour market success*

| **Cluster number** | | **1** | **2** | **3** |
|---|---|---|---|---|
| Label | | **Analytical domains** | **Educational studies** | **Social sciences and business** |
| | Number of respondents | | | |
| **Education** | 5,160 | | x | |
| **Science** | 4,028 | x | | |
| **Engineering** | 7,333 | x | | |
| **Medicine** | 2,629 | x | | |
| **Social Sciences** | 2,429 | | | x |
| **Business and Economics** | 8,598 | | | x |
| **Total** | 30,177 | 13,990 | 5,160 | 11,027 |
| **Share in total population (%)** | | 46.4 | 17.1 | 36.5 |

Source: Own elaboration based on the REFLEX/HEGESCO data.

Graduates of the analytical domains generally face a *supply-driven labour market*. It means that they usually do not have any serious problems finding job which matches their educational profile. Since studies in these domains are relatively costly and difficult, the growth in the number of students during the recent educational boom has been relatively moderate. Occupational paths are quite well defined, leading to occupations such as medical doctors, engineers, scientific researchers or school teachers. For most of these professions, there is excess demand in the labour market, leaving the supply to mainly drive the market wages and employment.

On the other hand, graduates of Social Sciences and Business face more of a *demand-driven labour market* where it is not that easy to find a high quality job matching graduates' aspirations. One key reason for the alleged over-supply of graduates is the relatively low costs of studies in these domains. As a result, in recent years most countries have experienced a massive growth of students here. In many countries, this has been related to the development of the private sector in higher education. In the presence of such a great increase of supply it is more market demand that drives their wages and employment opportunities. Occupational paths for most graduates within this domain are however very broadly defined, which in the case of a demand-driven market might be an advantage as it allows graduates to search for jobs in a much larger scope and allows them to be more flexible in choosing their future professions. In the case of some study programmes, this might be an obstacle when the costs of acquiring new skills and adapting to labour demand are high. The Education domain seems to be similar to Social Sciences and Business in terms of the cost of education and study requirements. On the other hand, the Education domain shows some similarity to the Analytical domains with their very narrowly defined professional career paths. The transition to the labour market is very specific because in most countries the profession of school teacher is a regulated occupation and labour market demand for teachers largely comes from the public sector.

The three clusters differ in terms of wage distribution. For the Analytical domains, wages are generally higher and less dispersed than in Social Science and Business. In the field of Education wages have both the lowest mean and standard deviation. Differences in wage distribution might be related to the ownership structure of employment. Education domain graduates mainly find employment in the public sector (73.4% in the REFLEX/HEGESCO sample for DEHEMS countries). The remaining domains have much lower shares of public sector employment (Analytical domains – 33.2%, Social Sciences and Business – 27.4%). Differences between the clusters are also found with respect to the international mobility of students and graduates. Generally, Education domain students are the least mobile. The remaining domains are characterised by a considerably higher incidence of international mobility, with pre-graduate mobility

dominating in Social Science and Business studies and post-graduate mobility being typical of Analytical domains. The characteristics of the clusters of study domains (both for educational process and labour market features) are presented in Table 4.6.

The three types of study domains also clearly vary in terms of the factors determining labour market success. In the domains of Engineering, Medicine and Science, the greatest impact on factors of professional success comes from personal traits and the environment and the surroundings in which respondents work. Generally speaking, education-related factors (study programme, teaching modes etc.) are less important. In the domain of Social Science and Business, the most relevant appear to be factors related to the education process, particularly those factors which allowed the respondents to stand out in a competitive labour market such as, for example, a diploma from a well-respected institution or possessing other certified skills or practical experience. Finally, in the Education field the influence of study process characteristics, personal attitude or international mobility were found to be insignificant for labour market success. This can be directly related to the fact that state regulations regarding the teacher profession create formal requirements as an employment entry condition. Meanwhile, their current work characteristics and teaching and learning modes have proven to be more important, as these are the factors in which graduates might potentially be more differentiated.

*Table 4.6: Characteristics of study domain clusters*

| **Cluster number** | **1** | **2** | **3** |
|---|---|---|---|
| | **Analytical domains** | **Educational studies** | **Social science and business** |
| **Education process characteristics** | | | |
| Number of students in recent years | Stable | Increase | Massive increase |
| Cost of education | High | Low | Low |
| Vocationally oriented programme | Medium | High | Medium |
| Occupational career path | Partly defined | Narrowly defined | Broadly defined |
| Share of active teaching modes | High | Low | Medium |
| Share of part-time studies | Low | Medium | High |
| Entry study requirements | High | Low | Low |
| Programme requirements | High | Low | Medium |
| Prestige of the programme | Medium | Low | High |
| International mobility | High | Low | High |
| Degree of feminisation | Low | High | Medium |
| **Employment characteristics** | | | |
| Dominating ownership sector | Private | Public | Private |
| Competitiveness of market environment | High | Low | High |
| Need for analytical skills | High | Low | Medium |
| Wage level | High | Low | High |
| Wage dispersion | Medium | Low | High |
| Type of labour market | Supply driven | Demand driven | Demand driven |

Source: Own elaboration based on REFLEX/HEGESCO data.

The undertaken study of the labour market success determinants in the cross-domain perspective allows for preliminary conclusions concerning potential actions to be taken in order to improve employability of European graduates. Complementing this analysis with qualitative data based on the interviews with HE stakeholders will validate the conclusions and will significantly strengthen potential recommendations. It is particularly important during the period of implementation of National Framework ofQualifications which is supposed to improve flexibility of European graduates and make them better prepared for entering labour market.

# 5 REVIEW OF PROFESSIONAL DOMAINS AND ANALYSIS OF PROFESSIONAL SUCCESS OF THE GRADUATES

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## 5.1 BUSINESS AND ECONOMICS

### 5.1.1 Introduction

The Business and Economics programme, according to assumptions made within the DEHEMS project, includes a wide range of topics as well as many higher education programmes administered by universities and other institutions throughout the DEHEMS participant countries. The professional domain itself is very differentiated and, in addition to the core knowledge on business and economics, it requires knowledge of specific business sectors or management duties.

Graduates within the field of study may be employed within a wide range of positions, from education to chartered accountants or auditors, to any managerial position within a public or private organisation. Students who have successfully completed the higher education programme are trained to begin different career paths, making it is easy for them to enter the labour market as well as to move into other positions within the same or a different sector. Indeed, as will be explained later, although the business and economics field within the DEHEMS countries covers a wide variety of programmes, duration and contents, there is evidence that graduates have the mentioned work opportunities. The Bologna Process, strongly promoting the renewal of higher education, has triggered an on-going and substantial process to make HEIs more attentive attitude to labour market needs and their evolution.[30]

General statements and statistics in this section refer to the domain of Business and Economics in DEHEMS countries if not stated otherwise. In some cases, comparisons will be related to other domains, other countries, totals, or averages but this will be mentioned explicitly. The professional domain "Business and Economics" was defined by the project team as ISCED 314 and 34 (on ISCED level 5). In the DEHEMS countries, this generally covers the following areas of study: *business administration; economics; studies related to business administration in a specific field such as tourism, education or sports; studies related to a specific aspect of business administration such as management, law, marketing, finance, IT, …*

The last section of the chapter Business and Economics (4.1.6) is based on interviews carried out as part of the DEHEMS project in the six DEHEMS countries. Despite context differences, the interviews followed a common outline in order to standardise the outcome.

[30] Despite all the commonalities, it is interesting to note that in Germany, Italy and Austria future teachers of business and economics are also educated in this domain – unlike in the education domain – whereas in other countries similar programmes like "Business and Economics Education" are not listed in this domain.

### 5.1.2 Statistical description of graduates

The socio-biographical background includes a number of issues that define the social profile of graduates in the domain: the social condition with particular reference to graduates who feel they have a good social status, the educational level of their parents, graduates who live alone or with their parents, graduates who have children to care of during their studies; the social commitment of graduates with particular regard to graduates who believe they have an opportunity to do something useful for society and to be able to balance their work commitments with family commitments, through to graduates who have a position in student organisations and/or volunteer during university studies, an important indicator of active citizenship; the importance of social networks (friends, relatives, colleagues, former teacher etc..), as a determinant of job opportunities.

The business and economic domain statistics are not very different from those characterising the DEHEMS countries in general. The following paragraphs provide some basic information about the number of students and graduates as well as the main characteristics of students with particular regard to the attraction of students on an international basis and PhD students.

#### *5.1.2.1 Number of students and graduates*

While it makes little sense to compare absolute numbers across countries, it is interesting to find that the trends are also quite different within the same countries. Many of them report an upward tendency in student numbers enrolled in the business and economics study field. Turkey is found at the top with an increase of more than 30 % from 2005 to 2008, whereas the growth rates in other countries are more moderate, usually in single digits. The only exception is Poland with a slight decrease of 0.5 per cent. This decline may be weak but it should not be ignored as 2008 was the third consecutive year with decreasing student numbers.

*Table 5.1: Numbers of students and graduates in the domain of Business and Economics in DEHEMS countries*[31]

| | **Number of students** | **Students as % of inhabitants** | **Number of graduates** | **Graduates as % of inhabitants** | **Population**[32] |
|---|---|---|---|---|---|
| **Slovenia** | 10932 | 0.5 | 1304 | 0.06 | 2054199 |
| **Germany** | 415876 | 0.5 | 27977 | 0.03 | 81757600 |
| **Italy** | 217178 | 0.4 | 35765 | 0.06 | 60418711 |
| **Turkey** | 159512 | 0.2 | 22089 | 0.03 | 72561312 |
| **Poland** | 589361 | 1.5 | 148274 | 0.39 | 38192000 |
| **Austria** | 44519 | 0.5 | 4553 | 0.05 | 8356707 |

Source: Own calculation.

In general, Business and Economics is a popular domain to study. This is supported by the number of students in the domain relative to the total number of students per country, e.g. 30.6% in Poland, 15.6% in Austria.

[31] The numbers assembled here come from different countries and different statistical sources. Thus, they refer to different groups and are only comparable only a limited extent – if at all.

[32] The purpose of this is to enable a very rough comparison, as a first suggestion population data were obtained from Wikipedia only (Wikipedia (2010). "Population by country." Retrieved 04 Nov 2010, from http://en.wikipedia.org).

When looking at the OECD figures on business and administration graduates in the DEHEMS countries (see Table 5.2), we can note that in Germany, Austria, Slovenia and Turkey those numbers are ascending through the years (2005-2009). The highest growth can be noted in Turkey where from 13,000 graduates in 2005 it rose to 66,000 in 2009. If we look at the shares of business and administration graduates compared to the total number of all graduates, we can see constant growth in Austria, Slovenia and Turkey. The lowest share is noted in Italy (around 12%) and the highest in Poland with around 27%.

*Table 5.2: Number of graduates of the business and economics field*

| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Austria** | 4881 | 4930 | 5752 | 7738 | .. |
| **Germany** | 41913 | 45819 | 51132 | 54704 | 64610 |
| **Italy** | 44300 | 44350 | 47375 | 29961 | 31310 |
| **Poland** | 150403 | 136251 | 144819 | 149342 | 162145 |
| **Slovenia** | 1152 | 1559 | 1561 | 1924 | 2345 |
| **Turkey** | 13214 | 42966 | 54557 | 60754 | 66733 |
| ***% of tertiary graduates*** | | | | | |
| **Austria** | 19.7 | 18.4 | 20.4 | 22.2 | .. |
| **Germany** | 17.5 | 14.7 | 15.1 | 14.8 | 15.9 |
| **Italy** | 11.9 | 11.7 | 12 | 13 | 14.1 |
| **Poland** | 30.4 | 27.4 | 27.5 | 27.1 | 28.5 |
| **Slovenia** | 15.4 | 19.3 | 19.9 | 23.3 | 24.3 |
| **Turkey** | 7.3 | 18.2 | 20.9 | 21.6 | 22 |

Source: Own elaboration based on OECD (2011).

#### *5.1.2.2 Students by gender*

The distribution in the Business and Economics domain in the six DEHEMS countries can be considered relatively equivalent. Table 5.3 shows that in this domain women account for 41% of students in Germany, close to 50% in Italy and Austria, and almost 60% in Poland. It is interesting to note that in all countries where data are reported, the female share is higher among graduates than among students. This difference may be moderate with 1.5 percentage points in Austria, or considerable with 8 percentage points in Poland, but it clearly shows that male students drop out of higher education more often than females.

#### 5.1.2.3 International students

Comparing the extent of internationalisation in HEI proves to be a difficult task. First, the analysed countries recognise different meanings of the term "foreign student": The most common reference is citizenship, whereas Germany refers to the place where the school leaving certificate is issued. In addition, students with a migration background[33] may or may not be included in this group. Finally, among these 'foreign' students there will be exchange students who are only temporarily studying at the host institution, with others studying permanently in the respective country.

As 5.3 shows, the reported numbers again vary substantially across the countries. While the share of foreign students is a mere 1% in Poland, it varies from 3.9% in Italy, 12% in Germany to a comparatively high 20% in Austria.

*Table 5.3: Number of students and graduates, shares of female and foreign students in the Business and Economics domain in DEHEMS countries*[34]

| | Number of students | Female (%) | Foreign students (%) | Number of graduates |
|---|---|---|---|---|
| **Slovenia** | 10932 | | | 1304 |
| **Germany** | 415876 | 41 | 12 | 27977 |
| **Italy** | 217178 | <50 | 3.9 | 35765 |
| **Turkey** | 159512 | 44.0 | | 22089 |
| **Poland** | 589361 | 59.4 | 1 | 148274 |
| **Austria** | 44519 | 48.1 | ~20 | 4553 |

Source: Own calculation.

#### 5.1.2.4 PhD students

It is interesting to note that although, in this domain, Poland has almost four times as many students and almost seven times as many graduates as Turkey, both report a similar number of PhD students. While in Turkey a PhD is not highly valued in the labour market, no such information is available for Poland.

### 5.1.3 Family Background

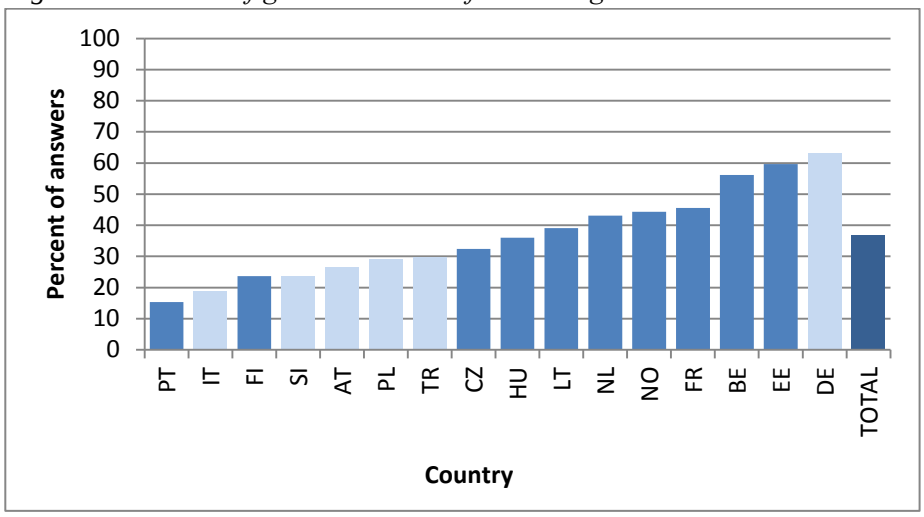
#### 5.1.3.1 Parents' education

The HEGESCO results reveal significant differences between the partner countries with an accent on the differences in almost all profiles of social background. With particular regard to the family background of graduates, the three figures below present the shares of students who say that their father, mother or partner have a tertiary education degree.

[33] This term would need to be defined separately.

[34] The numbers assembled here come from different countries and different statistical sources. Thus, they refer to different groups and are only comparable to a limited extent – if at all.

*Figure 5.1: Shares of graduates whose father's highest education is ISCED 5+6 (tertiary education)*

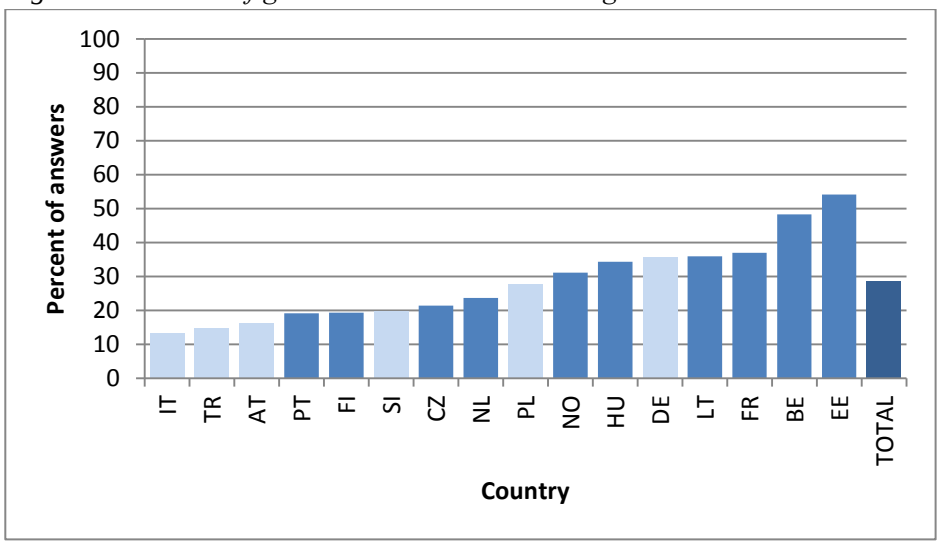



Source: Own elaboration based on REFLEX/HEGESCO data.

The countries generally show that the shares for DEHEMS countries are below the average for Europe with Italy, Slovenia, Austria and Poland being characterised by increasing values. Only Germany is placed above the European average.

These results are substantially confirmed when taking into consideration the education of the mother (Fig. 2), while the percentage grows significantly in all countries when considering the university education of their partner (Fig. 3).

*Figure 5.2: Shares of graduates whose mother's highest education is ISCED 5+6 (tertiary education)*




Source: Own elaboration based on REFLEX/HEGESCO data.

It is interesting to note the position of Italy which lies significantly below the average of the European countries participating in the survey. This situation is explained by the historical under-participation of the Italian population in higher education.

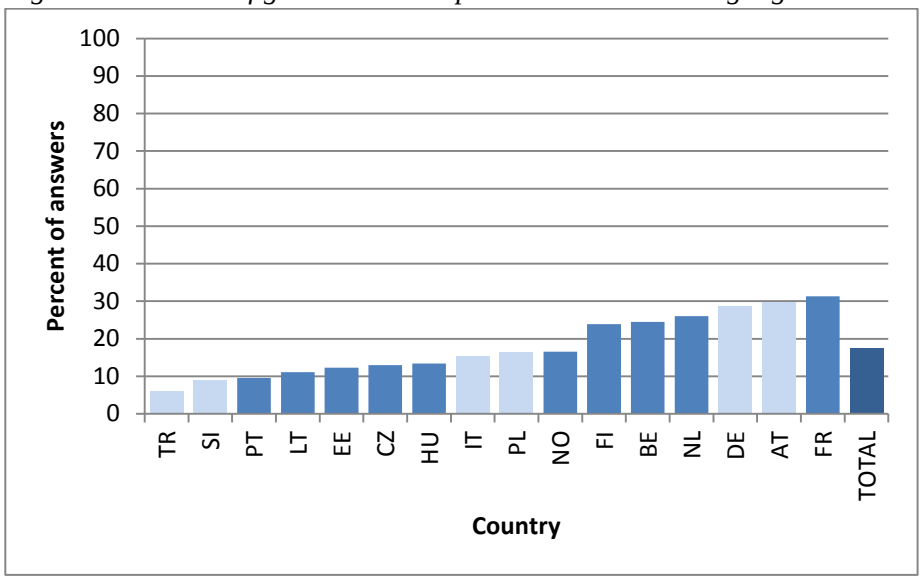
#### *5.1.3.2 Children*

From the HEGESCO database we can obtain information on the social profile of university students from the point of view of their living conditions during studies. In particular, two questions help shed light on this aspect: students who live alone (including single parents) and those who have children to take care of.

#### *5.1.3.3 Mobility*

The mobility of university students can be analysed from different points of view, but it is certainly central to their ability to have work experience during their studies. Figure 5.4 shows the percentage share of graduates who had spent a period of study abroad during higher education:

*Figure 5.3: Shares of graduates who spent time abroad during higher education to study*

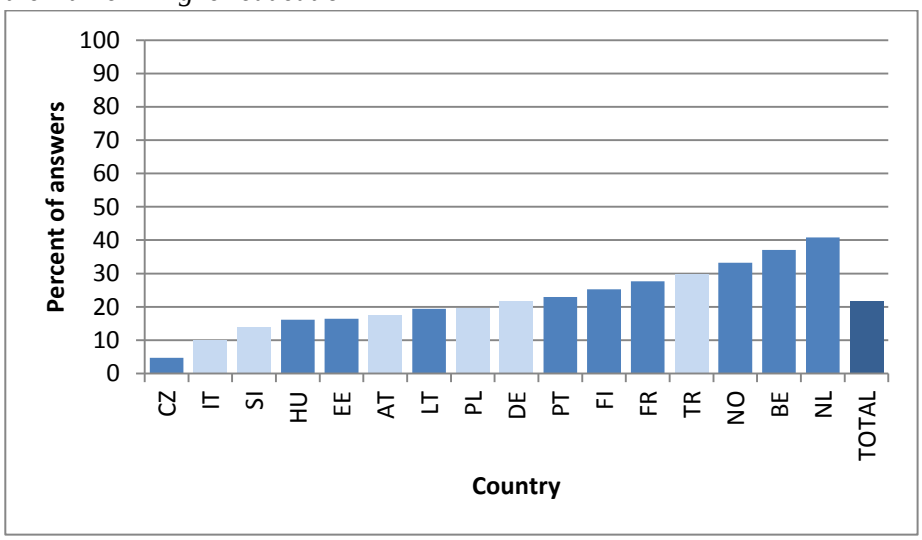



Source: Own elaboration based on REFLEX/HEGESCO data.

As part of the DEHEMS countries, Austria and Germany are characterised by a high number of graduates while. On the contrary, Turkey and Slovenia are countries where graduates acquire less experience of studying abroad. Italy and Poland take intermediate positions, but they are still below the average of the HEGESCO countries.

The HEGESCO questionnaire makes it possible to analyse the work experience of graduates during their studies. No less interesting are the differences among the countries of the DEHEMS project on social mobility, analysed here in the sense of social activism and active citizenship (Fig. 5.4):

*Figure 5.4: Shares of graduates who held a position in a student or other voluntary organisation during their time in higher education*




Source: Own elaboration based on REFLEX/HEGESCO data.

On average, 21.7% of the graduates took part in student organisations or participated in the activities of voluntary organisations. Among the DEHEMS countries, only Turkey and Germany are above the aver-

age, while graduates of Poland, Austria, Slovenia and Italy appear to mainly have a lower propensity to engage in social activism.

### 5.1.4 Study provisions and conditions

In all the DEHEMS countries a few common features of higher education in Business and Economics can be established. However, there is a common transitional path driven by the Bologna Process which has changed, sometimes radically, the study provisions and conditions. The old curricula are still maintained for a small number of students who have not yet finished their studies, multiplying the number of programmes offered by HEIs.

Still, in many other respects there are substantial differences. The following section provides an overview of the most striking common and individual features.

#### *5.1.4.1 Higher education institutions*

The types and numbers of HEIs and the numbers of subjects they provide vary widely across countries. Table 5.4 shows that with 7 HEIs Slovenia has the smallest number of institutions in this domain while Germany's 260 is the highest. Similarly, Germany also reports the highest number of programmes on offer. Another interesting aspect is the relationship between the number of institutions and the number of administered study programmes. On average, each Turkish HEI offers exactly one curriculum, whereas the ratio is 1:10 in Italy and 1:17 in Austria. However, this overview does not provide information concerning the extent of differentiation between different study programmes or the extent of flexibility within a chosen curriculum.

*Table 5.4: Numbers of higher education institutions and studies offered in the Business and Economics domain in DEHEMS countries*

| | **Number of programmes** | **Number of HEIs** | **Types of HEI** |
|---|---|---|---|
| **Slovenia** | n.a. | 7 | higher professional schools and faculties at universities |
| **Germany** | 1100 | 260 | mainly universities and universities of applied sciences |
| **Austria** | more than 462 | 27 | mainly public universities, private universities and universities of applied sciences |
| **Italy** | more than 737 | 73 | public and private universities |
| **Turkey** | 90 | 90 | public and private universities |
| **Poland** | n.a. | 113 | public and non-public: universities, technical universities, and different academies |

Source: Own elaboration

The Bologna Process has affected the number of programmes shown above, although there may be differences regarding their effects. For example, in Italy the fragmentation of the study programmes is argued to have led to the high number of programmes, whereas in Austria the high numbers are due to the current transitional process during which both 'old' and 'new' curricula have to be administered – still, after the transition has been excluded, some fragmentation could also be involved.

The differences displayed in 5.4 cannot simply be explained by country size as can be noticed in the example of Turkey – a relatively large country which offers a relatively small number of studies at a relatively small number of universities. This needs further investigation.

#### *5.1.4.2 General description and duration*

All countries offer undergraduate, graduate and postgraduate programmes as stated in the Bologna Declaration. The three study cycles mostly last three, two and three years, with some notable exceptions: In Turkey, the first and third cycles have a duration of four years each, and in Germany some HEIs provide first-cycle programmes that last 3.5 years and second-cycle programmes that last 1.5 years. However, these numbers do not indicate whether there may be a difference between the minimum study duration and the students' actual study duration. While in Turkey the duration of study may not be exceeded by more than 50% of the normal period, Austria does not specify a time limit for most programmes and students – on average – study considerably for longer than what is stated in the curricula.

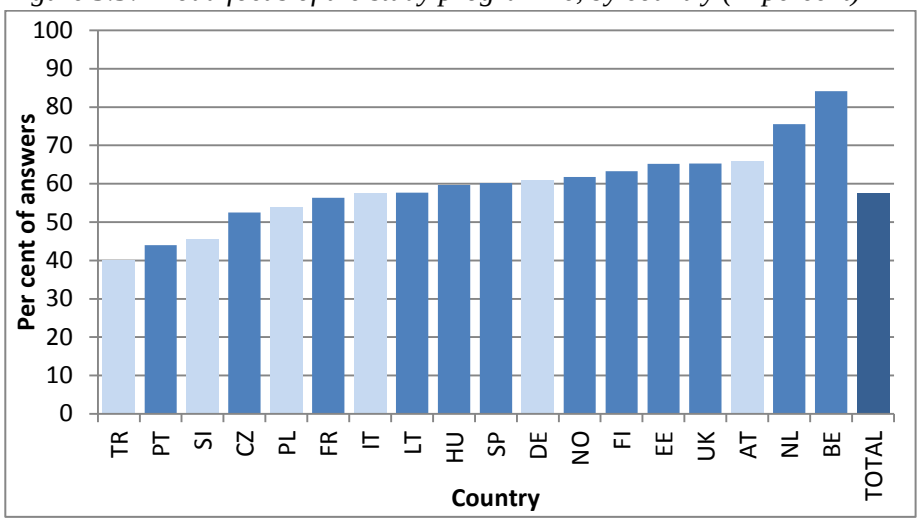
Moreover, despite the fact that the Bologna structure has been introduced in all countries, some of them – e.g. Germany, Italy, Austria – are going through a transitional process that has not been completed yet.

#### *5.1.4.3 Number of more specialised study programmes vs. the freedom to choose one's own special interest within a single programme*

All countries provide students with the opportunity to focus on particular aspects of the field, like economics, econometrics, management, business, administration, human resources, finance, accounting, law etc. Similarly, education may be directed to specific industries/economic fields such as tourism, public services, small and medium enterprises, sports, banking, real estate etc. These functional or divisional specialisations may take the form of different curricula, like in Germany, Austria, Italy and Poland, or be offered as elective subjects within a programme such as in Turkey and Slovenia.

These aspects can also be analysed on the basis of the HEGESCO data. As the table below shows, Austria and Germany are characterised by the broad focus of the study programme, while Turkey, Slovenia and Poland are well below the average:

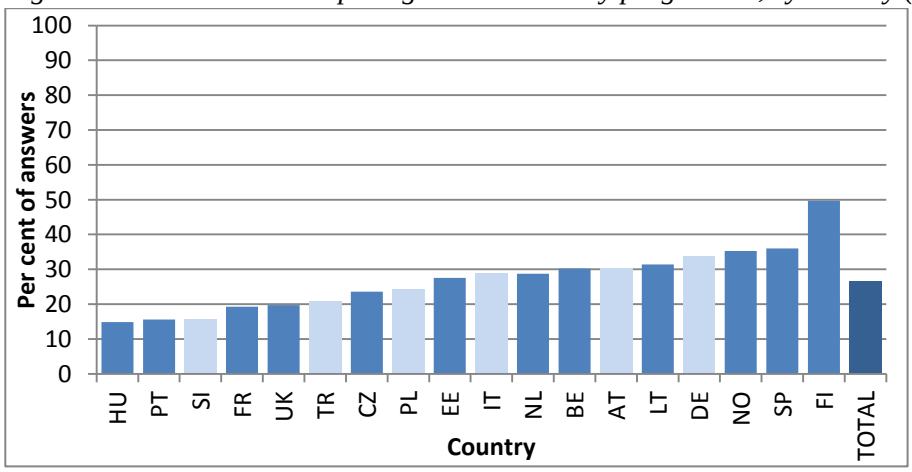
*Figure 5.5: Broad focus of the study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5d (Hegesco), A6d (Reflex): To what extent did the programme have a broad focus? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

The following figure shows the results of the Hegesco project about freedom on the part of graduates regarding the composition of their study programme: Austria and especially Germany are the countries where such freedom is greater, while in Slovenia, Turkey and Poland the figures are below-average.

*Figure 5.6: Freedom in composing one's own study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5c (Hegesco), A6c (Reflex): To what extent was there freedom in composing your own study programme? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

### 5.1.5 Teaching and learning modes

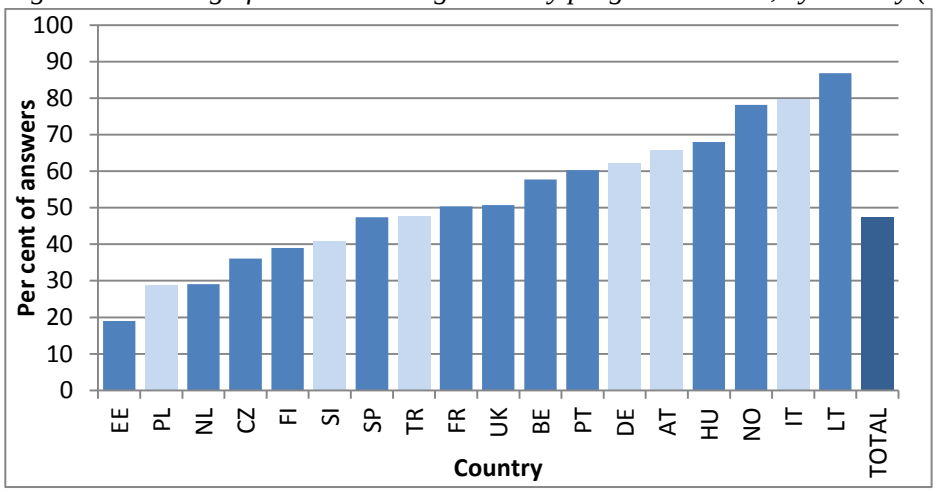
#### *5.1.5.1 Formal general curricula elements*

One aspect of particular interest when comparing the curricular structure of the courses from the graduates' perspective is to what extent the course of study is demanding and what is appreciated in the marketplace. In fact, if the course is perceived as very demanding but employers are not familiar with it, the level of students' frustration can be very high.

The REFLEX/HEGESCO database provides a number of elements that represent a starting point for the DEHEMS project with regard to the curricular structure of the courses in the different partner countries.

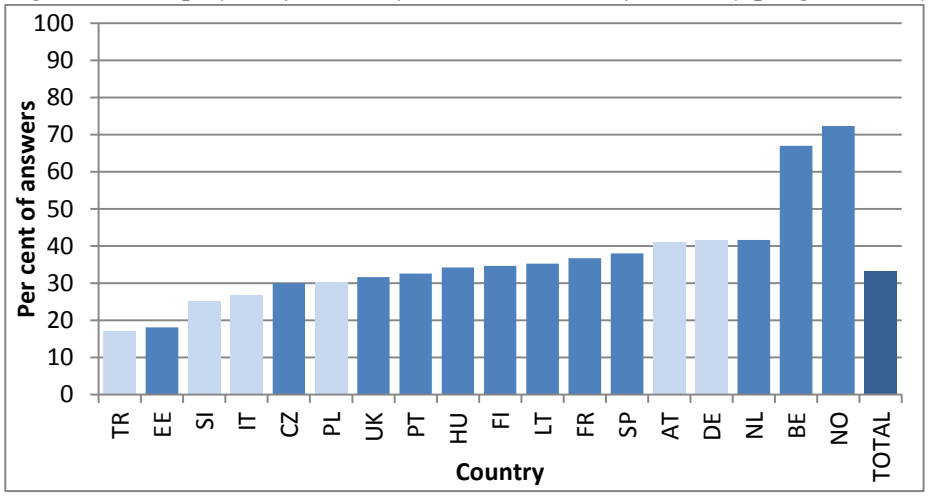
The two figures below show that in Italy the rating of a course of study is highly demanding, while employers have little familiarity with their curriculum. In Poland and Slovenia, compared to other countries, the course is perceived to be not very demanding, while employers have a high level of familiarity with it. Finally, in Austria and Germany the curriculum is considered to be highly demanding and employers are quite familiar with the course:

*Figure 5.7: Rating of how demanding the study programmes was, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5a (Hegesco), A6a (Reflex): To what extent was the programme generally regarded as demanding? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

*Figure 5.8: Employers' familiarity with the content of the study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5b (Hegesco), A6b (Reflex): To what extent are employers familiar with the content of the study programme? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

The table below shows the average score of the assessment of the teaching and learning modes in the domain of business and economics.

*Table 5.5: Average score of assessments of teaching and learning modes in the business and economics domain (mean of possible answers ranged from 1 to 5- see REFLEX/HEGESCO questionnaire)*

| | Non-DEHEMS | AT | DE | IT | PL | SI | TR | Total |
|---|---|---|---|---|---|---|---|---|
| **Extent to which the following characteristic was emphasised in the study programme:** | | | | | | | | |
| Multiple-choice exams | 2.8 | 2.3 | 2.2 | 2.2 | 3.9 | 2.3 | 2.6 | 2.7 |
| Oral presentations | 3 | 3.7 | 3.2 | 3.3 | 3.2 | 3 | 2.4 | 3 |
| Written assignments | 3.4 | 4 | 3.7 | 3.1 | 3.4 | 3.8 | 2.5 | 3.4 |
| Problem-based learning | 2.7 | 3.2 | 2.9 | 2.4 | 2.9 | 2.7 | 2.4 | 2.7 |
| Teacher as the main source of information | 3.5 | 3.4 | 3.5 | 3.8 | 3.4 | 3.2 | 3.3 | 3.5 |
| Theories and paradigms | 3.7 | 3.8 | 3.4 | 3.2 | 3.7 | 3.6 | 3 | 3.6 |
| Research project | 1.9 | 1.8 | 1.9 | 2.1 | 1.9 | 2 | 2.2 | 2 |
| Group assignments | 3.2 | 3.7 | 3 | 2.4 | 3.3 | 3 | 2.4 | 3.1 |
| Lectures | 3.8 | 3.3 | 4.2 | 3.9 | 4.1 | 3.9 | 4.1 | 3.9 |
| Academically prestigious programme | 2.9 | 3.1 | 2.8 | 3.5 | 3 | 2.7 | 3.3 | 3 |
| Employers familiar with the content of the programme | 3 | 3.2 | 3.2 | 2.7 | 2.7 | 2.6 | 2.3 | 2.9 |
| **To what extent has your study programme been a good basis for:** | | | | | | | | |
| Personal development | 3.7 | 4.1 | 4.1 | 3.8 | 3.7 | 3.7 | 3.5 | 3.7 |
| Performing your current work tasks | 3.3 | 3.5 | 3.4 | 3.3 | 3.2 | 3.1 | 2.8 | 3.2 |
| Starting work | 3.5 | 3.9 | 3.8 | 3.4 | 3.4 | 2.7 | 2.9 | 3.4 |

Source: Own elaboration based on REFLEX/HEGESCO data.

There are very obvious differences among the countries in the domain of business and economics concerning the different modes of teaching and learning:

- There is the highly above-average use of multiple-choice exams in Poland (3.91), while in Germany, Italy, Slovenia and Austria it is below-average.
- In Austria (3.73), they use oral presentations much more often than in other countries. On the other side, in Turkey the use of oral presentations is below-average (2.42). There is a very similar situation with written assignments.
- Problem-based learning is again most often used in Austria (3.15), while the average among the countries stands at 2.67. This method is not so often used in Turkey (2.38) and Italy (2.42).
- In Italy (3.77), the teacher is more frequently seen as the main source of information than in other countries, especially in Turkey and Slovenia which are below the countries' average.
- A research project as an assessment method on average very rarely used is across the countries, although the greatest use is noted in Turkey (2.24).
- Group assignments are most often used in non-DEHEMS countries and Austria (above the average) and less often in Turkey and Italy (below-average).
- Lectures are still the most often (3.85) used method in this domain across all the DEHEMS countries, with the highest frequency being noted in Germany (4.23).
- Employers are more often familiar with the content of the programme in Germany (3.15) and Austria (3.18) than in other countries, where the average is 2.87.

German and Austrian students see the programme as a good basis for personal development and for starting to work far more often than in other DEHEMS countries.

### *5.1.5.2 Practical training period during studies*

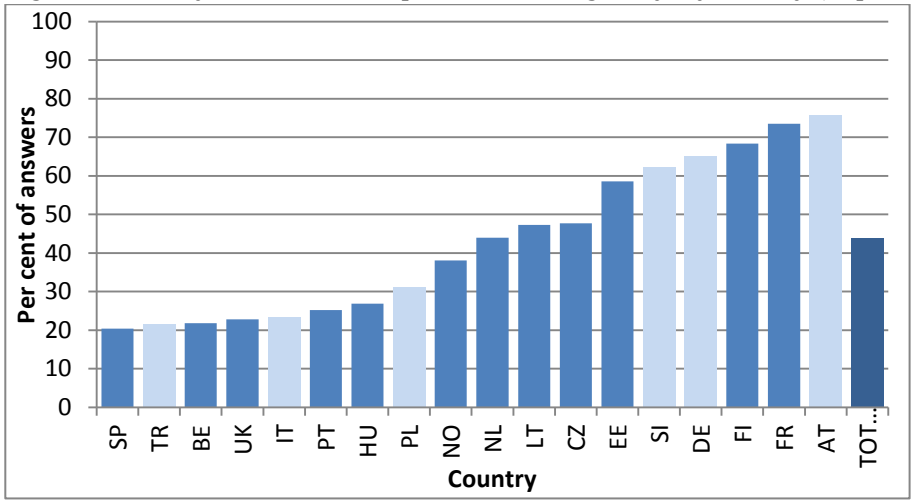
Practical training periods are an indicator of the extent of a specific education's vocational orientation. In this respect, both the domain and the countries prove to be heterogeneous. In Germany and Austria, whether a programme includes work experience as a compulsory element depends on the type of HEI.

In Slovenia all HEIs provide two different tracks, a more vocational and a more theoretical one. Finally, in Turkey practical training is not required in any curriculum, and in Poland it is mandatory in all first-cycle programmes. In Italy, short internships or work experiences are required, mainly between 3 and 6 months, to successful complete any programme.

In general, practical training (= informal learning) will not be recognised as equivalent to course credits except if this training is a compulsory element of the curriculum or if there is an explicitly mentioned possibility – like in Slovenia – to substitute some courses with work experience. For example, in Austria practical training periods are a common part of curricula only at universities of applied sciences. On the other hand, at public universities students will in most cases not obtain credits for work experience as practical training usually lacks any formal examination and awarded grade.

For different reasons, Turkey, Italy and Poland are characterised by a low percentage of graduates who have work experience related to their studies. While these countries are all below the average of Hegesco, Slovenia, Germany and especially in Austria (76%) reveal strikingly different patterns of behaviour whereby it is very popular for students to do work experience consistent with the studies undertaken (Figure 5.9):

*Figure 5.9: Study-related work experiences during study, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question B3 (Hegesco), B3 (Reflex): Did you acquire any study-related work experiences? "Yes" responses on a scale of answers "yes" and "no".

On average, 63% of graduates said they had in the previous 12 months taken a training course in preparation for a job. Austria, Poland and Slovenia are those countries of the DEHEMS project with the highest shares of students, while Italy is characterised as the country where the smallest number of graduates who took a course of training for work.

#### *5.1.5.3 Foreign languages*

In many cases, knowledge of a foreign language is an important element of the curriculum. Sufficient knowledge of at least one foreign language is compulsory for first-cycle students in Italy, Poland, Austria, and for international business studies in Germany. In Austria, also most second-cycle programmes either explicitly include language courses or have English as a teaching language, whilst Austrian internationally-oriented courses usually require students to learn a second or third foreign language.

#### *5.1.5.4 Thesis*

In all countries, students are required to write a bachelor, master or PhD thesis to successfully complete their respective studies. The only exception is Turkey where a thesis is a prerequisite to graduate from second- and third-cycle programmes, but first-cycle studies can be completed without one.

### 5.1.6 Transition to employment and first job

Different countries show varying approaches to helping students with their first jobs. Generally, work placements are not compulsory in the curriculum. Therefore, it is up to the HEI to assure contacts and push students to acquire some work experience in exchange for ECTS credits.

Most often the occupation of business and economics graduates is “other professionals” (44.5%). Especially high percentages of other professionals are seen in Austria (almost 80%) and Poland (57%), while in Slovenia, Turkey and Italy they are below-average, at around 35%. Another very common occupation in this field is other associate professional with 21%, except in Austria and Germany where the respective figure is below 10%.

*Table 5.6: Occupations of business and economics graduates (in percent)*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Other professionals | 44.5 | 79.0 | 48.4 | 38.8 | 56.9 | 34.5 | 33.9 | 23.0 | 30.6 |
| Other associated professionals | 21.5 | 3.9 | 9.4 | 28.9 | 20.4 | 25.6 | 26.4 | 26.4 | 24.7 |
| Corporate managers | 8.6 | 3.9 | 9.4 | 1.9 | 1.8 | 14.0 | 12.2 | 11.6 | 10.6 |
| Office clerks | 6.9 | 0.0 | 13.0 | 11.7 | 4.4 | 9.3 | 2.6 | 14.1 | 11.5 |
| Physical, mathematical and engineering science professionals | 4.3 | 4.7 | 8.1 | 3.1 | 6.2 | 5.2 | 1.6 | 4.2 | 4.2 |
| Teaching professionals | 3.4 | 5.5 | 2.7 | 5.5 | 4.0 | 1.8 | 2.4 | 2.8 | 3.0 |
| Managers of small enterprises | 2.9 | 1.8 | 3.1 | 1.5 | 1.3 | 0.5 | 8.5 | 1.9 | 2.2 |
| Customer services clerks | 2.7 | 0.0 | 0.0 | 4.8 | 0.9 | 2.7 | 4.3 | 5.9 | 4.7 |
| Physical and engineering science associate professionals | 1.6 | 0.8 | 1.8 | 2.1 | 1.8 | 1.2 | 2.1 | 2.2 | 2.0 |
| Life science and health associate professionals | 0.9 | 0.0 | 0.0 | 0.2 | 0.0 | 1.2 | 2.3 | 0.2 | 0.5 |
| Personal and protective services professionals | 0.5 | 0.3 | 0.9 | 0.4 | 0.0 | 0.7 | 0.4 | 1.6 | 1.2 |
| Life science and health professionals | 0.4 | 0.3 | 0.0 | 0.2 | 0.0 | 0.3 | 1.0 | 0.3 | 0.3 |
| Armed forces | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.5 | 0.2 | 0.3 |
| Legislators and senior officials | 0.3 | 0.0 | 0.0 | 0.0 | 0.4 | 0.9 | 0.0 | 0.5 | 0.4 |
| Teaching associate professionals | 0.3 | 0.0 | 1.4 | 0.0 | 0.0 | 0.5 | 0.0 | 0.6 | 0.5 |
| Extraction and building workers | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 0.0 | 0.1 |
| Other | 0.9 | 0.0 | 1.8 | 0.8 | 1.8 | 0.7 | 0.9 | 4.6 | 3.3 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Own calculations based on the REFLEX/HEGESCO data.

In the field of business and economics there are quite notable differences among the countries with respect to graduates' search duration for their current job. The average search duration among countries is 4.3 months which is not very different from the average search duration for all domains. However, inside the field of business and economics Austria and Germany are far below the average with a search duration of only 1.5 months, while graduates in Slovenia (5.8 months) and Turkey (8.3 months) are searching for a job for far longer. In these two countries, graduates of business and economics find it harder to become employed than in the other DEHEMS countries.

*Table 5.7: Search duration of graduates in the field of business and economics*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (months)** | 4.3 | 1.7 | 1.5 | 2.9 | 2.2 | 5.8 | 8.3 | 2.6 | 3.2 |
| **SD** | 7.0 | 2.2 | 2.8 | 5.4 | 2.2 | 7.2 | 10.0 | 4.3 | 5.4 |
| **Science/All domains** | | | | | | | | | |
| **Mean (ratio)** | 1.076 | 0.753 | 0.672 | 0.923 | 1.119 | 1.196 | 1.023 | 0.984 | 1.044 |
| **SD** | 1.019 | 0.612 | 0.650 | 0.868 | 0.904 | 1.081 | 0.993 | 0.852 | 0.955 |

Source: Own calculations based on the HEGESCO and REFLEX data.

Note: Search duration was calculated on the basis of the question "How many months did you search before you obtained this employment (after graduation)?" from REFLEX/HEGESCO questionnaire. Mean is an average of months, SD is standard deviation.

The ways business and economics graduates most often use to find employment are through family, friends or acquaintances; contacting employers on their own initiative; through an advertisement in a newspaper; and being approached by an employer. Through family, friends and acquaintances is used by the highest number of graduates and far more often in Turkey (almost twice the average of all countries) and far less often in Germany and Austria. A lot of students found a job by contacting an employer on their own initiative. This way is very often used in Italy and Poland (above the average) and not so often in Turkey (almost half of the average). Business and economic graduates also very frequently find a job through advertisements in newspapers. It is an especially popular method in Germany and Austria (highly above-average) and not so much in Italy (very below-average). Significant numbers of students were approached by employers and in that way obtained their current employment. This is the case for all DEHEMS countries, except Poland. In Slovenia and Poland, graduates far more often find employment through public employment agencies than in other countries. A similar case is Turkish and Polish students who are for more likely to find a job through the Internet than students in other countries.

*Table 5.8: Ways graduates in the field of business and economics find work*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Through advertisement in newspaper | 16,3 | 25,6 | 24,4 | 9,9 | 12 | 17,6 | 12,4 | 16,9 | 16,7 |
| Through public empl. ag. | 4,1 | 1,1 | 1,8 | 1 | 7,5 | 8,4 | 1,8 | 4 | 4 |
| Through private empl. ag. | 1,9 | 2,4 | 2,3 | 3,7 | 0,9 | 1,2 | 1,5 | 8,3 | 6,1 |
| Through the Internet | 8,9 | 5,3 | 11,3 | 5,2 | 14,6 | 2,2 | 20,2 | 9,9 | 9,5 |
| Contacted employer on own initiative | 16,6 | 19,2 | 14,5 | 22,3 | 26,6 | 16,4 | 7,8 | 14 | 15 |
| Approached by employer | 10,3 | 13,3 | 9,5 | 12 | 5,3 | 11 | 8,4 | 9,4 | 9,7 |
| Through work placement during higher education | 5,1 | 5,1 | 11,3 | 4,1 | 4,9 | 6,5 | 1,7 | 9,2 | 7,7 |
| Through family, friends or acquaintances | 25 | 13,9 | 11,3 | 23,4 | 24,3 | 23,2 | 41,1 | 16,8 | 19,8 |
| Through help of higher education institution | 3,8 | 8,5 | 2,7 | 9,1 | 1,8 | 0,5 | 2,5 | 5 | 4,6 |
| Set up my own business | 2,5 | 3,2 | 1,4 | 3,3 | 1,8 | 2,5 | 2 | 1,7 | 2 |
| Other | 4,1 | 0,8 | 9,5 | 6 | 0,4 | 6,5 | 0,6 | 4,3 | 4,3 |
| Through previous work | 1,4 | 1,6 | 0 | 0 | 0 | 4 | 0 | 0,5 | 0,8 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Business/All domains** | | | | | | | | | |
| Through advertisement in newspaper | 1,365 | 1,517 | 1,819 | 1,401 | 1,066 | 1,361 | 1,024 | 1,185 | 1,230 |
| Through public empl. ag. | 0,985 | 0,899 | 0,637 | 0,531 | 0,861 | 1,147 | 0,445 | 0,880 | 0,911 |
| Through private empl. ag. | 1,329 | 1,752 | 3,477 | 1,333 | 1,354 | 1,658 | 0,876 | 1,759 | 1,609 |
| Through the Internet | 1,258 | 1,031 | 1,459 | 1,175 | 1,342 | 1,340 | 1,194 | 1,234 | 1,233 |
| Contacted employer on own initiative | 0,745 | 0,746 | 0,630 | 1,095 | 0,725 | 0,678 | 0,626 | 0,692 | 0,717 |
| Approached by employer | 0,963 | 1,010 | 0,856 | 1,109 | 1,264 | 0,856 | 0,984 | 0,898 | 0,923 |
| Through work placement during higher education | 0,856 | 0,656 | 1,317 | 0,821 | 1,292 | 0,923 | 0,546 | 0,911 | 0,873 |
| Through family, friends or acquaintances | 1,254 | 1,023 | 1,216 | 1,003 | 1,255 | 1,373 | 1,234 | 1,086 | 1,174 |
| Through help of higher education institution | 0,752 | 1,380 | 0,749 | 1,038 | 0,714 | 0,178 | 0,529 | 0,916 | 0,858 |
| Set up my own business | 0,849 | 0,928 | 0,413 | 0,663 | 1,639 | 1,687 | 0,948 | 1,132 | 1,031 |
| Other | 0,570 | 0,213 | 0,577 | 0,593 | 0,512 | 0,828 | 0,629 | 0,897 | 0,767 |
| Through previous work | 1,044 | 0,899 | - | 0,000 | 0,000 | 0,915 | - | 1,098 | 1,143 |
| Total | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |

Source: Own calculations based on the HEGESCO and REFLEX data.
Note: Each number in the top part of the table shows share of a given way of finding job in the population of graduates in employment – they sum up to 100. In the bottom part is a ratio of a share for business to the general population showing specifics of channels of finding job for business domain graduates.

If we compare the ways of finding employment in field of business and economics with other domains, we see that advertisements in newspapers, private employment agencies (except Turkey), the Internet and

family, friends and acquaintances are more frequently used in this field than across all domains. On the other side, graduates of business and economics less often find a job by setting up their own business (except in Poland and Slovenia where it is more often used); through the help of the HEI (except Austria and Italy); through a work placement during HE (except Germany and Poland); or by being contacted by an employer than graduates across all the domains.

#### *5.1.6.1 Certification*

With the Bologna structure most countries have adopted the degree titles bachelor, master and PhD, but there is no clear preference for one of the 'branches' of academia: arts or sciences. Graduates are awarded the degrees Bachelor of Arts, Bachelor of Science (in Italy *Laurea*), Master of Arts, Master of Science (in Italy *Laurea Magistrale*) and Doctor of Philosophy. In Germany and Austria, we find *Doktor*, *Doktorin* (females) for completing first-, second-, or third-cycle studies, respectively.

However, in some cases like Turkey there are other certifications for special cases as the short cycle degree of Bologna given to students who stop attending the undergraduate programme or are dismissed and receive an associate degree.

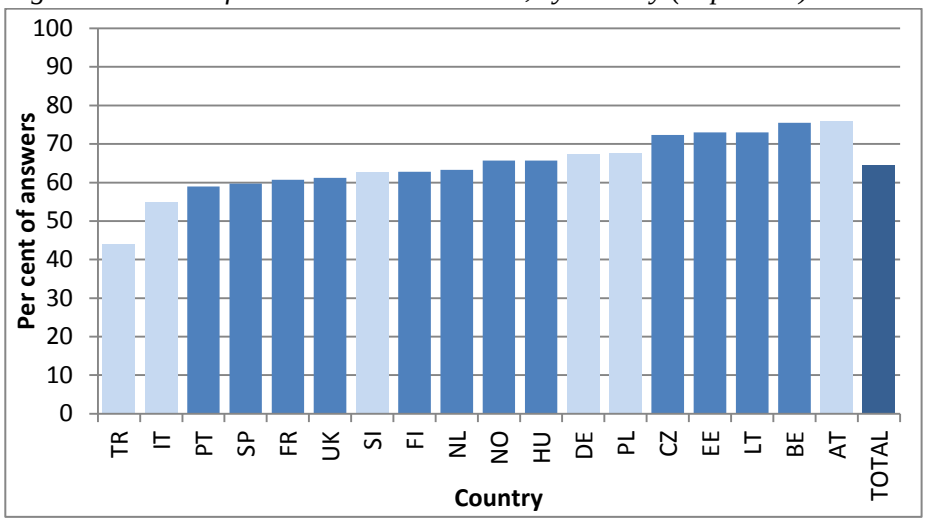
Certain certificate programmes are arranged by professional associations. NGOs, university foundations, private training institutions within the framework of continuous education or lifelong learning. These certificate programmes differ in duration from 16 hours to 90 hours.

In the DEHEMS countries, graduates in the domain of Business and Economics cannot generally rely on their higher education institutions to support them when entering the marketplace. However, in Slovenia offices supporting students and maintaining contact with the market can be found at the respective faculties. To a smaller extent this is also true for Austria where career centres exist at larger universities. In Germany and Austria graduates in Business Education can and must get in contact with the state which not only sets standards for the teacher profession but is also their most likely future employer. Altogether, graduates' transition to their first employment is highly individualised and is largely left up to graduates themselves. There is only a small number of professions requiring additional training and/or examinations, like statutory auditors, certified accountants, investment advisors, stock brokers, or insurance brokers. Although these professions may be highly regulated in specific countries, they only represent a minority of graduates in this domain across all the DEHEMS countries.

#### *5.1.6.2 Job Satisfaction*

The REFLEX/HEGESCO database provides empirical evidence on the degree of graduates' satisfaction with the current job. In particular, Turkey and Italy are characterised by a low share of graduates who are satisfied, while Austria stands clearly above the average.

*Figure 5.10 : Satisfaction with current work, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question F13 (Hegesco), F13 (Reflex): How satisfied are you with your current work? Responses 4 and 5 on a scale of answers from 1 = "Very dissatisfied" to 5 = "Very satisfied".

A crucial aspect for promoting the employability of graduates is the responsiveness of the course, and then the knowledge and skills included in the curriculum with respect to the professional profiles required in the marketplace. As found in the data analysis in Turkey, Italy, Poland and Slovenia employers are familiar with the contents of the curriculum at only a very low level, while Austria and Germany are above the average. These figures are confirmed by the question "Study programme as a good basis for starting work": In Austria and Germany more than 70% of graduates responding affirmatively, while at the opposite extreme in Slovenia and Turkey only 26% and 34% of graduates responded that the curriculum was a good basis for starting work.

*Table 5.9: Study programme as a basis for starting work: business and economics vs. all domains*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Business (%)** | 44 | 70.2 | 73 | 51.4 | 48.1 | 26.3 | 34.1 | 55.82 | 51.7 |
| **All (%)** | 46.1 | 62.8 | 54.4 | 48.5 | 52.9 | 32.9 | 36.2 | 57 | 53.7 |
| **Business/All (ratio)** | 0.953 | 1.117 | 1.341 | 1.062 | 0.909 | 0.800 | 0.943 | 0.980 | 0.961 |

Source: Own calculations based on the HEGESCO and REFLEX data.

From the responses to the question “To what extent has your study programme been a good basis for starting work?” we can see that as across all domains there is a similar situation in the field of business and economics where more than 50% of students answered that their programme has been a good basis for starting work to a high or very high extent. We have an especially high percentage of such answers in Austria and Germany (above 70%) and a relatively low percentage in Turkey (34%) and Slovenia (26%), where graduates do not see their programme as being helpful in the process of starting work. However, these results are not field-specific because, compared to the average shares across all domains, we note that the results are pretty similar with the highest percentages in Austria, Germany and Poland and the lowest in Turkey and Slovenia.

Most graduates (60%) in the field of business and economics were given a time-unlimited contract in their first job. In Austria and Germany, the shares are even above 78%, while in Italy and Poland we find the reverse situation with a share below 38%. Comparing the results with the average across all domains we

may conclude that in the business and economics field graduates more often sign an unlimited contract for their first job than in the other domains.

*Table 5.10: Type of contract in the first job: business and economics vs. all domains*

| **Business (%)** | | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Unlimited** | 60.7 | 78.7 | 86 | 33 | 38.9 | 55.7 | 77.1 | 60.1 | 60.3 |
| | **Fixed-term** | 33.4 | 20.1 | 14 | 63.1 | 56.6 | 37.5 | 10.9 | 36.1 | 35.2 |
| | **Other** | 5.9 | 1.2 | 0 | 3.9 | 4.4 | 6.8 | 12 | 3.8 | 4.6 |
| **Business/All (ratio)** | **Unlimited** | 1.272 | 1.308 | 1.682 | 0.994 | 1.172 | 1.312 | 1.146 | 1.191 | 1.215 |
| | **Fixed-term** | 0.720 | 0.518 | 0.289 | 1.045 | 0.897 | 0.751 | 0.537 | 0.811 | 0.780 |
| | **Other** | 0.995 | 1.162 | 0.000 | 0.611 | 1.204 | 0.893 | 0.968 | 0.757 | 0.860 |

Source: Own calculations based on the HEGESCO and REFLEX data.

The average number of hours of work per week in the first job in the field of business and economics across the DEHEMS countries is 39.5. This result was noted in all countries, except Turkey where we saw a slightly higher result, namely 43.4 hours of work per week. Comparing the results of the domain with all domains, we can see that distribution of hours is fairly similar in all countries across the domains, except in Germany where they work a little more in this field compared to the others.

*Table 5.11: Hours of work per week in the first job: business and economics*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (hours)** | 39.5 | 38.4 | 38.7 | 38.1 | 38.7 | 38.8 | 43.4 | 37.5 | 38.2 |
| **SD** | 10.0 | 7.5 | 4.9 | 9.1 | 7.0 | 9.3 | 14.3 | 8.7 | 9.2 |
| **Business/All domains** | | | | | | | | | |
| **Mean (ratio)** | 1.063 | 1.089 | 1.123 | 1.054 | 1.068 | 1.018 | 1.036 | 1.040 | 1.050 |
| **SD** | 0.874 | 0.734 | 0.484 | 0.838 | 0.653 | 0.928 | 0.980 | 0.863 | 0.877 |

Source: Own calculations based on the HEGESCO and REFLEX data.

If we consider how much graduates utilise the knowledge and skills they gained through the programme in their current work, we see that there is a slight difference between graduates of business and economics and other domains. Graduates of this field utilise their knowledge and skills almost 3% less than graduates across all the domains. However, the utilisation rate is still relatively high at 68%; the highest is in Austria (78%) and Germany (74%) and the lowest in Slovenia (64%).

*Table 5.12: Utilised knowledge and skills in current work: business and economics vs. all domains*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Business (%)** | 67.9 | 78.6 | 74.1 | 67.6 | 67.1 | 63.8 | 65.7 | 63.8 | 65.2 |
| **All (%)** | 70.9 | 75.1 | 72.7 | 69.4 | 66.8 | 71.6 | 69.2 | 70.2 | 70.4 |
| **Business/All (ratio)** | 0.959 | 1.046 | 1.020 | 0.973 | 1.005 | 0.890 | 0.949 | 0.909 | 0.927 |

Source: Own calculations based on the HEGESCO and REFLEX data.

#### *5.1.6.3 Important stakeholders*

With the exception of Slovenia, the state is considered a very influential and usually the most important stakeholder in this domain. As a legislator, the state is responsible for the legal framework of HE. Institutional autonomy varies across the countries with HEIs in some countries, e.g. Austria, being more independent than in others, e.g. in Poland where the ministry sets minimum curriculum requirements, but at some point they all end up being subordinated to a national body to obtain accreditation and/or funds. Other relevant stakeholders are companies (Turkey, Austria, Italy), employers' associations (Germany, Austria) or influential individuals (Turkey) establishing new HEIs, funding research projects or becoming decision-makers, quality assuring (Poland), or accrediting (Germany, Austria) bodies.

### 5.1.7 Lifelong learning

As the importance of lifelong learning has gained in importance around the world due to technological developments, the educational sector is working intensively on this subject. Educational ministries and other actors such as Councils of Higher Education (e.g. Turkey) have generally developed and changed all the pre, primary, secondary school curricula in the direction of student-centred learning. The universities themselves also take the lifelong learning into consideration and try to review their curricula according to the related demands. However, none of the countries have a specific policy or regulation on the lifelong learning process in the field of Business and Economics.

*Table 5.13: Study programme as a good basis for further learning on the job: business and economics vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Business (%)** | 48 | 57.7 | 53.2 | 55.6 | 60.8 | 42.6 | 33.5 | 56.2 | 53.3 |
| **All (%)** | 50.5 | 55.6 | 49.3 | 52.1 | 64.3 | 49.2 | 37.5 | 59.2 | 56.6 |
| **Business/All (ratio)** | 0.950 | 1.039 | 1.080 | 1.067 | 0.946 | 0.866 | 0.893 | 0.949 | 0.941 |

Source: Own calculations based on the HEGESCO and REFLEX data.

Almost half (48%) of the interviewed business and economics graduates see the programme as a good basis for further learning on the job, which is comparable across the domains where the average stands at 50%. The highest share of business and economics graduates believing the programme is a good basis for further learning on the job is seen in Poland and Austria (above 57%). In Turkey (33%) graduates do not believe as much that their programme prepared them well for further learning on the job.

*Table 5.14: Work-related training/course in the past 12 months in the first job: business and economics vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Business (%)** | 60.2 | 70.9 | 65 | 47.4 | 67.7 | 65.5 | 48.9 | 64.5 | 63 |
| **All (%)** | 60.3 | 68.9 | 65.8 | 48.4 | 67.7 | 68.4 | 48.3 | 65.1 | 63.6 |
| **Business/All (ratio)** | 0.998 | 1.029 | 0.988 | 0.979 | 1.000 | 0.957 | 1.013 | 0.992 | 0.989 |

Source: Own calculations based on the HEGESCO and REFLEX data.

60% of graduates of business and economics had work-related training in the past 12 months in their first job. The highest result is found for Austria with 71% and the lowest for Italy and Turkey with only around 48% of graduates having had work-related training in the past 12 months. When we compare the results of this field with the results across all the domains, we see that there are no bigger differences.

### 5.1.8 Higher Education Management Perspectives on Graduates Professional Careers – Synthesis of the DEHEMS Interviews

#### *5.1.8.1 Understanding of career success*

The understanding of career success is the first step in determining the interviewees' knowledge of the main topic of the interview. The countries involved are Germany, Slovenia and Turkey. Due to their specific and different contexts, the understanding of this issue has more correlation within the same country, but they show a similar understanding even among the different countries. Nevertheless, there are different perspectives on the definition of "career success".

Generally, the interviewees refer to job satisfaction as career success. Yet such satisfaction can be related to different factors: salary; finding a job in a short time after graduating; happiness at work; doing something that really matters; coping work with personal needs etc. Nevertheless, as one German interviewee pointed out, "*there is no single criterion to define professional success. One has to differentiate. There are people who wish to be employed in a field where they have the feeling of being needed. Other people would say that salary is decisive*". Despite the various definitions, there is an underlying thread concerning some key dimensions, as elaborated below:

***Short- versus long-term success***

An important distinction when defining career success relates to the time period concerned. Most interviewees referred to the short time period as the timeline of interest when determining the success of students' transition to the market. Nevertheless, it is not only short-term success that is important (i.e. how quickly graduates find their first job; the importance of the first position), but so too is the long-term development of their careers.

Research on higher education institutions and their ability to determine their graduates' success, considers a five-year period after the first occupation as the longest period where HEIs can be a determining factor of graduates' occupations. There was no clear indication by the interviewees if they have the same short and long ranges, although there were some cases where the distinction between the short and long run was apparently clear enough. For instance, a professor from Turkey clarified that "*short-term career success is the possession of competencies that enable graduates to get employed and that the time of school-to-work transition is as short as possible. This also has an influence on other factors, such as having families, housing etc. The long-term understanding of career success also consists of progression in one's job position, salaries etc.*".

Long-term success can create benefits not only for the graduate but for the whole of society. An executive director of MBA-granting institution' from Slovenia thinks that "*successful graduates do something good for society, for the company, for their family and for themselves. Employment in itself is not a success*".

***Adequate employment of professional skills***

Business and economics comprehend a wide range of fields and, consequently, a wide range of career opportunities. Nevertheless, not all graduates find a job that matches their course of study. Sometimes, they work in positions that generally require different knowledge than business and economics. Thus, finding a job that sufficiently matches one's university studies is an important feature that determines suc-

cess in a graduate's career. As pointed out by an interviewee in Germany, one criterion to indicate this is the level of salary. Yet, others think that salary itself is not enough to determine true success; another dimension of professional success is a kind of satisfaction with the employment situation: *job satisfaction* would lead to success in the long run.

Being able to find a job in the same field of one's studies is even more difficult in some areas that are dominated by the family-business type of organisations. A professor from Turkey recognised this diversity compared to others in the region: "*80% of our graduates are employed by their family companies. And about 90% of our students are employed after graduation. Generic skills are very important in my view of career success. If they can be promoted and are working in the field they have got an education in, then for me they are successful in their career path.*"

The above dimensions show there are dissimilarities in defining the concept of career success. Some focus on personal satisfaction, while others on a wider outcome beyond that just for the graduate, but for society as a whole. Some interviewees define success as short-term goal achievement (i.e. the time needed to find a job; the level of salary; the importance of the first position), while others look at the long-term dimension as a more realistic sense of career success (i.e. getting promotions). Most of the interviewees perceive it as important to place graduates in positions that cope with their studies, while some value generic skills due to their specific job market context.

### *Knowledge of the professional orientation of the graduates*

The second background question "*to what extent are you in touch with former graduates and do you know what they are doing*" aims to check whether the interviewees are in touch or informed about the professional positions their graduates hold in business and economics.

It can be noted that the main sources of information for the interviews are information systems on graduates (i.e. alumni networks; reports from research centres on employability; associations' networks) and personal networks (following PhD/Master theses; social media). The use of these information channels varies in relation to the country and position of the interviewees.

Again the interviewees share good knowledge of the occupational situation of the graduates, but their channels of information differ somewhat. In Germany, the interviewees in the role of professor mainly stay in touch with their Master/PhD students that they supervised. Non-academic professionals mainly use alumni networks; reports from higher education research centres on students' employability and other institutionalised contacts (i.e. associations such as in the domain of business and law). This point is important as it shows that the non-academic professional interviewees (such as in Germany where the interviewees are employed as a consultant to the Dean's office) have broader information on the employment status of their graduates, rather than the personal networks the professors use.

The interviews in Slovenia show that graduate information systems are not very functional at the moment, but they are working on improving this. One interviewee from a business faculty noted that: "*recently the faculty implemented a survey among former graduates on their careers and job positions. This information is also used for designing new study programmes. This survey will be conducted systematically in the next years.*"

The Turkish interviewees noted that their information channels are mainly based on personal networks since information systems have still to become functional. A representative of a Polish faculty of economics recognised the extreme importance "*to observe how graduates proceed in the labour market*," but un-

fortunately up until now there have been no regular activities in terms of following graduates' career paths, neither at the level of the faculty nor the university.

Despite the biases produced by using only personal information on graduates' occupations, wider information systems such as alumni networks might also involve a certain risk of not giving the right information. As noted by an assistant professor at one Slovenian university: "*the problem is that the alumni club usually includes graduates who are more successful in their careers. However, other contacts with former graduates are based only on the individual level (for example, through mentorship of a thesis).*"

In conclusion, it can be noted that the interviewees mainly base their observations on personal knowledge on the graduates' occupations, therefore running the risk of inductive reasoning when generalising conclusions about the factors that influence career success.

#### *5.1.8.2 How should HE management take the future professional activities of graduates into account?*

***The relevance of graduates' future activities for curricula design and Bachelor and Master curriculums' relationship to market needs***

Graduates from the domain of business and economics have career opportunities in the private and public sector. The interviewees do not make a clear distinction between the public and private markets and mainly refer to the private one when making assumptions.

One of the goals of the Bologna Process was to standardise and simplify degree cycles in the European Higher Education Area. The two-cycle model has profoundly changed the curricula of many universities in different countries (i.e. Italy and Austria which shifted from a four-year cycle to three (bachelor) + two (master) cycles). The first cycle (bachelor) includes background and theoretical programmes that give students the initial foundations in business and economics. The second cycle (master) is intended to be more focused on specific needs of the industry and therefore involves curricula designed to be related to industry requirements.

Nevertheless, another aim of the Bologna Process was to help the market transition of students who do not need much specialisation and are to work in more general positions. This would decrease the age and raise the number of graduates ready to get a job.

Despite the intention to enhance the graduates' transition to the world of work, the Bologna Process has not had the desired outcome. As one Austrian interviewee stated, in general the perception is that Bachelor graduates will need training on the job: *"Bachelors are unfinished material"*). *As long as the specialisations exist in the Bachelor, there will be an orientation towards the professional field. … Otherwise, we would have a kind of basic programme without any idea of what will happen [to the graduates] after that."*

The bachelor degree seems to be insufficient. The Head of a Career Centre at a university in Austria noted that: "*this idea of a student completing a bachelor programme, then working for approximately 2 years and then returning to university to study full time in a Master programme does not please employers. First of all, companies are not interested in bachelor graduates without practical experience, secondly they fear that bachelors will enter the company and as soon as they are 'knowledgeable employees' they will already leave e.g. to do a Master study [supposedly also a reason to refuse to accept bachelor graduates]. Part-time master studies are not offered.*"

### *Issues in tailoring curricula to market needs*

There is a certain difficulty in tailoring curricula to what the market needs. A reasonable factor might be the missing link between HEIs and businesses, which do not always get in contact to initiate constructive debates on how to shape universities' curricula. Sometimes universities act as closed systems isolated from business needs. As a professor from Austrian university comments, the bigger an HEI is, the more difficult it is to smoothly change; "*employers have to accept what we produce*". Despite this perspective, the Head of Quality Management Austrian university, states that, to some extent, there are initiatives that aim to close the gap between the university and the marketplace (i.e. inviting guest speakers). Yet, confirming the first perspective, he continued: "*even though the development of a curriculum should not only be driven by employability, it should at least be linked to the perceptions of the economy or society*".

Another issue is due to the fact that universities' goal is to provide usable knowledge, not specific training. As a representative of a university of applied sciences, a clearly practice-oriented higher education institution, noted, the aim is "*to provide them (students) with a set of skills like: experience in problem solving; analysing a problem, knowing where to start and how to go on from there; the ability to work on projects with complete strangers to solve a particular problem within a tight schedule; understanding of the area they work in but with specific training to do a specific job that will be done on the job. […] We cannot always train our students for a specific job in the job market because we can never predict which job they are going to get after they leave university.*" Thus, the feeling of not having practical training at universities is justified by the fact that universities should develop skills and not impart practical information. In the new information age, the role of HEIs is to enable students to successfully find and use information and not just have it already. Thereby, problem-solving skills, team working ability and other skills would equip graduates with the right tools to face modern businesses challenges.

Not all interviewees make the same distinction about the relationship that Bachelor and Master curricula should have with the professional requirements of the market. While interviewees from Germany, Austria and Slovenia showed they are aware of such differences, interviewees from Poland, Italy and Turkey did not comment specifically on this issue, but mainly offered general ideas on the importance of curricula being aligned with market needs.

The Polish interviewees show a high level of awareness of the fact that faculties' curricula should respond to market needs. The HEI curriculum is strongly theoretical at the moment. The most important thing the studies impart is the skill of learning. Curricula should be evaluated as to whether they fulfil market demands. Due to the lack of monitoring of the marketplace, the programmes must be changed through subjective judgments without supportive professional research. The head of the First and Second Cycle Programme in Business and Economics at the Polish university thinks that the HEI plays a major role in shaping the chances of a successful future professional career for the graduates. That is why market requirements and expectations are regarded by her as a key factor influencing curriculum and teaching modes at the study programme she supervises: "*We need to keep an eye out for industry developments and trends to see if we're going to successfully prepare students for the market*".

Another factor that raises awareness of the link needed with the marketplace is the necessity to attract more and more students to HEIs. Again, a former Dean of Polish university pointed out that the *"dramatic fall of number of secondary school graduates in the coming years, formulating study programme attractive from the employability perspective is going to be a major challenge for HEIs, particularly in the private sector".*

Yet there is an interesting point of view from a Polish interviewee who said that there is a relevant number of students that do not need specific teaching programmes in line with the market: "*We have two typical groups of students: family business (50%) and eagles (50%)".* The first group does not have to care about labour market success. They are successors to the family business. They need studies simply to learn how to improve their parents' enterprise. They need freedom in choosing subjects rather than a good theoretical background. They also rarely stay in touch with the HEI. The second group needs a more general programme that suits market demands. Due to this division and the core curricula enforced by the ministry it is hard to construct a single curriculum that is appropriate for both groups. He concludes that "*none of the Polish universities have understood the idea of Bologna's demands. They just cut the curriculum after three years. So did we. Now it is time to improve this*".

Slovenian, Turkish and Italian interviewees made no specific comments about this issue. They agreed about the importance of a link between HEIs and the marketplace when designing the curricula, but the actions they personally mentioned are at the personal network level.

In conclusion, one can note that all the interviewees agreed about the importance of the market in designing curricula. Nevertheless, as an Austrian former Rector of the university pointed out that curricula design is a complex process and "*depends on legislation (the main trigger for changes), the university's general strategy and, implicitly, historically evolved ideas of the professors and heads of departments concerning what is 'important' content to teach"*. Accordingly, the market is a new feature to consider in the variety of factors that determine faculty curricula. Not all countries show a consonant level of the assimilation of market needs in the curricula design process. Germany and Austria are far ahead in the implementation of such links between HEIs and markets than other countries yet even though they are acquainted with the importance of such links, they still need the proper strategy and infrastructure to make it happen.

#### *5.1.8.3 HEI actions to support graduates' transition to the market and their professional career*

After discussing the definition of the short- and long-term career success of graduates with the interviewees, this part of the interview moved to the core of the analysis by pragmatically asking about any activities each interviewee's HEI has taken to support their graduates' transition to the market and to increase the probability of their long-term success.

As noted in the Introduction, not all the interviewees have a clear definition of their graduates' career success. There is even more confusion when it comes to the short- and long-term reference to the career success. Thus, there is some degree of heterogeneity in the responses to this section. The first classification that can be noted is the specific vs. general response of the interviewees on each issue. While the Austrian, German and Slovenian interviewees made specific remarks about particular issues, the Polish, Italian and Turkish interviewees offered more general and theoretical observations on the HEI's role in supporting the short- and long-term success of its graduates.

The interview focuses on four issues: teaching/curriculum development; research; relationships between HEI and other groups; and other services. All of these topics have the same perspective: how do they influence graduates' success. Most of the discussions are focused on the first topic of teaching/curriculum development, while the other perspectives were not the main focus of the interviewees.

### *Making curricula more flexible: Rigid and flexible systems*

As noted before, the flexibility of curricula is an important factor of the Bologna Process in meeting new market requirements. Not all countries have implemented a flexible system that interacts smoothly with outside factors.

An important factor to be considered in this analysis is the autonomy of each countries' higher education system and the autonomy of each HEI (private or public). The interview does not consider and assess the autonomy of the HEIs so it is difficult to understand if the rigid or flexible systems outlined in the interviews are due to HEI autonomy in each country, or an internal problem of the HEI itself. Despite this missing link, some interviewees did reveal some information about their institutional autonomy. Based on such information, one can say that there are HEIs with greater autonomy (Germany, Austria) and with less autonomy (Slovenia, Italy, Poland, Turkey).

#### *i) Rigid systems*

In some cases, even though there are internal and external forces which determine the development of teaching/curricula, they are not linked to the market. For example, the Vice-Dean for Students' Affairs at the Polish university noted that: *"changes in curricula are triggered by two major forces: external and internal. As for the external ones, these are changes in the core curriculum determined by the Ministry of Science and Higher Education. They can hardly be said to be market-driven, but reflect rather the lobbying forces in central bodies responsible for curricula development. The other trigger for curriculum change lies inside the Faculty. It is in the shape of a Didactic Commission that gathers ten heads of all degree programmes taught at the Faculty and two representatives of students. The Commission formulates a comprehensive concept of learning objectives for each programme of study and specialisation and presents it to the Faculty's Council. The Didactic Commission supervises the implementation of the objectives of teaching and deals with the teaching quality management system."*

Again in Poland, external certification is an important driver of changing curricula. The Vice-Rector of the Polish university noted that: *"Applying for external certification gives the opportunity and incentives for self-improvement and development. The accreditation process is extremely demanding but it is worth it. Accreditation is a challenge for the whole institution but it is a perfect opportunity to make structural changes and improvements. This could be the key to growth of the diploma brand (this helps in finding a job) and the quality of courses."* Yet, contrary to what she first stated, she added: "*Our current curriculum leaves much to be desired. We need to adapt and take on a more modern outlook*."

External certification gives goals and highlights strategy paths that singularly aim to produce benefits for the HEI. Nevertheless, if strategy considers the external drivers alone, one can lose focus on the mission that the HEI must pursue: creating value for the students and society. As the Vice-Rector noted when asked about the level of the curricula, despite the efforts to comply with external-certification benefits, the quality of the curricula is poor and thus one can conclude that there is not enough attention to the internal resources which can drive real change.

Turkey's curricula flexibility shows the same features as in Poland. A lecturer at the university in Turkey noted that the changes mainly come from two different factors: "*1) internal factors; such the information about the success of graduates in job applications and job exams as well as the demand from lecturers to have a competitive curriculum both domestically and internationally. 2) External factors; the Bologna project and collaborations with other universities at departmental or faculty level.*" However, another lecturer from Turkish university noted a more flexible reality: *"every 2-3 years we change our curriculum. We have feedback questionnaires from students. We meet with representatives from the Chamber of Indus-*

*try and Commerce, the Chamber of Maritime Commerce and the Mersin Businessmen's Association. We ask them their opinion about the graduates. This is important feedback. Besides our academics follow new trends in the world and other prestigious universities' curriculums. Also we invite our former graduates to those meetings. Then we combine all that feedback to develop and reshape our courses and course contents".* Yet, confirming the rigidity of Turkey's HEIs, a professor from Turkish university noted that: "*We are not taking into account the demands of employer when we are changing programmes*."

Italy also reveals a rigid system. The Head of a Department of Management at Italian business faculty noted that "*programmes have minor flexibility and credit shall be gained for abroad experiences upon agreement with the professors involved*". An important constraint on changing and adapting programmes rapidly is the strict legal requirements on HEI curricula. According to a professor from Italian university the inflexibility is due "*to strict requirements and constraints from the Ministry of Education and the legal framework*". Despite these limits, companies are invited to participate in curricula design each year and there is a wide offer of internships.

The Slovenian scenario does not vary much. The HEIs in Slovenia also shows a lack of autonomy, which in return constrains HEIs' liberty to quickly adapt their curricula. The problems encountered have similar features to the above cases since they have the same roots in the rigidity of regulation. One interviewee from a Slovenian business faculty noted "*changes in curricula are triggered by development and changes in the profession itself, the situation in the labour market, trends in the development of the higher education system and new generations of students. The legislation is inflexible in implementing new changes and employers' needs into the study programmes. However, employers expect that the faculty will 'produce' graduates with full knowledge ready for the beginning of work but the role of the faculty is to provide graduates with broad knowledge, which can be used in practice. The faculty is not a factory; therefore, the expectations of employers are often unrealistic*."

Despite the external constraints, there is some sort of submission to the fast changing environmental needs and the ability to react in time. As a representative of the same university noted: "*study programmes can't be too responsive to employers' needs because what they need today you cannot offer this the next day as the study programmes cannot change so fast. And the knowledge the employers want today might be useless tomorrow. Therefore, it is also important to follow global trends and to see what will be important in the next years. Also systematically they are very limited about how to be responsive to employers' needs. The faculty has to produce graduates who will be employed in the long term".*

The two interviewees above hold important decision-making positions so these thoughts contain a shared important message not only about the lack of proactiveness but the ability to react as well. Yet, these observations cannot be generalised to all Slovenian HEIs. One of the Slovenian universities to some extent shows a more flexible organisational environment where changes in curricula are triggered by assessments made once per year together with pedagogic staff, students and employers. A professor from the same university thinks that it is right that study programmes are flexible and responsive to the needs of employers to some extent but, on the other side, some fundamental knowledge is also needed. This shows a more reactive attitude to change, affirming the idea of traditional curricula during bachelor studies and more flexible and customised curricula at the master level.

### *ii) More Flexible Systems*

On the other hand, the Austrian and German interviewees do not consider external limits (law; external certification institutes) that might limit their ability to efficiently change the curricula. They see a more favourable context where curricula are more adaptable to specific needs.

The Austrian curricula are broader at the Bachelor level and offer a greater focus on business needs at the Master level. Further, they focus more on the methodological formation of the students. A Professor of Finance at the Austrian university believes that the strength of their good curricula is because they "*convey not only theory and facts but also methods. Our graduates have high methodological competence, this may not be the case in some other programmes at this HEI*." Despite these general observations, the Head of Business Studies (a bachelor programme) at the same university added that their curricula are constantly and frequently reviewed by different bodies: internal and external.

Nevertheless, constant and frequent changes of curricula bring the potential risks not offering stability and sometimes following new approaches which might fail. She added here that they "*are very careful not to be taken in by some 'fashion trend' … so that we not waggle back and forth in the curriculum but have some stability. So to say, ok, these are basic requirements associated with a business degree*."

Germany presents more evidence of attention to market demands when designing curricula. The greater autonomy of the German HEIs gives them more room for manoeuvre to quickly adapt their curricula. Contrary to Italy, Turkey and Poland where HEIs are constrained by external regulation, German HEIs show more governance autonomy, and can hence use different mechanisms to respond to the market. An expert and consultant at one of German universities noted that they have an "*advisory board with representatives of the economy. One task of this advisory board is of course to deepen the link between the economy and the faculty of business and economics with the goal to support graduates in their transition to work.*" This is a common feature noted by other interviewees in other countries (e.g. Turkey), but the interviewees in Germany are the only ones to mention this governance body that acts as a link between faculties and business.

There is a shared perspective of the German interviewees on the strong regional background of their universities. An important factor seems to be the role of external stakeholders (e.g. the Chamber of Commerce and Industry). A Professor from another German university noted that the region has a "particular interest" in the graduates of business and economics: "*the same is true for those with an eye for the regional market*."

### *The stress on international orientation varies from country to country*

International orientation is an important factor not just in developing students' curricula, but also in improving other student skills as team-working, socialising etc. The first aim of the Erasmus Mundus programme is to enhance the quality of higher education and to promote dialogue and understanding between people and cultures. Surely nowadays, firms highly value students with international experience in their studies, and most of the interviewees are aware of that.
Nevertheless, there are some significant results from the analysis of the interviews on this issue. An important distinction can be made concerning the level of importance the interviewees assume at this point.

There is a common feature between Austria and Germany, whose interviewees do not consider the internationalisation topic much. This could be due to the interview process, which might have avoided this topic or because the high level of the universities in both countries might be a factor that attracts more incoming students than outgoing ones. The head of the career centre at the Austrian university noted the low level of exchange students that: "*companies often ask for it so the services offered here are important. But on the*

*other hand the quality of life in Vienna is high. So it is understandable that many graduates want to stay here. Also, many international companies have their headquarters – and thus 'international' jobs – in Vienna, this may not be sufficiently accounted for in e.g. rankings.*" There were no other comments by German interviewees on this topic. This highlights the minor importance that these contexts attribute to internationalisation.

On the contrary, other countries such as Italy, Slovenia and Poland show similarities in their openness towards internationalisation. A former dean from Polish university said that they "*always have attempted to look beyond borders, and create a modern and international feel to our institution. A characteristic feature of the Academy is the very well developed level of international cooperation. Participation in the Erasmus Programme and numerous bilateral agreements results in a very broad offer of studies abroad. With the majority of students working while studying, the option of studies abroad for one or two semesters is effectively only available to full-time students. With high grade and language requirements, often the number of offers exceeds the number of interested students.*"

This is a common feature of all other universities in all three countries. Further, in order to increase the number of exchange students some universities offer English courses, in some cases bypassing the legal requirements as in the case of Slovenia where the law recognises Slovenian as the only language for use at universities.

Regardless of the issues that Turkey has with the Erasmus framework, every year lecturers and students participate in mobility projects.

Finally, one can draw some significant conclusions from the word tree relation in Figure 5.12.

*Figure 5.11: Word Tree Relation for Internationalisation*


Source: Own elaboration of the WP6 interviews.

The internationalisation is mostly associated with the Bologna Process, the mobility of students, cooperation and, most importantly, with strategy. Internationalisation is becoming an important feature of universities' strategies in order to enhance their students' outcome. Nevertheless, as noted before, the Austrian and German interviewees showed no significant interest in internationalisation.

***The practical orientation of the study programmes is highly stressed activities so as to enhance graduates' transition to the labour market***

Practical orientation is deemed to be important by the majority of interviewees, which reveals the significance of practical work for students. Indeed, it marries the theoretical knowledge from the bachelor curricula with the professional skills that can be offered by businesses, offering a highly valuable experience for students who elect to do an internship.

The Austrian interviewees prove to be more convinced of the high importance of internships for students. A representative of the Austrian Career centre noted that: "*We always point out that the study duration is*

*relative. It is better to lose a semester for an internship than graduate without any practical experience because then the prospects are bad in the labour market.*" Another professor from an Austrian university stresses that internship at his university is compulsory and fairly long (recommended from 5 to 6 months) so students can be really trained to actually work on a project. "*We have a number of companies who regularly take interns and also communicate vacancies, and most of our lecturers are external lecturers who work for companies that might be interested in interns. But we do not place students in internships that do not really offer market experience. It's fairly brutal, it's tough, but it's what life is going to be like. ... This is why we don't actually hand internships out on a plate at all.*"

Nevertheless, one has to consider even the opportunity costs of sustaining a compulsory internship since it can suspend students' studies and consequently postpone the graduation period. A professor from an Austrian university had scepticism about the use of internships: "*they can be very useful to realise what the acquired theories and methods are good for. I am not sure whether we should make it compulsory or not.*"

Germany shows a very similar practical orientation to Austria. The interviewees noted that they have several tools to communicate with businesses which offer internships positions and, furthermore, they offer positions to non-academic lecturers in order to share their professional experience with students.

Poland reveals a very different scenario. As a higher education manager from a Polish university noted: "*The HEI aims to involve market leaders and employers to set up apprentice programmes for students. This however is still a weak area for the HEI as not enough is being done. Nevertheless, it is a part of the Faculty's strategy.*" The same worries come from the Head of the Polish Confederation of Private Employers Lewiatan.

While Poland is trying to improve the practical orientation aspect, Slovenia shows a more advanced scenario in the implementation of internships, but it is still problematic. A higher education manager from a Slovenian business faculty noted that despite practical training being obligatory and that students go to a company for several weeks, she is not satisfied with the practical training as it is now because students get easy tasks due to the short period of their training and employers are not interested in investing too much time and energy. So the internship turns to be a waste of time for both of them. The Vice-Rector for the Students' Affairs of the same university shares the same opinion: "*The problem with practical training is that the work of students done during the training is very limited – they are there several weeks and it is very difficult to give them a larger amount of work, they also don't have enough time so that the students and employers get to know each other very well, they don't get a real picture of the environment. Thus, it is not important how long he stays there, but what is the quality of the time spent at the practical training. If the time spent at the practical training is longer, the students would get more responsible tasks but this is not possible due to attendance at the classrooms.*"

In Italy, a higher education manager from one of the Italian management faculties noted that the internship placement office organises around 500 internships per year. There is an annual event of "Career Days" for recruitment purposes, in addition to minor recruitment events. In addition, the university offers a web-service (*Alma Laurea*) that creates a virtual space where graduates can get in touch with employers.

### *The inclusion of students in research not only enhances their methodological skills but increases opportunities for their future employment*

The aim of this topic is to discover how HEIs try to enhance students' future activities through their participation in research projects; common research projects with employers or other factors. Nowadays, HEIs are changing. The push towards academic research inevitably influences teaching and participation in research projects. Practical research is currently becoming indispensable and partnerships with businesses are rapidly increasing.

The inclusion of students in such projects not only enhances their methodological skills but increases the chances of future employment. Nevertheless, the domain of business and economics is not as attractive as other applied sciences (i.e. bio-technology; engineering) for business to participate in research projects. In addition, the high number of students again decreases the opportunities for working in such research projects.

These issues are shared among all the interviewees from the different countries who commented on the research impact on students' career success. The orienting and placement office manager of one Italian university noted that: "*Academic research is widely funded by companies; it is consistent with both companies' needs for evolution and faculty needs to enhance students' training. It therefore has an indirect positive influence on graduates' employability."* Despite the low number of students that get involved in research projects, a professor of one university in Italy noted that "*some of them get an internship thanks to it but with almost no further job opportunity. Nonetheless, students involved with research projects gain ready-to-use competences and foster their entrance into the market."*

In conclusion, students' inclusion in research projects offers them more opportunity to enhance their methodological skills, advance their professional knowledge and offer future opportunities to get a job. On the other hand, one should consider that only a small number of students can use this opportunity, thus the overall effect is not very significant.

### *A limited focus on innovative teaching and learning modes*

In general, there were not many comments on teachers' training and modes. A common outline is the orientation towards teaching modes, with group assignments, workshops, case-study-based projects etc., deemed particularly important for building graduates' attractiveness to employers.

Regarding the evaluation of teaching quality, only some professors from Slovenia and Turkey noted that student questionnaires are used to assess each teacher quality. Nevertheless, none of them specifies the likelihood of using students' assessments to improve teaching quality. Students' evaluations cannot be used as effective tools to measure the teacher quality in training students, thereby influencing their future short- and long-term career success.

### *Forging relationships between HEIs and stakeholders' vacant jobs*

In order to ensure an effective transition of graduates to the market, universities should not only care about the "training" period, but even create points of contacts between future graduates and businesses interested in hiring new professionals. This is a common belief of all the interviewees who explicitly or implicitly hold this opinion.

While all interviewees show the same attitude to the need to enhance points of contact with the market through the use of a Career Centre or other establishments (as in the case of Slovenia), a former rector of Austrian university noted that: *"Our HEI always had a lot of contacts but ... it will decrease or be reduced*

*to certain contacts."* Sometimes a high number of contacts leads to wasted time in managing the relationship between students and businesses. Thus, a few but still a good number of contacts can assure the quality of the relationship.

***Career centres: Shifts from best practices to failed attempts***

Career Centres are a common organisational solution to manage the relationships between students and employers. The applications of career centre range from best practices, as in the case of one Austrian university where the head of the career centre claimed that "*there are approximately as many jobs as graduates available each year*", to unsuccessful cases where the implementation of the Career Centres fails.

A higher education manager from a Polish university noted that: "*There is quite an active Careers Bureau which operates centrally at the HEI, however it does not specialise in jobs for economists. A few attempts to develop such a centre at the Faculty ended in failure. This might be attributed to the relatively small scale of the Faculty with too little interest being paid by prospective employers. The lack of resources didn't permit the HEI to develop this activity on a larger scale.*" This opinion is shared by all other interviewees from the same university.

Italy shows a similar situation. The representative of the department of management at one Italian university noted that the relationships with companies and other relevant stakeholders are maintained individually by professors and are not institutionalised. They mainly deal with consultancy activities of the professors and are helpful for those few students who are actively involved.

#### *5.1.8.4 Future developmental needs*

The interviewees' standpoints on the first sections of the interview revealed several issues related to successful employability in the short- and long-term. The last part of the interview refers to practical solutions to the background problem and the major developmental needs of each HEI.

***The centrality of the follow-up surveys (tracer studies)***

An important issue highlighted by the Austrian interviewees is the missing data on graduates' histories. A professor from one of the Austrian universities noted that: "*We do not know what happens to the graduates after finishing universit)*". The information systems on graduates' histories play a crucial role in designing and implementing efficient strategies in assuring students' career success. Thus, one should first consider the ability of HEIs to collect useful data, rather than adopting changes that might produce unwanted effects.

The same view was voiced by the Vice-Dean of Students' Affairs at the Polish university who noted: *"A regular tracer study that will allow the HEI to gather full knowledge about the market position of graduates at some (relatively short) time after graduation (for instance 6 months) and after a longer time (for instance 5 years after graduation). This type of data collection system would highlight the fluctuations of a graduate's career and supply the HEI with data that could be assembled to show continuous market activity by its graduates."*

***Uncertainty on the future development of innovative teaching modes***

Despite the push towards the use of case studies and other practical didactic methods that emerges from the solutions mentioned by different interviewees from Poland, Slovenia, Turkey and Italy, interviewees

from Austria and Germany tended to be more confident about actual methods. These mixed approaches tend to increase students' risk of having neither a good professional profile nor a broad, theoretical education. The Head of the Career Centre of one Austrian university thought this is a common problem to all Austrian universities: "*we need to decide what we want to provide in the future, either broad education or specific, career relevant skill.*"

#### *Limiting the number of students in a class*

A professor from Italian university noted that effective teaching can be achieved with smaller classes, where the use of groups in team-working; case studies; guest speakers, is more feasible: "*Developing classes with no more than 40/50 students as a way to increase the participation within the learning group.*" This might be a suitable solution to provide practical experience while establishing a good theoretical background for the students.

Nevertheless, small numbers in class are quite difficult to achieve due to the mass university trend that is characterising the European Higher Education Area. Defending this perspective, an expert from the Faculty of Business and Economics at German university noted that: "*the number of students will highly increase in the next years due to the reduction of school years for the A-levels (from nine to eight years) and the abolition of compulsory military service in Germany. At the same time, the qualifications of students will not increase. This means that there is an increasing number of students at the university who do not fulfil the introductory qualifications since schools have similar problems as universities have.*"

Another issue raised by the above interviewee is the decreasing quality of students due to the overall impoverishment of the school system, which does not provide good quality students.

#### *The question of the future development of career centres remains open*

A common opinion of all interviewees is the relevancy of the career centre as a feature that has a key role in determining the career success of students in their future employment. Nevertheless, there are no particular and pragmatic thoughts on such issue, only a general belief about the role of the career centre.

### 5.1.9 Conclusion

Business and Economics is a wide domain with a continuous growing number of graduates. This trend, jointly with the Bologna Process, has inevitably influenced the curricula in all countries with different results on graduates results and work placement. While some countries (i.e. Germania; Austria, Poland) have adopted new programs with the aim of facilitating graduates' shift towards the market, others (i.e. Turkey, Italy, Slovenia) show a low percentage of graduates with work experience related to their studies. Nevertheless, the common ways graduates use to find employment is through personal efforts and not by Universities. This raises worries about the strategies that HEIs have to implement in order to assure an effective transition towards the market.

Thus, the second part of the chapter reports the outlooks of 34 academics and non-academics from the six partner countries of the DEHEMS project on different issues (Austria, Germany, Slovenia, Poland, Italy and Turkey). The interviewees show different perspectives on the three themes of the interview which aimed to discuss and reveal opinions on the knowledge about the career success of the students at each HEI; what is the actual role of the HEI in determining the career success of its students; and what is the opinion of each interviewee on future actions to bring about improvement.

The significant heterogeneity of the interviewees' backgrounds, specific HEIs and country contexts determines much of the dissimilarity in the various views, starting from the personal concept of career success to the issues each HEI addressed when dealing with specific topics: teaching/curriculum development; research; relationships between HEI and other groups; and other services.

The opinions reveal a certain similarity within two main clusters: 1) Austria and Germany; and 2) Poland, Slovenia, Italy and Turkey. The main factor that determines clusters' boundaries seems to be HEI autonomy which influences the way the HEIs manage career success. Nevertheless, all interviewees share quite a few opinions on possible actions to take at each HEI in order to improve the career success of their students.

*Mateja Melink, Samo Pavlin, Božidar Grigić **

## 5.2 EDUCATION AND TEACHING STUDIES

### 5.2.1 Introduction

Several scholars and EU policies stress the importance of quality teacher education as teachers represent the link between education from pre-school to higher and adult education and the world of work. Appropriate education is the key element in the European Union, following the goals of the Lisbon Strategy[35] (2000-2010). National governments and European institutions have declared that a highly educated population is a key determinant of economic success and sustainability (ETUCE 2008, 12).

Further, the European Council (Official Journal of the European Union 2009) recognises that "the knowledge, skills and commitment of teachers, as well as the quality of school leadership, are the most important factors in achieving high quality educational outcomes. Good teaching and the ability to inspire all pupils to achieve their very best can have a lasting positive impact on young people's futures. For this reason, it is essential not only to ensure that those recruited to teaching and school leadership posts are of the highest calibre, and well-suited to the tasks they have to fulfil, but also to provide the highest standard of initial education and continuing professional development for teaching stuff at all levels".

The central role of teachers is recognised not only by the European Union but also by the OECD (2005, 2), stressing that the demands on schools and teachers are becoming more complex as the role of teachers is being transferred from knowledge providers to actors for the development of competencies. Society now expects schools to deal effectively with different languages and different youth backgrounds, to be sensitive to culture and gender issues, to promote tolerance and social cohesion, to respond effectively to disadvantaged students and students with learning or behavioural problems, to use new technologies, and to keep pace with rapidly developing fields of knowledge and approaches to student assessment.

High quality teacher education is essential for the quality and relevance of education at all levels, and to the high status of the teaching profession itself (ETUCE 2008, 12). It is generally agreed that teacher education has to be conceived as an open and dynamic system, and as a part of a continuous process. As an open and dynamic system, teacher education is embedded in different spheres: society in general, the state, universities, colleges of education, schools and with a large number of different actors (e.g. teacher educators, teachers, politicians, administrators and school inspectors) (Buchberger et al. 2000, 4).

As seen from the above paragraphs, teacher education and education sciences are large systems and a crucial factor in providing knowledge and skills for teaching millions and millions of children and youth across Europe and across the globe. Because of its indirect impact on society as a whole, we also cannot neglect the importance of quality teacher education and research in this field is also extremely important if we want to ensure the appropriate implementation and development of teacher education and educational sciences.

This chapter is based on the national reports on teaching and education studies from the DEHEMS countries and statistical analysis. However, for the purpose of the last section (4.2.6), 36 representatives of

* Support: Nevenka Černigoj Sadar, Matej Godnič, Miroljub Ignjatović, Anton Kramberger

[35] The Union follows a strategic goal to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion (European Parliament 2000).

higher education institutions in the field of education and teaching studies in six DEHEMS countries were also interviewed in order to obtain information about the transition of graduates into the world of work, the characteristics of programmes and development needs in the area. These interviews were conducted with 7 staff with academic experience and 22 people with HE management roles. Universities, faculties, higher professional schools, an academy and career centre were approached, in total making 26 different institutions.

### 5.2.2 Statistical overview of the domain

#### *5.2.2.1 Number of graduates*

As Table 5.15 shows, in the field of education the number of graduates is growing over the years in Austria, Germany and especially in Turkey, where the number rose from 56,000 in 2005 to 71,000 in 2009. On the other side, in Slovenia and Italy numbers of graduates have been dropping over the years. However, when looking at percentages of the DEHEMS countries the share of graduates from the field of education is constantly growing, but Slovenia and Turkey have constantly shrinking shares of education graduates. The biggest shares of graduates from the education field are in Turkey (around 25%) and Poland (around 15%), while the lowest shares are seen in Austria, Italy and Germany (below 10%).

*Table 5.15: Numbers of graduates in the education field*

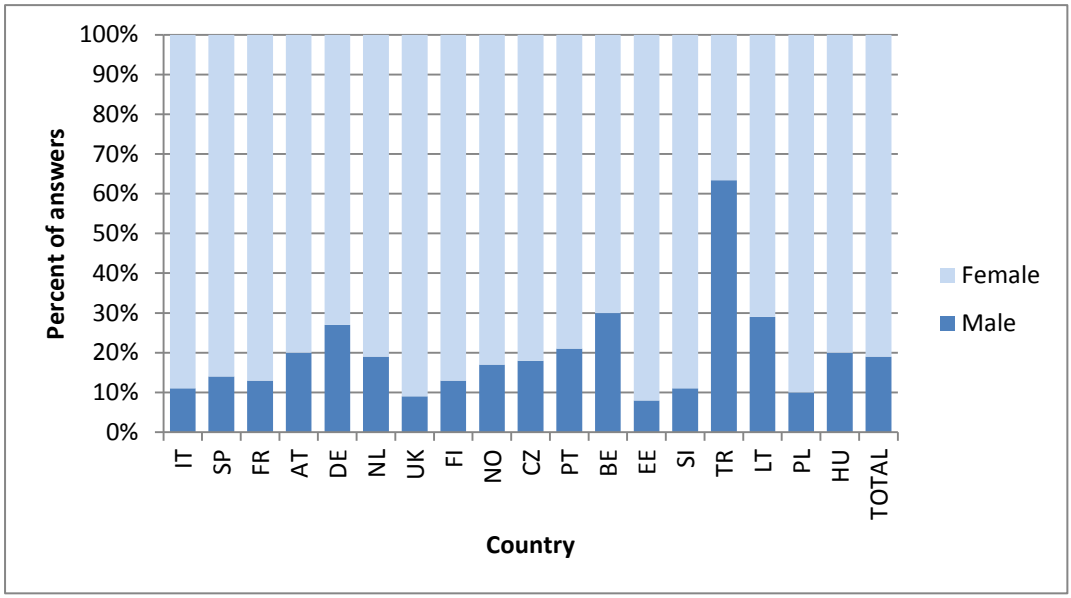
| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Austria** | 2247 | 2342 | 2433 | 3802 | .. |
| **Germany** | 18687 | 31264 | 32266 | 34151 | 37581 |
| **Italy** | 36534 | 32990 | 48467 | 12844 | 13735 |
| **Poland** | 83969 | 81239 | 80952 | 92166 | 86736 |
| **Slovenia** | 1246 | 1244 | 1183 | 1149 | 1121 |
| **Turkey** | 56297 | 64376 | 65729 | 67325 | 71362 |
| **% of tertiary graduates** | | | | | |
| **Austria** | 9.1 | 8.7 | 8.6 | 10.9 | .. |
| **Germany** | 7.8 | 10 | 9.5 | 9.2 | 9.2 |
| **Italy** | 9.8 | 8.7 | 12.3 | 5.6 | 6.2 |
| **Poland** | 17 | 16.3 | 15.4 | 16.7 | 15.3 |
| **Slovenia** | 16.7 | 15.4 | 15.1 | 13.9 | 11.6 |
| **Turkey** | 31.1 | 27.3 | 25.2 | 24 | 23.5 |

Source: Own elaboration based on OECD (2011).

#### *5.2.2.2 Gender distribution*

Teaching is one of the most highly feminised professions in Western democracies. As the Commission of the European Communities (2007) points out, in all European Union countries except one, over 70% of teachers in primary education are women (in some countries this proportion is considerably higher). The proportion of women teachers in lower secondary education is not as high as in primary education. While the proportion of women in upper secondary education is less striking, they outnumber men in nearly all countries (Drudy in Hudson and Zgaga, 2008; 43).

*Figure 5.12: Ratio of males and females in education and teaching studies*




Source: Own calculation based on HEGESCO and REFLEX data.
Note: The total represents the average value of all countries in the Hegesco and Reflex databases.

According to Figure 5.12 that stems from the HEGESCO and REFLEX databases, one can see that the graphs only confirm the above statements. The ratio of women in education and teaching studies ranges from 73% in Germany up to 90% in Poland. The only exception here is Turkey where men outnumber women. As reported by the Turkish partner, there is also female dominance in this professional field, but males prevail mostly in vocational/technical subjects.

Feminisation of this profession is also evident from the statistical data contained in the DEHEMS national reports. Austria and Slovenia reported that 80% of all their graduates in the field of education and teaching studies are females. Also Poland pointed out that in the study fields of education and teaching the female domination is very strong, with the proportion of women reaching 74%. The highest proportion of women is found in Special Education with 86%. The situation is not very different in Germany where on average 70% of the students are female. There is also female dominance in most of the study programmes from this professional field in Turkey. However, in physical education and sport and technical education programmes, the share of males is higher (65% of males in physical education and 80% of males in technical education).

#### *5.2.2.3 Parents' education*

Socio-biographic background is an important factor of education as it is inevitable and closely connected with the process of primary socialisation which takes place during childhood, usually in the range of parents. It is well known that parents have an important impact on our subsequent career. Therefore, one has to take their status and their education into consideration, as it is still evident that there is a higher proportion of students entering higher education whose parents have a higher education compared to children whose parents have a lower education (see Schomburg and Teichler 2006, 30). We can assume that parents' education in the case of future teachers plays an above-average role due to it generating social values and competencies.

*Table 5.16: Highest education of father and mother by country for graduates of the education and teaching studies (in percent)*

| | **ISCED 1+2** | | **ISCED 3+4** | | **ISCED 5+6** | |
|---|---|---|---|---|---|---|
| | ***Father*** | ***Mother*** | ***Father*** | ***Mother*** | ***Father*** | ***Mother*** |
| **Italy** | 60.5 | 65.0 | 30.9 | 28.8 | 8.6 | 6.3 |
| **Austria** | 65.4 | 74.6 | 19.5 | 15.1 | 15.1 | 10.2 |
| **Germany** | 1.8 | 6.3 | 40.4 | 65.8 | 57.8 | 27.9 |
| **Slovenia** | 23.3 | 27.0 | 58.0 | 58.9 | 18.7 | 14.1 |
| **Turkey** | 47.1 | 62.4 | 31.4 | 19.6 | 16.8 | 6.3 |
| **Poland** | 48.6 | 34.2 | 37.7 | 47.3 | 13.7 | 17.8 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Table 5.16 shows that a majority of parents of education and teaching studies graduates obtained an education equivalent to ISCED 3+4 (see the total). The percentages of ISCED 1+2 and ISCED 5+6 are almost equal. As we can see from the table, there are some large deviations. In Germany there are only minor shares of parents who obtained an ISCED 1+2 education and a majority who obtained the highest levels of education. On the contrary, in Austria and in Italy the majority of parents obtained ISCED 1+2. In all countries, except Poland, the shares of fathers with ISCED 5+6 are bigger than those of mothers.

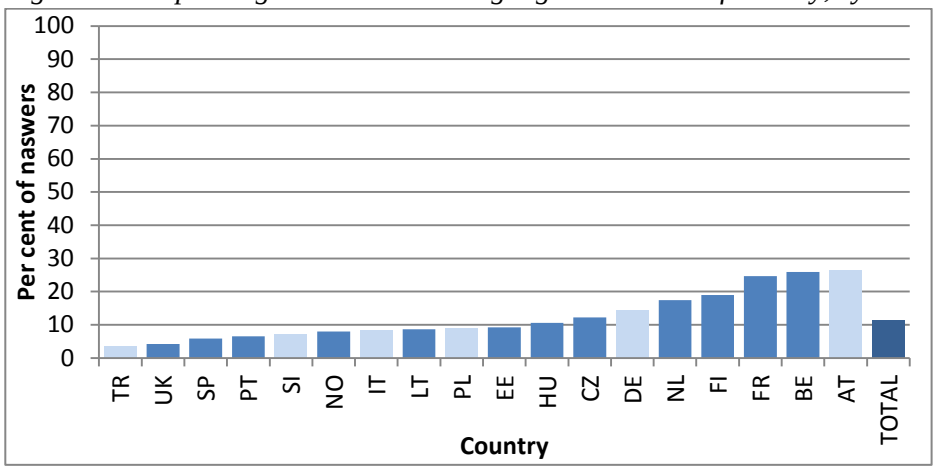
#### *5.2.2.4 Mobility*

The European Council (Official Journal of the EU 2009) recommends "the gradual expansion of mobility for teachers and trainers with a view to making periods of learning abroad the rule rather than the exception, which define as one of the priorities during the first work cycle the need to focus on the quality of initial education and early career support for new teachers, as well as on raising the quality of continuing professional development /…/".

According to the HEGESCO/REFLEX data, the percentages of graduates from the professional domain of education and teaching studies who spent some time abroad during their higher education for study-related reasons are the lowest, compared to other professional domains (business and economics, engineering, life sciences, medicine, sociology and political science) – 12% (total) in education and teaching studies compared to 20% (total) in sociology and political sciences which is the field with the highest percentage of student mobility.

Within study programmes of education and teaching studies, the shares of study mobility are the highest in Austria where 27% of graduates reported they had spent some time abroad. The smallest percentage is in Turkey where only 3% of graduates went abroad for study-related reasons.

*Figure 5.13: Spending time abroad during higher education for study, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question K5 (Hegesco), K5 (Reflex): Did you spend any time abroad during your higher education for study? – "Yes" responses.

These shares are even lower when it comes to graduates' mobility for work-related reasons, where 12% of Polish graduates reported they had spent time abroad during higher education for work-related reasons, with this being the highest percentage among all DEHEMS countries.

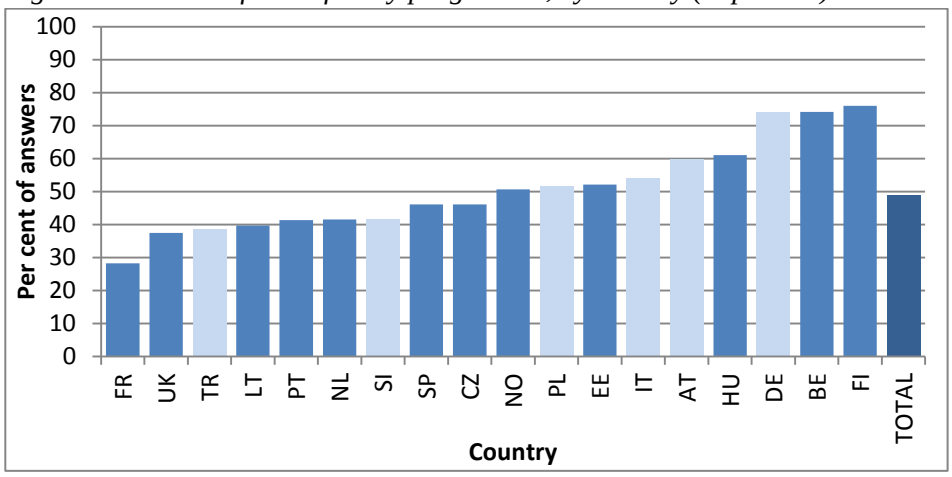
### 5.2.3 Study provisions and conditions

In all DEHEMS countries most study programmes are offered by faculties of education, although some of them are also offered by other faculties where study programmes have a pedagogic orientation (music academies, fine arts academies, physical academies). Alongside the public universities, there are also foundation (non-profit private) universities in Turkey but, on the other hand, there are no private institutions in Slovenia offering study programmes in this professional field.

After implementing the Bologna directions in study programmes across Europe, there were some debates about which level of study programme is sufficient for students to become teachers and professionals in education sciences. ETUCE (2008, 8) agrees that all teachers are educated to master's level. The demands teachers face today in terms of in-depth subject knowledge, advanced pedagogical skills, reflective practice and the ability to adapt teaching to the needs of a group of learners as a whole require that teachers are highly educated and equipped with the ability to integrate knowledge and handle complexity at the level which characterises studies at the master's level.

Especially teachers without a subject specialisation, that is mostly teachers in primary schools, have to have a broad range of knowledge from different fields, ranging from natural and technical to social subjects. The following figure shows the results from the Hegesco and Reflex databases for teaching and education studies concerning the extent to which the study programmes had a broad focus.

*Figure 5.14*: *Broad focus of study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5d (Hegesco), A6d (Reflex): To what extent did the programme have a broad focus? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Concentrating on the DEHEMS countries (coloured in yellow), one can see that three-quarters of graduates from Germany reported that their study programme had a broad focus, but on the other side only one out of three graduates in Turkey said their study programmes were more broadly oriented.

#### *5.2.3.1 Programme particularities*

*Germany:* Teaching education encompasses a theoretical and practical part. Besides two subjects (like biology and mathematics), for students who want to teach in school later on, the curriculum includes pedagogy (general and school pedagogy), psychology, sociology and technical didactics. The duration of teaching studies for elementary schools is 7 semesters (3,5 years), for teaching education for middle school from 7 to 9 semesters (3.5 to 4.5 years), for teaching education for "Gymnasium" from 9 to 12 semesters (4.5 to 6 years), for teaching education for vocational schools 9 semesters (4.5 years) and special education from 9 to 12 semesters (4.5 to 6 years). The traditional degree is the state exam which is organised and conducted by the state authorities and not by the university itself.

*Poland:* According to the regulations of the Ministry of Science and Higher Education, first-cycle studies in pedagogy are expected to last at least 6 semesters and include at least 1,800 hours of courses, with the total number of ECTS credit points equalling at least 180. As for second-cycle studies, they last for at least 4 semesters and include at least 800 contact hours, with the total number of ECTS credit points equalling at least 120.

Programmes offered in the field of pedagogy include programmes leading to two degrees: *licencjat* (the equivalent of a BA) – after the first-cycle programme and *magister* (the equivalent of an MA) – after the first-cycle programme. It is expected that a graduate in pedagogy *(first-cycle studies)* has basic knowledge of general pedagogy, history, philosophy, sociology and psychology that is indispensable for understanding the social and cultural contexts of the education process.[36]

[36] He/she has the ability for social communication, using diagnostic tools improving own knowledge, competences and methodical workshop. Graduate should know at least one foreign language at the B2 level of the Common European Framework of Reference for Languages (CEFR) put together by the Council of Europe and be prepared for undertaking the studies of the second cycle.

As for *second-cycle studies*, it is expected that a graduate has mastered and broadened – in relation to first-cycle studies – knowledge of pedagogy. A graduate is reliably prepared for specific education-related professional activity. He/she is able to carry out research activity and able to resolve theoretical and practical problems related to the sphere of upbringing and education. It is also assumed that a pedagogy graduate is prepared to undertake third-cycle studies.

*Austria:* Bachelor programmes at universities of education last for six semesters and are specifically aimed at providing the competencies needed by teachers at primary schools and lower secondary schools. Students usually have to pass entrance examinations that assess whether an applicant is qualified to become a teacher (e.g. musical and physical requirements, command of German, personality; [see University of Education Vienna 2010, 873]).

Students are educated in basic competencies as well as in the areas of human sciences, special branches of science, technical didactics, pedagogics, and other fields to a limited extent (University of Education Vienna 2010, 873; University of Education Vienna 2010; 874) [37].

While universities of education focus on educating rather general teachers of primary and lower secondary schools, the teaching at "Academic secondary schools" and "Higher technical and vocational colleges" (see the Austria country report) is organised subject-wise, i.e. at the respective university, faculty or academic unit for this professional field (e.g. German teachers are educated at the same unit as students of German Philology).[38]

*Italy:* Primary-level teaching and education science LvO has a four-year full-time equivalent duration and aims to train pre-primary and primary teachers. The first and second years are devoted to endowing students with core knowledge. During the latter two years, students choose a pre-primary or primary emphasis and specialise in related subjects. Among 94 ISCED 5A second degree level (equivalent to France's *Maîtrise*), a number of four commits with the teaching and education professional domain. Such programmes are denominated Laurea Magistrale (LM) and, as for the 5A first degree level, are offered by Italian public and private universities. They have a duration of two years in the full-time equivalent; it requires a final individual dissertation to be produced and a public discussion, after which a 5A second fully recognised degree is conferred on students. Admission requires the successful completion of a Laurea programme from the same study field, as L 19 class programmes or LvO, but a personalised analysis of candidates' backgrounds is always conducted to check whether all subjects considered relevant to enrol and attend in the second-level programmes had been met during the preceding study career. In case candi-

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The minimum curriculum contents requires HEIs to offer at least 330 hours (45 ECTS points) of courses on so-called basic content (*treści podstawowe*) and 210 hours (28 ECTS points) of courses on field-specific content (*treści kierunkowe*). As for basic content it includes: philosophy (75 hours), psychology (90 hours), sociology (90 hours), pedagogical notions and systems (75 hours). The field-specific contents include history of pedagogical thought, theoretical basics of upbringing and education, social pedagogy. There are no specific regulations on the number of course hours devoted to each of these domains.

[37] The University of Education Vienna is but one of many universities of education in Austria (see sections 2 and 3: types and number of institutions). With respect to institutional differences, curricula can be regarded as widely homogenous. When comparing curricula descriptions of different universities of education the extent of generality is similar (see e.g. [University of Education Vorarlberg, 2010; 875]).

[38] A practical training period is compulsory in the curricula. For twelve weeks students accompany experienced teachers in an academic secondary school or a higher technical and vocational college in their lessons ([University of Vienna 2009, 879]). Topics in the curricula include the four areas subject-specific scientific knowledge, technical didactics, pedagogics, and school practics ([Haddad_Internet_Services 2009, 878]).

dates encounter a shortage in some subjects, they are allowed to enrol and required to attend extra courses in order to fill those gaps.

*Turkey:* There is increasing demand to meet the needs of the newly organised eight-year system of compulsory education. Elementary school education aims to train teachers to meet this demand and to understand how children learn and develop skills. Generally, departments offer four programmes: *teacher training in natural sciences; teacher training for primary schools; teacher training for elementary education in Mathematics; teacher training in Social Sciences.*

Teacher training programmes are centrally developed and implemented at all Turkish universities offering these programmes. At the national level there is a Teacher Training National Commission, which is headed by the Council of Higher Education and consists of five deans of faculties from different HEIs and representatives at the directorate level of the Ministry of National Education. This Commission holds regular monthly meetings in order to develop and define the policy, strategy and the working practice.
Since there are different programmes in elementary education, the courses and curriculum are constructed differently in each programme. The Turkish education system and general teaching courses are common to all programmes. In the programmes of Mathematics and Science the first two years of the programmes offer basic science courses like Fundamentals of Mathematics and Basic Physics. The second-year scientific and statistical knowledge of the students is called into play by introducing more advanced theoretical courses. In the third and fourth years of the programmes there are elective courses besides the core courses. The fourth year is especially based on practice in teaching for elementary education. A formal practical training is required for graduation. In the graduate programmes the compulsory courses are Development and Assessment of Programmes in Primary Education, Research Methods, Learning and Teaching Approaches. There are also elective courses in several fields of primary education.

*Slovenia:* Education and teaching studies are offered by three faculties at three universities. These are the Faculty of Education at the University of Ljubljana, the Faculty of Education at the University of Maribor, and the Faculty of Education at the University of Primorska. At the Faculty of Education in Ljubljana students can choose between various study programmes: Primary teacher education, The two-subject teacher, Art pedagogy, Special and rehabilitation pedagogy, Visually impaired education and the pedagogy of specific learning difficulties, Social pedagogy and Preschool Education. The education of subject teachers is also performed at other faculties such as the Faculty of Arts, the Biotechnical Faculty etc.)
Study programmes in the 1st cycle (undergraduate study programmes) last four years (eight semesters) and contain 240 credit points (ECTS). The exception is the Preschool education study programme which last three years and is implemented on a higher professional level. Students who finish the 1st cycle of study programmes from this professional domain are not entitled to work independently in the classroom.
The Faculty of Education offers several study programmes from various fields of education.

The *primary teacher education* study programme enables students who have completed the 2nd level of the study programme to work in primary schools from 1st to 5th class.

In the *two-subject teacher* study programme, students can choose from among several orientations and the programme includes three components: obligatory general subjects in two orientations (two subject areas of teaching), selected from the following: biology, chemistry, computing, home economics, mathematics, physics and technical education. This study programme is usually aimed at those who teach on the 2nd level of primary school (from 6th to 9th class). [39]

39 Primary schools have two levels: 1st level (class level) is attended by pupils from 6 to 10 years, 2nd level (subject level) is attended by pupils from 11 to 15 years.

Faculties also implement several study programmes with a specific pedagogic orientation: art pedagogy, special and rehabilitation pedagogy, visually impaired education and the pedagogy of specific learning difficulties, social pedagogy.

#### *5.2.3.2 Teaching and learning modes*

One of the key elements of teacher education is to ensure the right combination between theory and practice. This also includes ensuring the right combination of teaching practice as an element of formal education programmes at the teacher education institute and teaching practice arranged as separate periods at school (ETUCE 2008, 23-24). In Table 5.17, we provide results on the average score of teaching and learning characteristics.

*Table 5.17*: *Average score of assessments of teaching and learning characteristics in the education domain (mean of possible answers ranged from 1 to 5- see REFLEX/HEGESCO questionnaire)*

| | Non-DEHEMS | AT | DE | IT | PL | SI | TR | Total |
|---|---|---|---|---|---|---|---|---|
| **The extent to which the following characteristic was emphasised in the study programme:** | | | | | | | | |
| Multiple-choice exams | 2.3 | 1.6 | 1.6 | 2.2 | 3.3 | 1.6 | 2.7 | 2.2 |
| Oral presentations | 3.2 | 3.3 | 3.8 | 3.6 | 3.4 | 3.4 | 3.2 | 3.3 |
| Written assignments | 3.6 | 4.1 | 3.7 | 2.9 | 3.4 | 3.6 | 3 | 3.6 |
| Problem-based learning | 2.7 | 2.5 | 2.7 | 2.7 | 2.9 | 2.7 | 2.8 | 2.7 |
| The teacher as the main source of information | 3.4 | 3.8 | 3.4 | 3.8 | 3.4 | 3.3 | 3.3 | 3.5 |
| Theories and paradigms | 3.8 | 3.8 | 3.9 | 3.1 | 3.7 | 3.7 | 2.9 | 3.8 |
| Research project | 2 | 1.8 | 1.9 | 2.3 | 2 | 2 | 2.7 | 2 |
| Group assignments | 3.4 | 3.1 | 3.2 | 2.6 | 3.7 | 2.9 | 2.9 | 3.3 |
| Lectures | 3.9 | 4 | 3.8 | 3.8 | 4 | 4.2 | 3.8 | 3.9 |
| Academically prestigious programme | 2.5 | 2.4 | 2.6 | 2.8 | 2.9 | 2.5 | 3.1 | 2.6 |
| Employers familiar with the content of the programme | 3.4 | 2.6 | 2.8 | 2.7 | 3.3 | 3.4 | 2.3 | 3.3 |
| **To what extent has your study programme been a good basis for:** | | | | | | | | |
| Personal development | 3.8 | 4.3 | 3.9 | 4 | 3.7 | 3.7 | 3.4 | 3.8 |
| Performing your current work tasks | 3.5 | 3.4 | 3 | 3.3 | 3.4 | 3.5 | 2.8 | 3.4 |
| Starting work | 3.6 | 3.4 | 3.1 | 3.1 | 3.5 | 3.2 | 3 | 3.5 |

Source: Own elaboration based on REFLEX/HEGESCO data.

While there are very few differences between the field of education and other domains, there are very obvious differences in the assessment methods among countries in this domain:

- There is the highly above-average use of multiple-choice exams in Poland (3.27), while in Germany, Slovenia and Austria it is far below-average (1.6 or less).
- In Germany and Italy (around 3.7) they use oral presentations more often than in other countries, where the average stands at 3.27.
- Written assignments are used to quite a large extent (3.6 on average), while the highest usage is in Austria (4.05) and the lowest in Turkey and Italy (2.9).

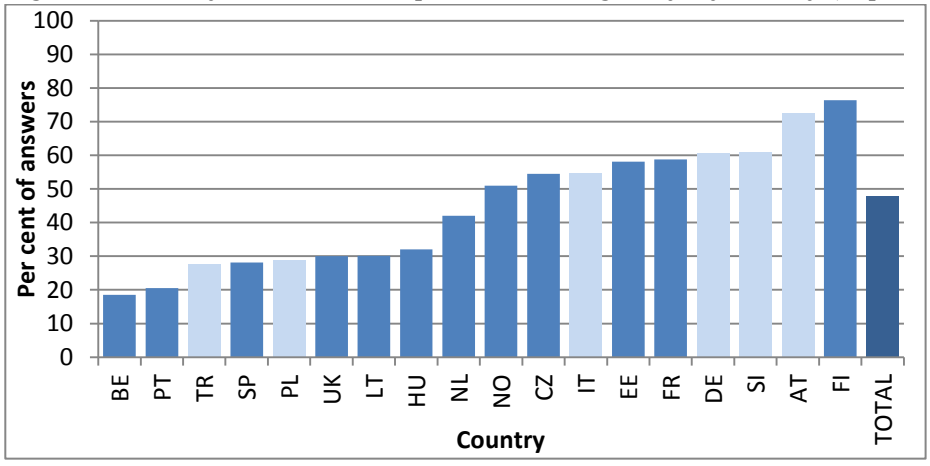
- Problem-based learning is, as already mentioned, low as in other domains and quite equally used in all DEHEMS countries (2.66), with the highest results in Poland (2.94).
- In Italy and Austria (3.8) teachers are more frequently seen as the main source of information than in other countries, where the average is 3.45.
- A research project as an assessment method is across countries on average very rarely (2.01) used. The highest usage is noted in Turkey with 2.73 and lowest in Austria and Germany with 1.8.
- Group assignments are most often used in Poland (above the average of 3.27) and less often in Slovenia and Italy (below-average).
- Lectures are most often (3.93) also used in this domain across all DEHEMS countries, although the highest frequency can be noted in Slovenia with 4.18 and the lowest in Turkey with 3.77.
- Employers are less often familiar with the content of the programme in Germany, Italy, Turkey and Austria than in other countries, where the average is 3.3.

Across the countries graduates see the programme as a good basis for personal development with an average of 3.8 and the highest result in Austria (4.31). The lowest result was achieved by Turkey, where graduates also to the lowest extent see education programmes as a good basis for performing current work tasks and for starting work.

Regarding the DEHEMS countries, teamwork is emphasised the most in Polish study programmes of teaching and education where around two-thirds of graduates reported that group assignments took up a large part of their study programme. On the contrary, in Italy only one of four graduates reported there was a great emphasis on teamwork in their study programme.

Project and problem-based learning is considered as situational learning where students are confronted with practical or real-life tasks they need to solve. Therefore, some scholars put a lot of emphasis on the importance of such learning. Compared to other learning and teaching modes, project and problem-based learning do not receive a great emphasis in study programmes. One-third of Polish graduates reported that this kind of learning took up a large part of their studies and 20% of Austrian graduates also said this.
Figure 5.15 shows the percentage shares of those graduates who reported they had acquired study-related work experiences. As the graph indicates, this percentage was over 50 in four DEHEMS countries: Germany, Slovenia, Austria and Italy.

*Figure 5.15*: *Study-related work experiences during study, by country (in percent)*

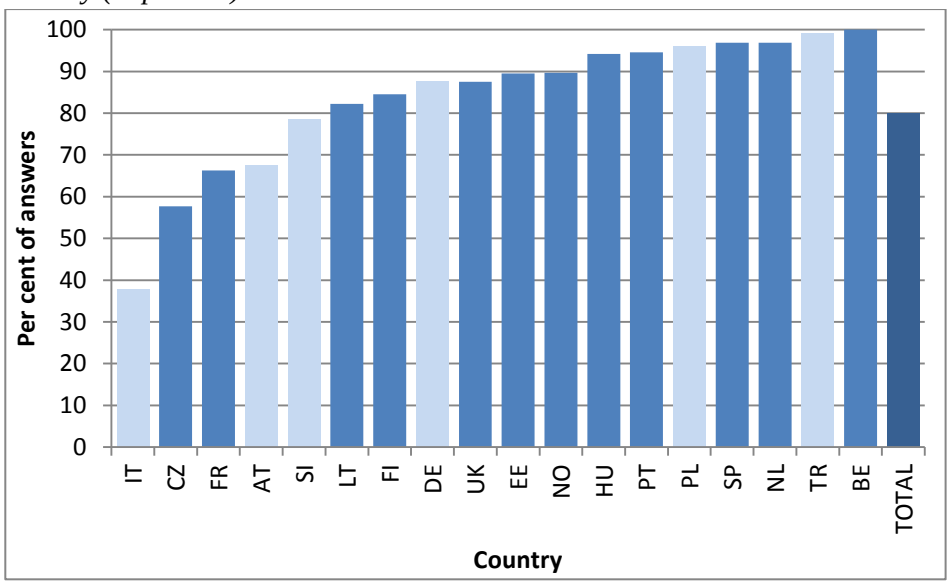



Source: Own elaboration based on REFLEX/HEGESCO data.
Question B3 (Hegesco), B3 (Reflex): Have you acquired any study-related work experiences? "Yes" responses on a scale of "yes" and "no" answers.

According to Figure 5.15 Turkey is among those countries where acquired study-related work experiences are below-average. The Turkish partner reports that although an apprenticeship during university education is compulsory and part of the programme it seems that graduates are not content with the existing arrangement and are demanding more study-related work experience during their study time.

But Figure 5.16 shows that participation in one or more work placements/internships as part of a study programme is highly embedded in study programmes in the field of teaching and education studies. There are also high percentages among Polish and German graduates but, on the other side, one-third of Italian graduates had attended practical training during their study programme.

*Figure 5.16*: *Participation in one or more work placements/internships as part of the study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A7 (Hegesco), A8 (Reflex): Did you take part in one or more work placements/internships as part of your study programme? – "Yes" responses.

### *5.2.3.3 National characteristics of practical training*

*Germany:* All teacher education programmes include at least two practical trainings during the course of study. The length of the practical period depends on the institute and the chosen school-track (normally, study programmes for elementary school teachers include more and longer practical work than study programmes for Gymnasium). Schools of education have the highest percentage of practical training during study. Besides the practical trainings, teacher education often includes practically-oriented seminars which are taught at least partly directly in the school. The main practical training period is the "Referendariat" which follows after the first state exam or master's degree.

*Austria:* A very important element of teachers' education is practical training. Every student will have both the opportunity and obligation to apply the acquired knowledge and competencies in so-called 'practice schools' ('Praxisschulen'). A practical training period is compulsory in the curricula. For 12 weeks, students accompany experienced teachers in an academic secondary school or a higher technical and vocational college in their lessons (University of Vienna 2009, 879). Topics in the curricula include the four

areas' subject-specific scientific knowledge, technical didactics, pedagogics, and school practices (Haddad_Internet_Services 2009, 878).

*Poland:* Students are required to undergo practical training that should last at least 8 weeks. The rules and form of this training are left up to the HEI to determine. The minimum programme also provides compulsory classes in foreign languages (120 hours, 5 ECTS credits), IT skills (30 hours, 2 ECTS credits) and physical activities (60 hours, with possibly 2 ECTS credits). As for IT skills it is assumed that the content of courses should enable students to pass the European Computer Driving Licence (ECDL). It is formally required that the programme includes at least 60 hours of courses broadening the general knowledge of students (including classes on biomedical basics of development) and classes on the protection of property rights, work safety and ergonomics. Preparing for a final (BA) examination and preparing a (BA) thesis, if required by the programme, give students 10 ECTS credits.

*Turkey:* Practice in preschool education is in the 3rd year and Teaching Practice is in the 4th year. Practice in preschool education is a course based on observations, interviews, practices and evaluations performed in order for preschool teacher candidates to learn about the school where the practicum will take place, the programme and the teachers. The preschool education practice is undertaken in the third year of the major as one full day (eight hours) a week for 24 weeks. Teaching Practice is a course aimed at allowing candidates to test and improve the knowledge and skills they have acquired through theoretical courses in a school environment and to gain the required professional skills. This course is taken in the fourth year of the programme as one full or two half days a week for 14 weeks.

*Slovenia:* An obligatory part of study programmes at the faculties of education includes practical pedagogical teacher training. Students of primary teacher education have practical training in all years of study. The active participation of students in pedagogical work and the amount of independent work are increased from year to year – for example, in the 4$^{th}$ year the student does an individual practice. He/she teaches autonomously under the supervision of the mentor for four weeks and participates in all activities at the primary school for the duration of the practice (Valenčič Zuljan, 2011).

### 5.2.4 Transition to employment and the first job

#### *5.2.4.1 Transition to employment*

In the field of education there are quite notable differences among the countries in terms of graduates' search duration for their current job. The average search duration among DEHEMS countries is 3.6 months, which is a little less than the average search duration across all domains. However, inside the field Germany is far below the average where graduates search for a job on average for only 1.1 months. On the other side, graduates in Turkey are searching for their job for far longer, namely for 7.3 months. In Germany and Slovenia graduates of the education field are searching for their job for almost half the time than in other fields.

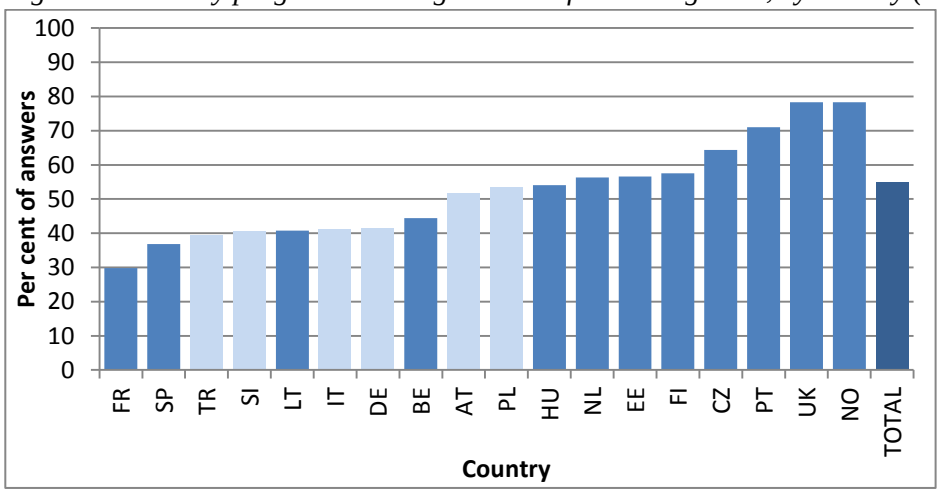
*Table 5.18: Search duration of graduates in the field of education and teaching studies*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (months)** | 3.6 | 2.2 | 1.1 | 2.9 | 2.1 | 3.1 | 7.3 | 2.7 | 3.0 |
| **SD** | 6.2 | 3.1 | 1.8 | 5.2 | 2.8 | 3.5 | 10.0 | 5.9 | 6.0 |
| **Education/All domains** | | | | | | | | | |
| **Mean (ratio)** | 0.916 | 0.974 | 0.517 | 0.919 | 1.062 | 0.647 | 0.896 | 1.026 | 0.968 |
| **SD** | 0.899 | 0.857 | 0.407 | 0.835 | 1.172 | 0.531 | 0.992 | 1.166 | 1.054 |

Source: Own elaboration based on REFLEX/HEGESCO data.
Note: Search duration was calculated on the basis of the question "How many months did you search before you obtained this employment (after graduation)?" from REFLEX/HEGESCO questionnaire. Mean is an average of months, SD is standard deviation.

Next, Figure 5.17 shows those responses of graduates who answered that their study programme was a good basis for starting work. The highest shares here are seen in Norway and the United Kingdom, but the DEHEMS countries are all on the left side of the graph. Half of the Polish and Austrian students reported that their study programme was sufficient for them to start with professional work and in the other countries only around one-third to 45% of graduates reported this.

*Figure 5.17: Study programme as a good basis for starting work, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question I1a (Hegesco), I1a (Reflex): To what extent has your study programme been a good basis for starting work? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

From the results of the question "To what extent has your study programme been a good basis for starting work?" we can see that across all domains it is a similar situation in the field of education where around 45% of graduates answered that their programme has been a good basis for starting work to a high or very high extent. Especially high percentages of such answers can be noted in Austria and other non-DEHEMS countries (51% and up). However, in Austria, Germany and Italy graduates of this domain less often see the programme as a good basis for starting work compared to all domains in the same three countries. The reverse situation is revealed in Slovenia, where graduates in field of education more often believe their programmes are a good basis for starting work than in other studied fields.

*Table 5.19: Study programme as a basis for starting work: education vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Education (%)** | 44.1 | 51.7 | 41.4 | 41 | 53.5 | 40.5 | 39.9 | 58.5 | 55.1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **All (%)** | 46.1 | 62.8 | 54.4 | 48.5 | 52.9 | 32.9 | 36.2 | 57 | 53.7 |
| **Education/All (ratio)** | 0.957 | 0.823 | 0.761 | 0.846 | 1.011 | 1.233 | 1.102 | 1.027 | 1.025 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Graduates from the education field most often find employment by contacting employers on their own, which is an especially popular method in Poland and Austria and not so much in Italy. Quite often they also use family, friends or acquaintances (most often in Italy and Turkey), an advertisement in a newspaper, or they are approached by an employer (most frequently in Slovenia and other non-DEHEMS countries) to get a job.

*Table 5.20*: *Graduates' ways of finding work in the field of education*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| Through an advertisement in newspaper | 10,3 | 12,7 | 8,3 | 11,1 | 4,5 | 10,6 | 11,4 | 15,2 | 14 |
| Through a public empl. ag. | 8,9 | 2,8 | 1,9 | 2,8 | 10,7 | 10,3 | 17,1 | 4,7 | 5,7 |
| Through a private empl. ag. | 0,8 | 1,9 | 0 | 1,4 | 0 | 0,3 | 1,4 | 2 | 1,7 |
| Through the Internet | 3,9 | 2,8 | 6,5 | 2,8 | 10,7 | 0,5 | 6,6 | 4,8 | 4,6 |
| Contacted employer on own initiative | 30,3 | 41 | 23,2 | 15,3 | 50 | 28,6 | 20,9 | 25,9 | 27 |
| Approached by an employer | 10,3 | 8 | 5,6 | 8,3 | 4,5 | 16,7 | 7,6 | 14,1 | 13,2 |
| Through a work placement during higher education | 4,7 | 6,6 | 4,6 | 2,8 | 4,5 | 5,8 | 1,4 | 8,2 | 7,4 |
| Through family, friends or acquaintances | 15,4 | 9 | 6,5 | 22,2 | 14,3 | 14,3 | 26,5 | 15,1 | 15,2 |
| With the help of the higher education institution | 2,7 | 2,8 | 5,6 | 0 | 0,9 | 1,9 | 4,3 | 2,7 | 2,7 |
| Set up my own business | 0,9 | 0,9 | 0 | 5,6 | 0 | 0,5 | 1 | 1,2 | 1,1 |
| Other | 9,6 | 7,6 | 38 | 27,8 | 0 | 6,4 | 1,9 | 5,6 | 6,6 |
| Through previous work | 2,2 | 3,8 | 0 | 0 | 0 | 4,2 | 0 | 0,5 | 0,9 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Education/All domains** | | | | | | | | | |
| Through an advertisement in a newspaper | 0,867 | 0,755 | 0,620 | 1,569 | 0,398 | 0,818 | 0,937 | 1,068 | 1,035 |
| Through a public empl. ag. | 2,158 | 2,378 | 0,651 | 1,433 | 1,227 | 1,402 | 4,171 | 1,038 | 1,299 |
| Through a private empl. ag. | 0,562 | 1,380 | 0,000 | 0,498 | 0,000 | 0,356 | 0,835 | 0,422 | 0,455 |
| Through the Internet | 0,557 | 0,547 | 0,836 | 0,632 | 0,984 | 0,327 | 0,392 | 0,597 | 0,592 |
| Contacted an employer on own initiative | 1,357 | 1,594 | 1,007 | 0,750 | 1,365 | 1,181 | 1,677 | 1,280 | 1,294 |
| Approached by an employer | 0,964 | 0,608 | 0,501 | 0,771 | 1,062 | 1,299 | 0,883 | 1,346 | 1,250 |
| Through a work placement during higher education | 0,789 | 0,854 | 0,539 | 0,553 | 1,183 | 0,826 | 0,467 | 0,816 | 0,834 |
| Through family, friends or acquaintances | 0,771 | 0,661 | 0,697 | 0,954 | 0,737 | 0,847 | 0,797 | 0,976 | 0,902 |
| With the help of the higher education institution | 0,521 | 0,458 | 1,536 | 0,000 | 0,359 | 0,685 | 0,910 | 0,488 | 0,499 |
| Set up my own business | 0,312 | 0,272 | 0,000 | 1,114 | 0,000 | 0,353 | 0,452 | 0,789 | 0,582 |
| Other | 1,338 | 2,013 | 2,306 | 2,750 | 0,000 | 0,808 | 1,810 | 1,165 | 1,191 |
| Through previous work | 1,618 | 2,118 | - | 0,000 | 0,000 | 0,972 | - | 1,146 | 1,271 |
| Total | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Note: Each number in the top part of the table shows share of a given way of finding job in the population of graduates in employment – they sum up to 100. In the bottom part is a ratio of a share for business to the general population showing specifics of channels of finding job for business domain graduates.

If we compare the ways of finding employment in the field of education with other domains, we can note that public employment agencies (except Germany) and being contacted by an employer (except in Italy) are more frequent ways of finding employment in this field than across all domains. On the other hand,

graduates of the education domain less often find a job by setting up their own business (except Italy); with the help of the HEI (except Germany); through the Internet and through private employment agencies (except Austria) than graduates across all the domains.

#### *5.2.4.2 Certification*

Teacher education is strongly regulated in most EU member states, and internal regulations may not always be fully in tune with other regulations influencing higher education. Today in Europe all secondary school teachers, almost all primary school and many pre-school teachers are educated to the first-degree level or equivalent. In many if not in most countries, the curricular components and standards of achievement follow national guidelines set by ministries of education or professional bodies such as teaching councils, lending a degree of homogeneity to programmes (Tuning Project 21).

*Austria:* Most jobs in the teaching sector are located in the public sector (BMWF 2010, 872). Other employers like private schools only play a minor role in the professional domain of education and teaching studies. Unsurprisingly, the state as an employer has an impact on the content and structure of this domain. The Federal Minister for Women and Civil Service, organised within the Austrian Federal Chancellery, thus represents the state as an outside stakeholder. Whereas the Austrian Federal Ministry for Education, Arts and Culture as well as the Austrian Federal Ministry for Science and Research assume the state's responsibilities from within, i.e. as the superior body of the HEI concerned with the education of teachers. Due to the relatively large institutional autonomy of public universities, the state's influence on the curriculum design of all studies there – hence also on teaching studies – can be considered negligible. However, the state has still not withdrawn completely as a share of government representatives is compulsory on many important boards and committees. Further, the practical training period is a compulsory feature of all teaching studies and, as the dominant employer in this field, the state's interests can hardly be ignored. Apart from that, the autonomy mentioned above mainly applies to public universities and their teaching studies. Curricula at universities of education are regulated on a national basis in a tighter way.[40]

*Germany*: The German state is a major player in teacher education. It is not only the main employer of public school teachers (only 6% of German schools were private in 2006), but it has also a strong influence on teacher education. Before the Bologna reform, all teacher education students needed to pass two state exams; the first at the end of their university studies and the second at the end of the "Referendariat – practical training period". Both state exams are organised and conducted by state authorities (Staatliche Prüfungsämter oder -kommissionen der Länder) and NOT by the university itself. Currently (2010), this procedure is in the process of change. As a consequence of the Bologna reform, the master's degree will replace the state exam. The influence of the university on the kind, content and procedure of exams will thereby increase. Still, it is planned that the state will define the criteria for this degree and will also only accredit each exam after a formal examination.

Before the Bologna reform, the federal ministries of culture and education were other major players in the teacher education. They were the main regulator of the teacher education by defining the study and exam-

[40] Teaching in Austria's primary schools and lower secondary schools (ISCED levels 1 and 2) is generally performed by bachelor graduates from universities of education, whereas graduates from teaching studies at public universities cover the later part of secondary education (ISCED levels 3 and 4A ([BMUKK 2009 ,882]). Also, most graduates choose to pursue a career in accordance with their study field, i.e. they become teachers in primary and secondary education ([BMWF 2010, 872]).
So, although employers have a very distinct group to recruit their personnel from and graduates have in the past shown a clear preference for their occupation,there is no standardised transition process from education studies to the labour market.

ination regulation. Since 2006, these regulations have been replaced by centrally defined standards of teacher education. In contrast to the former study and examination regulation, these standards are output-oriented. They define the main educational goals and occupation-related competencies which each student should acquire during study. The standards form the core curriculum which is the basis for the individual curriculum of each university. The fulfilment of the standards shall be controlled by accreditation agencies.[41]

The transition process for teaching education graduates is strictly state-regulated. The university education finishes with the first state exam. Afterwards, graduates apply (at central offices of the federal states) for their "student teaching/teacher training" (Referendariat) period. This period takes between 18 to 24 months depending on the federal state involved. The graduates have during this period the status of a "civil servant on probation" (Beamter auf Widerruf). In the first two months of this period, graduates follow one or several teachers in their lessons (sitting and listening) and also take their own lessons (teaching experience) later on, involving up to 17 school-hours (namely, 45 minutes) a week. The teaching experience splits into lessons in which the regular teacher sits in the background and evaluates the lesson afterwards (informally, no exam). These lessons are called "Ausbildungsunterrricht" – training lessons). Finally, the graduate has to prepare and teach lessons on their own (including preparing the tests, speaking with the parents etc.) – the so-called "eigenständiger Unterricht" (independent lessons).[42]

*Slovenia:* The state is the main stakeholder in this professional domain and plays a double role: as a main employer of graduates and as a governor regulating this profession. After completing a study programme, teachers must pass the State Teacher Certification Examination which is taken before the National Examination Board for professional competency examinations in the field of education and appointed by the Ministry of Education (Valenčič Zuljan et al. 2011). The transition from higher education to one's job position is defined by national legislation. Candidates for job positions in the educational field need to fulfil three requirements: knowledge of the Slovenian language, an appropriate level and direction of education (defined by the Ministry of Education) and a professional exam. If candidates do not have the appropriate pedagogic knowledge, they have to enrol in a study programme/training course for providing pedagogic/andragogic education for professionals in primary and secondary schools as provided by the faculties of education or faculties of arts. After a 6-month training period in an educational institution, trainees need to pass a professional exam in the field of education which is regulated by the Ministry of Education. After completing the appropriate field of study and passing the professional exam, students can obtain a fixed-term or unlimited term contract in educational institutions.

*Turkey*: Teacher training programmes are centrally developed and implemented in all Turkish Universities. In every five-year period, the deans of the faculties offering teacher education programmes establish a

[41] The standards were defined by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (abbr.: Kultusministerkonferenz - KMK) which unites the ministers and senators of the federal states ("Länder") responsible for education, higher education and research as well as cultural affairs. It is based on an agreement between the Länder.

[42] Additionally, they are part of an accompanying seminar program (normally in three subjects: pedagogy and subject-related didactics in both teaching subjects) as well as school-relevant knowledge (like school-law etc.). The Referendariat ("student teacher training") finishes with the second state exams. The graduates (or "Referendare") have to hold one lesson in each subject which are evaluated, hand in one written thesis and have to pass one oral exam. The successful second state exam allows to apply for teaching positions at German schools. The purpose of the "Referendariat" is to impart teacher relevant competences: stress resistance, planning competence as well as competences necessary to develop, plan and teach good lessons.
In the frame of the Bologna process, it is planned (and partly already done) to replace the state exam by exams which are organized and conducted by the university parallel to the study program - according to state-regulations. Additionally, the introduction of the master degree will shorten the "Referendariat" to 12 - 18 months.

working group for reviewing curriculum development studies of the teacher training programmes. Teacher training programmes are modified according to changes in the education policy and strategy of the country in relation to new global demands. After the approval of programmes by the Council of Higher Education (CoHE), the programme implementation begins in the related departments. At the undergraduate level, 80% of the courses in the programme are core courses (required courses) while 20% of the courses in the programme are elective. The latter courses are decided on by the departments themselves according to their departmental mission and vision which is defined in accordance with local needs.43 No additional elements/exams/working periods are required to become a full member of the profession. Graduates of this domain may begin to work in governmental or private institutions directly.

*Poland:* The state is the main and most important stakeholder in the domain of teaching and education. The Ministry of Education coordinates implementation of the National Qualifications Framework, while the Ministry of Science and Higher Education sets the minimum content of the curricula in all disciplines taught in HEIs. In the field of education and teaching, a special role is played by the Teachers' Charter – a legal act defining the rights and duties of teaching personnel working in the national education system, which covers matters such as the terms of remuneration, working time, promotion and retirement benefits. Trade unions might be perceived as another important player since they regard the Teachers' Charter as essentially a multi-employer collective agreement for the profession, and are therefore involved in the consulting stage of legislation process. The most important rules are stated in the Teachers' Charter (*Karta Nauczyciela*) and in the Ministry's regulation on professional advancement. The Teachers' Charter (*Karta Nauczyciela*) is a statute regulating the rights and duties of all teaching personnel employed in the Polish education system, covering:

- the duties of teachers;
- the required qualifications;
- professional advancement (promotion) paths;
- rules governing the establishment, amendment and termination of the employment relationship;
- pay and employment terms;
- the scope of social benefits and vacation/leave entitlements;
- conditions for continued professional development;
- additional healthcare benefits; and
- retirement entitlements.

#### *5.2.4.3 Characteristics of jobs*

In most cases, the occupation of graduates from the field of education is a teaching professional, with a high percentage of 73.2% (the highest is in Slovenia 84% and the lowest is in Turkey and Italy with around 60%). Graduates of DEHEMS countries also work as other professionals (8%), especially in Aus-

[43] Turkish higher education had already a three cycle degree (bachelor, master and doctoral) structure before Bologna Process and no change has been made according to Bologna; thus Turkish higher education system had no transition process. The duration of bachelor degree (first cycle) was four years and this duration is preserved. The duration of masters programs was 2 years (with thesis) and remained same.
In teacher training programs all undergraduate programs has four year duration except Education in Natural Sciences and Education in Social Sciences programs which are five year programs. The graduates of these five year programs gain MSc or MA degree. This structure was also present before the Bologna. So there is also no transition process in Turkey in the field of teacher training education.
The duration of doctoral programs was four years and this is also the same at the moment. There is no work done to change this structure.

tria and Germany (17%), but not so often in Turkey (just 0.5%). Other occupations are more country-specific as can be seen in the table: other associated professionals in Italy and Turkey, teaching associated professional in Italy, Slovenia and other countries and corporate managers in Turkey and Italy.

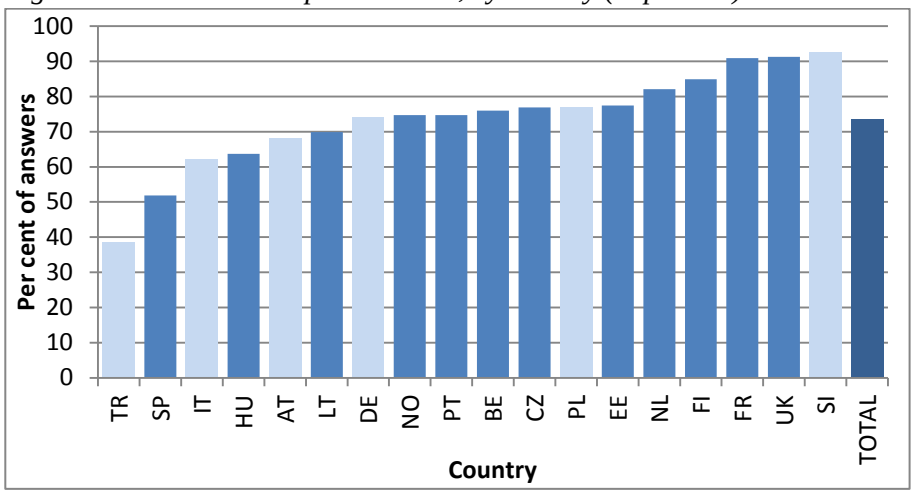
*Table 5.21*: *Occupations of education graduates (in percent)*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| Teaching professionals | 73.2 | 74.9 | 67.6 | 60.8 | 70.1 | 84.2 | 61.8 | 56.5 | 60.7 |
| Other professionals | 8.0 | 16.6 | 17.1 | 8.9 | 11.1 | 3.5 | 0.5 | 4.6 | 5.5 |
| Other associated professionals | 4.8 | 3.1 | 0.9 | 6.3 | 11.1 | 2.4 | 8.6 | 6.1 | 5.8 |
| Teaching associate professionals | 3.0 | 0.0 | 3.6 | 8.9 | 0.0 | 6.2 | 0.0 | 16.1 | 12.9 |
| Corporate managers | 2.1 | 0.5 | 0.9 | 2.5 | 1.7 | 0.5 | 7.3 | 1.3 | 1.5 |
| Office clerks | 1.6 | 0.9 | 3.6 | 5.1 | 0.9 | 1.6 | 0.5 | 2.8 | 2.5 |
| Physical, mathematical and engineering science professionals | 1.1 | 0.5 | 2.7 | 1.3 | 0.0 | 0.3 | 2.7 | 1.1 | 1.1 |
| Managers of small enterprises | 1.0 | 0.5 | 0.9 | 0.0 | 0.0 | 0.0 | 4.1 | 1.0 | 1.0 |
| Physical and engineering science associate professionals | 1.0 | 0.0 | 0.9 | 0.0 | 0.0 | 0.5 | 3.6 | 0.6 | 0.7 |
| Personal and protective services professionals | 1.0 | 0.0 | 0.9 | 1.3 | 3.4 | 0.0 | 2.3 | 2.1 | 1.9 |
| Life science and health professionals | 0.7 | 2.2 | 0.0 | 1.3 | 0.9 | 0.0 | 0.5 | 0.4 | 0.5 |
| Life science and health associate professionals | 0.7 | 0.5 | 0.0 | 1.3 | 0.0 | 0.0 | 2.7 | 1.1 | 1.0 |
| Customer services clerk | 0.4 | 0.5 | 0.0 | 1.3 | 0.0 | 0.0 | 0.9 | 1.2 | 1.0 |
| Other | 1.4 | 0.0 | 0.9 | 1.3 | 0.9 | 0.8 | 4.5 | 4.8 | 3.9 |
| Total | 10 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Own elaboration based on REFLEX/HEGESCO data.

As the next figure shows, over 90% of graduates from the professional field of teaching and education studies in Slovenia reported they are employed in the public sector. This can be explained by the fact that most schools in Slovenia are part of the public sector. Yet there is a different picture in Turkey where one-third of teachers are employed in the public sector, and others in the private sector.

*Figure 5.18: Work in the public sector, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question G3 (Hegesco), G3 (Reflex): Do you work in the public or private sector? – "Public sector" responses.

Table 5.22 indicates that most graduates (59%) in education field signed a fixed-term contract for their first job, which is 28% more for fixed-term employment than in other domains. In Germany, Poland and Slovenia, these figures are even higher than 70%, while in Italy and Turkey we note the reverse situation where graduates more often sign a time-unlimited contract.

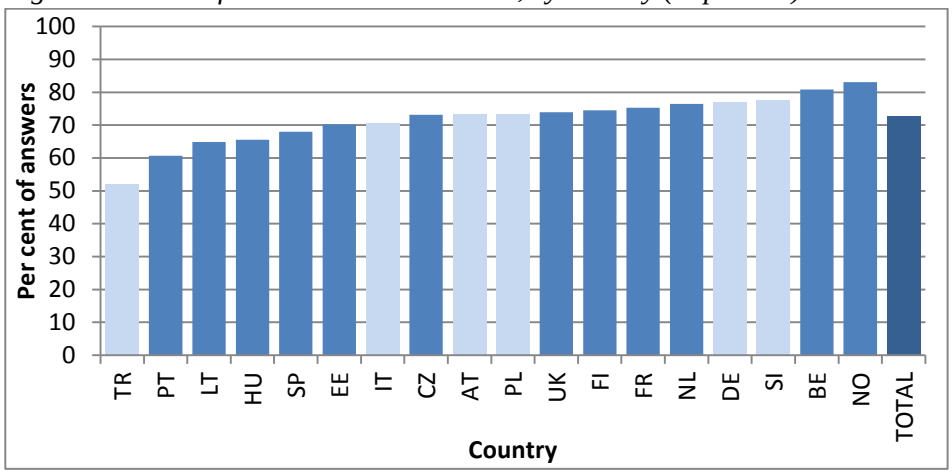
*Table 5.22*: *Type of contract in the first job: education vs. all domains*

| **Education (%)** | | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Unlimited** | 36.4 | 41.3 | 28 | 50.7 | 21.9 | 26.3 | 56.5 | 44 | 42 |
| | **Fixed-term** | 59.3 | 58.2 | 72 | 46.4 | 74.6 | 70.3 | 31 | 51.7 | 53.6 |
| | **Other** | 4.3 | 0.5 | 0 | 2.9 | 3.5 | 3.5 | 12.5 | 4.4 | 4.4 |
| **Education/All (ratio)** | **Unlimited** | 0.762 | 0.686 | 0.549 | 1.526 | 0.660 | 0.619 | 0.839 | 0.872 | 0.847 |
| | **Fixed-term** | 1.280 | 1.500 | 1.482 | 0.769 | 1.181 | 1.407 | 1.527 | 1.160 | 1.189 |
| | **Other** | 0.732 | 0.505 | 0.000 | 0.451 | 0.956 | 0.452 | 1.010 | 0.869 | 0.823 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Figure 5.20 shows how satisfied graduates are with their current work. According to an OECD study (2005), teachers express concerns about the effects of high workloads, stress and poor working environments on job satisfaction and teaching effectiveness.

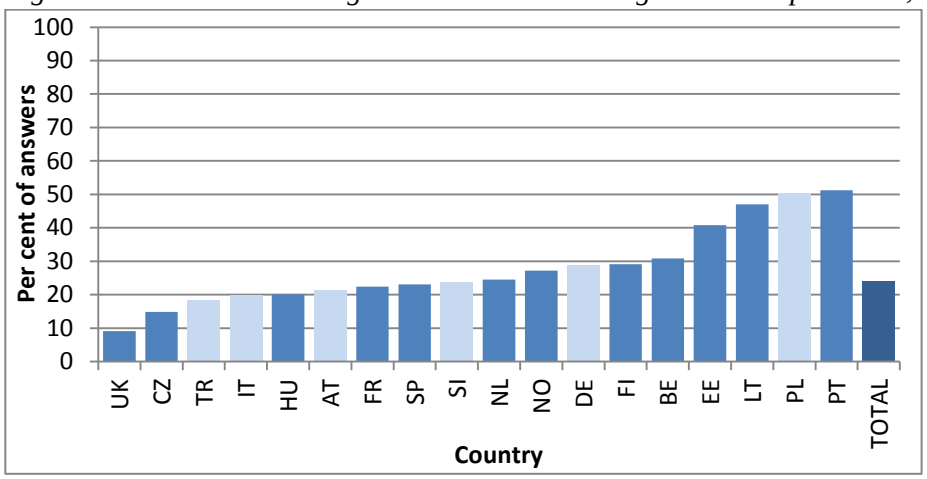
*Figure 5.19: Satisfaction with current work, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question F13 (Hegesco), F13 (Reflex): How satisfied are you with your current work? Responses 4 and 5 on a scale of answers from 1 = "Very dissatisfied" to 5 = "Very satisfied".

In all countries, over 50% of graduates reported they are satisfied with their current work. These shares are the highest in Slovenia and in Germany, and the lowest in Turkey.
The OECD study (2005) reports that almost all countries report concerns about 'qualitative' shortfalls: whether enough teachers have the knowledge and skills to meet school needs. The figure below shows the percentages of those graduates who reported their work is more demanding than the knowledge and skills they possess, meaning there are some deficiencies. One-half of the Polish graduates reported their work is more demanding than their knowledge, while other countries' figures range around 20%.

*Figure 5.20: More demanding work than the knowledge and skills possessed, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question F12 (Hegesco), F12 (Reflex): To what extent does your current work demand more knowledge and skills than you can actually offer? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

When we look at how much graduates utilise the knowledge and skills they gained through the programme in their current work, we see there is a slight difference between graduates of the education field and other domains. Graduates of this field utilise knowledge and skills almost 8 % more than graduates from all domains. However, such utilisation is low in Poland at 60.7%, which is also lower compared to all domains in this country.

*Table 5.23*: *Utilised knowledge and skills in current work: education vs. all domains*

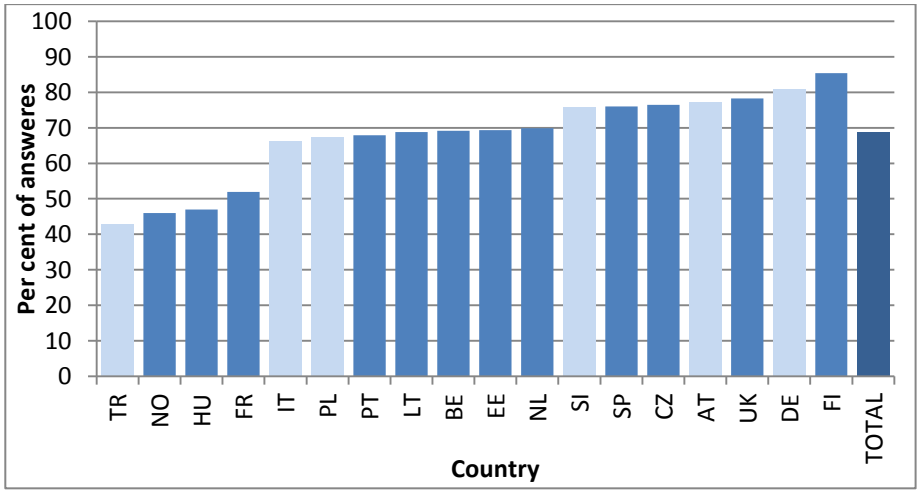
| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Education (%)** | 76.5 | 75.5 | 69.8 | 68.2 | 60.7 | 73.4 | 70.2 | 66.9 | 67.9 |
| **All (%)** | 70.9 | 75.1 | 72.7 | 69.4 | 66.8 | 71.6 | 69.2 | 70.2 | 70.4 |
| **Education/All (ratio)** | 1.080 | 1.005 | 0.961 | 0.982 | 0.909 | 1.025 | 1.013 | 0.954 | 0.965 |

Source: Own elaboration based on REFLEX/HEGESCO data.

### 5.2.5 Lifelong Learning

Graduates in the HEGESCO and REFLEX databases reported whether they were included in follow-up training at their work. Over three-quarters of teaching and education studies graduates from Slovenia, Austria and Germany had taken a work-related training or course in the last year. But in Turkey less than 50% of graduates said they had obtained additional trainings or courses.

*Figure 5.21: Following any work-related training/course in the past 12 months, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.

Question F14 (Hegesco), F14 (Reflex): Did you take any work-related training/course in the past 12 months? "Yes" responses on a scale of answers"yes" and "no".

*Table 5.24: Work-related training/course in the past 12 months in the first job: education vs. domain*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Education (%)** | 69 | 77.1 | 80.8 | 66.2 | 67.4 | 75.9 | 43 | 68.4 | 68.6 |
| **All (%)** | 60.3 | 68.9 | 65.8 | 48.4 | 67.7 | 68.4 | 48.3 | 65.1 | 63.6 |
| **Education/All (ratio)** | 1.144 | 1.120 | 1.228 | 1.368 | 0.996 | 1.111 | 0.891 | 1.052 | 1.077 |

Source: Own elaboration based on REFLEX/HEGESCO data.

69% of graduates stated that they had work-related training in the past 12 months in their first job. The highest result is in Germany, Austria and Slovenia (above 75%) and the lowest in Turkey with only 43% of graduates who had work-related training in the past 12 months. Comparing the results of this field with the results across all domains, we can see that in the field of education graduates more often have training than in other domains.

As shown by Table 5.25, half (51%) of the interviewed graduates of the education domain perceive the programme as a good basis for further learning on the job, and this result is comparable across domains with an average of 50%. The highest share of business and economics graduates believing the programme is a good basis for further learning on the job is noted in Poland (64%) and the lowest is in Turkey (37%).

*Table 5.25: Study programme as a good basis for further learning on the job: education vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Education (%)** | 51.5 | 56.5 | 46 | 47.6 | 64.3 | 50.5 | 44 | 57.6 | 56.1 |
| **All (%)** | 50.5 | 55.6 | 49.3 | 52.1 | 64.3 | 49.2 | 37.5 | 59.2 | 56.6 |
| **Education/All (ratio)** | 1.018 | 1.017 | 0.933 | 0.914 | 1.001 | 1.027 | 1.173 | 0.974 | 0.991 |

Source: Own elaboration based on REFLEX/HEGESCO data.

#### *5.2.5.1 National characteristics of lifelong learning*

In *Germany*, lifelong learning courses are offered in all federal states – mostly coordinated by central state-owned institutes[44] for teacher education. But private providers and universities are also offering courses. Until the end of the last century, teachers were strongly encouraged to participate in lifelong learning but there was no legal obligation to do so. Still, teachers could (and still can) take days off for course participation or there are 'Lifelong learning' days in which all teachers participate in a course and the school is closed. Since the 'PISA shock', more federal states have introduced a mandatory training system for teachers. In Hessia and Bavaria, for example, every teacher has to collect a certain number of credit points (in a given time period) in order to fulfil the legal requirements for lifelong learning. In the other federal states, the school leaders are responsible for the further training of their teachers. As the schools are regularly evaluated, the school leaders are 'controlled' regarding this activity. The first three or four years as young teachers (introductory years) are a particular focus of training course providers. In these years, specific courses are offered targeted at this group. School leaders are in particular encouraged to send their 'beginning teachers' to these courses.

*The Austrian* Federal Ministry for Education, Arts and Culture suggests continuing education to regularly renew teachers' knowledge and it also offers them a variety of courses and further education.

*In Slovenia*, the lifelong learning process is regulated by the Ministry of Education under the rules on the in-service training of educational professionals and their amendments. Teachers can participate in in-service training right after they have completed undergraduate education in programmes of professional education that are published within the selection of programmes of further education and training. There are also other programmes for teachers who wish to gain new knowledge: thematic conferences, study groups, professional staff networks etc. These programmes are offered by the faculties themselves as well as other institutions: the national education institute, the national institute for vocational education and training etc. (Valenčič Zuljan, 2011, 312).

Lifelong learning is also important in *Turkey*. The Turkish National Education Ministry is the official actor of the lifelong learning process. The National Education Ministry is the executive of the SVET (Strengthening the Vocational Education and Training System in Turkey) project. The Turkish Ministry of National Education developed and changed all pre, primary, secondary school curricula to student-centred

[44] Staatliche Akademien, Landesinstitute oder wissenschaftliche Institute für Lehrerfortbildung

learning. The other official actors of lifelong learning are the Council of Higher Education, the Turkey Statistics Agency, the Ministry of Labour and Social Security, the Social Services and Child Protection Agency, the Turkey Businessmen Organisation, the Institution of Vocational Qualifications. The Turkey Lifelong Learning Strategy Document, which is prepared with contributions from the official actors mentioned above, was approved by High Planning Council Decision No: 2009/21 on 5 June 2009. This document codifies the rules on lifelong learning on a legal basis. The universities themselves also take into consideration lifelong learning and try to review their curricula according to its demands. The Turkish Higher Education Council, the autonomous body responsible for the governance of Turkish higher education, strongly supports lifelong learning and calls on universities to develop their curricula to allow their graduates to be prepared for lifelong learning.

In Poland the Ministry of Education's regulations on professional advancement require a trainee teacher to submit to the school director their own professional development plan within 20 days of the date of commencing classes. The school director approves the teacher's professional development plan within 30 days of the date of start of classes or returns it to the teacher indicating any necessary changes. The teacher is obliged to immediately improve the plan for professional development in accordance with the recommendations of the school and re-submit the plan to the school director. Within 30 days of the date of completion of the internship, the teacher shall present a report on realisation of the professional development plan to the school director. The mentor of the trainee teacher presents an assessment of the teacher's professional achievements for the period of training within 14 days of completing the training to the school director.

Requirements for obtaining the position of a contract teacher: knowledge of the organisation, tasks and rules of the school where the teacher training takes place; the ability to teach in a way that ensures proper implementation of the statutory objectives of the school where the teacher training takes place; recognition of the pupils' environment, their problems and the ability to work with the community of pupils; and the ability to discuss, run and observe classes.

Requirements for obtaining the position of a tenured teacher: the ability to organise and master the relevant professional skills, to evaluate one's own activities, as well as to assess their effectiveness and make changes to those activities; the ability to include the developmental needs of the pupils, local environment issues, and contemporary social and cultural problems; the ability to use information and communication technology (ICT) tools; the ability to apply the knowledge of psychology, pedagogy and didactics and general issues of education, social assistance or proceedings in juvenile cases, to resolve problems related to the scope of tasks performed by the teacher; and the ability to use the provisions on the education system, social assistance or proceedings in juvenile cases in the functioning of the school where the teacher had an internship.

Requirements for to obtaining the position of certified teacher: to obtain positive results in teaching, education or care due to the implementation of measures aimed at improving their own professional skills and the quality of the school's functioning; practical use of ICT; the ability to share knowledge and experience with other teachers, including the conduct of open classes, particularly with teachers and trainee teachers, contractors, conducting classes with teachers in intraschool training or other activities; the implementation of at least three of the following tasks: a) development and implementation of a teaching, educational activity or other programme related respectively to education, social assistance or proceedings in juvenile cases; b) performing the tasks of a methodological adviser, examination commission member, an expert of the selection or examination committee for teachers applying for qualifications of professional advancement, expert for teaching curricula, education curricula, textbooks and teaching aids and, for the case

of teachers at art schools, also a consultant working with the Centre for Arts Education; c) expand the scope of school activities, in particular the tasks of teaching, educational or care; d) the acquisition of skills in foreign languages at an advanced level and, in the case of foreign language teachers, to obtain skills in a second foreign language at an advanced level; e) to perform tasks for education, social assistance or proceedings in juvenile cases in collaboration with others, local governments or other actors; and f) the acquisition of other significant achievements in their work; and the ability to identify and solve teaching, educational and other problems with special attention to the specificity of the type and kind of school where the teacher is employed.

### 5.2.6 Higher education management perspectives on graduates' professional careers – synthesis of the DEHEMS interviews

#### *5.2.6.1 Understanding career success*

The analysis of the answers collected among DEHEMS countries allows us to say that representatives mostly share the understanding of career success as a smooth transition into the labour market (finding a job), equipped with the competencies needed for quality teaching and job satisfaction.

***Finding a matching job is the most important career success characteristic***

The most common answer was that career success for graduates already comes when they find a (first) job because, according to the interviewees in most of these countries (except Austria), there are too many teachers and it is very hard for them to find employment. In Germany, one interviewee said: *"…professional success means that graduates find a first job in a school and 'survive' the provisional training period for teachers (Referendariat)…"*.

In some countries, the interviewees are more specific and define success as finding a well-paid job. E.g. *"The career success of a graduate from the education faculty is to be employed in their own field and, of course, to earn enough money" (TR)* or a Polish example: *"…getting a well-paid job, after not too long a period of job searching"*. Based on these answers, to be successful in their career graduates need to find a job, however we can develop this further because some informants added that besides finding a job graduates should also be good at and satisfied with it.

***Developed competencies in quality teaching and lifelong learning***

That career success involves being a good teacher, or providing quality teaching in one's job was mentioned quite often by the interviewees. It was mentioned in Turkey: *"If they will be a good teacher in the long term this will be their career success"*. Also in Slovenia, *"…it is important that a teacher performs quality work…"* as well as in Germany, *"A graduate must be a good teacher"* and Austria, *"The ideal graduate should provide the best possible teaching quality…"*.

Other representatives made a connection between career success and the acquisition of general or key competencies which equip them to be "good teachers". This was mentioned by one interviewee in Turkey: *"A professional career is mostly related with the personality or key competencies of graduates"*; also in Slovenia, *"A graduate is successful when one is able to work with children – this also includes teamwork, work with parents – they have broad knowledge and are prepared for lifelong learning"*; and Germany, *"… basic pedagogical content knowledge, basic knowledge of pedagogy and psychology, the capability to prepare and plan lessons and to implement strategies and measures that help identify the learning progress of pupils and, last but not least, the motivation to undertake further education"*.

As seen in the above citations, the interviewees claim that career success is also influenced by how much students are prepared and motivated for lifelong learning. Italian and Polish interviewees also mentioned this: *"Labour market success is the ability to adapt to changing opportunities and challenges, lifelong learning" (PL).* We can conclude that, in order to be successful in their careers, graduates need to find a job which they will be satisfied with and do well at, but to be good teachers they also need to have well-developed key competencies and be prepared for lifelong learning, i.e. on-going education.

***Job satisfaction***

But not only finding is a job is already seen as success since some interviewees also connected career success with job satisfaction, which was explained as influencing their performance. Job satisfaction was mentioned by German and Polish interviewees: *"…that graduates are successful and happy in their job" (DE).*

#### *5.2.6.2 Academics' knowledge about their graduates' careers*

Most interviewees said that they do not have a formal and structured way of tracking graduates' professional pathways, although they do stay in touch with them through mentorships, alumni events, meetings and similar. They therefore do get some feedback about how their graduates are progressing in their careers but nothing by way of proper statistics. Italian HEIs participate in the national *AlmaLaurea* programme that has been developed to keep track of graduates and their careers.

Some interviewees (Poland, Italy, Turkey, Austria) also mentioned that there are career centres at their institutions which provide different services for their graduates: *"The HEI is very active in the area of assisting its graduates with job searching, job counselling and building skills and qualifications during the transition from education to the labour market, with the Academic Career Centre being a central institution realising policy in this area" (PL). "Our Career Centre offers seminars right after graduation to help students with their transition to a job" (AT).*

It is common in all countries that the largest share of graduates works as a teacher in both private and public institutions. Many graduates continue their education in postgraduate programmes because they believe this will help them find employment. The interviewees reported that a lot of graduates do not work in the field of their studies and that, beside teacher positions, they take up roles in: public administration, supervision, research, guidance, psychological services, curriculum development, testing and measurement of adult education, special education etc. Unlike others, Austrian graduates of teaching studies do not have problems finding a job as a teacher: *"Students who graduate to be teachers nowadays often have a job even before they graduate because of the shortage of teachers in Austria. Moreover, the transition to work is institutionalised and there is a defined contact (educational authority of the respective province)".*

Even though most institutions do not have in place the formal and structured tracking of graduates' professional pathways, we can conclude based on their assumptions and experience from informal interactions with graduates that still most graduates work as teachers in either the private or public sector.

#### *5.2.6.3 The role of HEIs in the future professional activities of graduates*

***Practical training is a major factor in preparing graduates for work***

Based on the interviewees' answers, we may conclude that in all DEHEMS countries programmes in the area of education include practical training, which has been recognised as very valuable and important for students to develop professional and soft skills. The practical training may occur in different forms throughout the countries, faculties and programmes. In Slovenia, practical training is part of curricula throughout the whole study duration (all five years), with students training at the same school/institution for all that time. Turkish practical training involves a placement in schools, laboratory hours and research studies. *"Teaching entails a combination of lectures, classes and practical work in modern laboratories with state-of-the-art workstations where a wide range of learning resources in print, recorded or electron-*

*ic form are used. Moreover, students are required to do practice teaching in schools as part of their training" (TR).*

In *Austria* practical courses are implemented in curricula as a mandatory internship. German curricula includes something similar to the Slovenian practical phases, which are completed after every phase of the study programme. Different phases characterise different parts, where the first one is a sort of orientation for students and the second covers technical didactics. Before students can start with practical school training phases, they need to do two placements – in a company and in a pedagogical institution.

Also in *Polish* curricula practical training has been gaining in importance. This is evident by the growth of the practical orientation of education. Some faculties have implemented new active approaches in teaching with tutoring, mentoring and coaching. *"Teaching methods include tutoring, mentoring and coaching, which enable students to have more personal contacts with professors. It is based on a direct meeting with the student tutor and results in a cooperative process aimed at the integral – including knowledge, skills and attitudes – development of the tutee" (PL).*

*Italian programmes* are no different as practical training is also included in curricula in terms of practical laboratories, internships and practices, involving workshops and seminars, however the interviewees highlighted that the extent of these activities is strongly connected to the budgetary limits. Therefore, in some faculties frontal lecturing is still the approach most often used.

The analysis shows that the visited institutions are following European trends in education, where practical training and the transition from content-centred to learner-centred curricula are seen as very important in order to develop future graduates' competencies that will help them in their transition to the labour market.

### *Empowering lifelong learning and soft skills*

It also evident from the interviews that developing competencies for lifelong learning along with professional competencies is rising in importance. Such observations were mentioned in Slovenia, Turkey and Poland, where they are not only encouraging lifelong learning but also preparing students for it through the curricula. *"The programme aims at students achieving competencies for lifelong learning, thus courses in the humanities and arts fields are also embedded within the programme" (TR).*

Another important recent change in teacher education programmes mentioned by the informants is the development of students' soft skills, which are seen as crucial for their careers and further education and development. This is mostly incorporated in practical training with the development of technical skills. In Germany, a day and a half long tutorial in psycho-social competencies is implemented where students are trained in how to work with people in different situations. As the whole education system in Europe is characterised by lifelong learning, it is also notable that the institutions in DEHEMS countries are shifting their programmes in that direction.

### *Supporting internationality*

The internationalisation of teachers education programmes is expanding in all DEHEMS countries, mostly through faculties' participation in Erasmus programmes and faculties' efforts to simplify credit transfers for exchange students. Very active in such programmes are Turkey, Italia and Slovenia for both outgoing and incoming sides, although the interviewees recognise there is still room to improve and extend internationalisation. Some Turkish faculties also have bilateral agreements with German faculties which run exchange programmes for students.

In countries such as Germany, Austria and Poland students are not that keen on participation in exchange programmes unless they will be teaching foreign languages. *"At this HEI, there is an aim that students who study languages should go abroad for a semester. For all other students of teaching studies, this field is underdeveloped" (DE).* Some Polish faculties are also weak on the incoming side because they do not offer many courses in English. A German informant believes that students from that country do not go abroad because their programmes include an international component in the form of actual international studies in school pedagogies. Therefore, students do not have a need to go abroad. However, the main tendency of the institution is to follow the internationalisation processes of education and programmes.

#### *Other issues: cooperation with stakeholders, career centres, research activities, and quality assurance*

The majority of the interviewees said they have good relationships with other stakeholders, although most of such co-operation is not formal. The educational institutions usually cooperate with other universities and faculties, employers (companies and schools) and chambers. Universities in *Turkey* have strong relations with business but also provide student clubs, career guidance meetings with companies and focus group discussions. They also have strong collaboration with the ministry, the Higher Education Council and other education faculties/universities.

In *Germany* information days for higher education and occupations (HOBIT) are organised every year where all higher education institutions, companies and other organisation take part. One Austrian university officially collaborates with the Viennese Chamber of Economy in order to arrange internships at good companies for students. In Italy some universities have formal co-operation in place with stakeholders with a signed agreement with employers for student work practices: *"At present, the university has signed 17,000 partnership agreements with different employers for student work practice. These agreements are signed with private or social employers as well as with the public administration" (IT).* Some Italian universities leave this matter to faculties, while others are part of the institutionalised stakeholder networks.

The interviews point to the bigger role of *career centres* at higher education institutions in *Austria* and *Poland*. Especially the Polish case is interesting where the career centre not only has the responsibility to provide career guidance and links between employers and students (through job fairs), but also arrange internships and prepare and deliver skill training sessions for students.

Most of interviewed institutions include students in research later in their studies, at the second and third levels (master's and PhD), whereas undergraduate students do not usually participate in research projects. Institutions from most DEHEMS countries conduct surveys among students about their satisfaction with the programmes and/or teachers as part of quality assurance. However, in some cases the results are more relevantly used than in others. In Austria, students are even involved in curricula development through the study commission. Yet this is only a formal involvement that carries no major influence.

### *5.2.6.4 Developmental needs*

Due to the differences in higher education systems, organisation, development and activities of teacher education programmes among the DEHEMS countries, the further development needs also vary. Some of them see needs in terms of curricula development, some in the extent of practical training in curricula and others in the transition of graduates from education to work. However, they also share some common needs such as developing better relations with stakeholders (employers, other universities and faculties,

students), strengthening the internationalisation of the teacher education programmes, developing educational activities in line with lifelong learning, increasing student-centred learning and others.

### *Strengthening relations with stakeholders*

Most interviewees stressed the constant need to develop better relationships with important stakeholders such as employers, other educational institutions and students themselves and alumni. Turkish institutions would like to extend the collaboration with employers and also with students and alumni. Polish respondents mentioned the lack of cooperation with local employers to gain quality apprenticeships and for the promotion of the faculties.

Italian institutions would like to improve the existing collaboration with employers by including them actively in courses of curricula and to extend the network to large organisations and institutions in order to achieve the greater internationalisation of the programmes. *"On top of existing contacts, the university should try to develop further reaching networks that would not look only at small-medium enterprises (a natural reference point for technical and scientific faculties), but also institutions, organisations and agencies interested in nurturing citizens knowledgeable of their role, respectful of diversity, open to the cultural contaminations that globalisation imposes on us, hence requiring us to be able to communicate with people from around the world" (IT).* Also some Austrian interviewees mentioned the need to develop better relationships with employers, universities and society in general.

### *Internationalisation of programmes*

In almost all DEHEMS countries the respondents mentioned the need to work on the internationalisation of their teacher education programmes. In Turkey they would like to avoid limitations on the internationalisation of learning such as credit transfers. Polish institutions need to deliver more courses in English and they believe this will help them achieve the greater internationalisation of their programmes. *"Internationalisation could be improved but this would require starting an English programme, which involves additional resources and some time" (PL). "Internationalisation is a field in this domain of teachers' education that is quite underdeveloped" (DE).*

Moreover, German and Austrian institutions believe there is a lot of space to improve in the area of the internationalisation of their programmes. They see one reason for the underdevelopment of the area in the cultural sovereignty of federal states since students basically stay in the same state where they studied.

### *Further development of practical work and problem-based learning*

Especially in Poland a stronger need for more practice-oriented curricula was noted, as one informant mentioned: "The labour market experience of graduates of this HEI seems to suggest that practical skills are highly evaluated by the employers". With the implementation of new approaches in didactics such as coaching, mentoring, tutoring, more workshops and a higher level of interdisciplinary skills, students will develop more practical and general skills which will make them more attractive to employers. In Germany they also see a high level of relevance in the development of future teachers' psycho-social competencies in order to develop high quality graduates.

Besides the need for more practice-oriented curricula in Poland, the need for relevant and quality apprenticeships for students was also highlighted. This would not only guarantee the development of good practical skills but also help in the process of graduates' transition to the labour market. Similarly, in Italy they believe that relevant student trainings and internships should and will be developed ("Training camps with

strong involvement of practitioners and companies will start next summer and shall be developed") in order to help improve graduates' transitions to work.

### *Autonomy within curricula for regular updating according to current student needs*

Quite often educational institutions believe they do not have enough freedom when it comes to developing curricula and such cases were also mentioned in the DEHEMS countries: Turkey, Poland and Italy. In Italy there is a need to update curricula according to actual student needs in terms of competencies and labour market demands. They also believe students should have a greater voice in the development process. A similar situation is found in Poland, where informants see a need for more space for the individualisation of studies and where students would also be able to compose their own study programme. *"More individualisation of studies is required. Students should have more freedom in composing their own study programmes. Currently the autonomy of the faculty is limited, but under the new Education Act more autonomy will be available and therefore changes will be made in this area" (PL).*

### *Lifelong learning has been stressed, especially in Turkey*

Particularly in Turkey there is a high level of awareness (mentioned by four out of six informants) of the need to bring education programmes in line with lifelong learning. This need was also mentioned by some Italian and Austrian informants who believe that in the future there should be a greater focus on lifelong learning in teacher education curricula.

### *Career counselling*

Apart from the most stressed needs for development in the area of relationships with stakeholders, developing the internationalisation of programmes, changing didactics, achieving higher autonomy within curricula development and adopting the lifelong learning approach, informants in some countries also mentioned a need to develop career counselling, teachers' competencies, to provide more practically-oriented curricula and for students to have relevant and quality apprenticeships.

Career counselling is seen as an important area that should be improves by Italian and Slovenia informants. An Italian respondent mentioned: *"There is a need for a centralised placement service that would help graduates in the start-up phase of their careers"*. A similar opinion was voiced by a vice-dean from Slovenia: *"Career counselling is also one of the important things they have to implement as part of the study process"*. In both countries, career counselling is seen as something that needs further development and better implementation in the study process so as to result in a smoother transition of graduates to the labour market and to help in balancing course designs and job market needs.

### 5.2.7 Conclusion

Study programmes from this professional field are mainly offered at public higher education institutions as the state plays a major role in education (also the large majority of graduates are employed in the public sector). Each DEHEMS country has some national particularities concerning its education system. Therefore, the education and teaching study programmes also differ from country to country, regarding their length, teaching and learning modes, practical training, certification etc. However, there is a tendency in all the countries to ensure the broadness of theoretical as well as practical training which plays a special role in this professional domain and it is an obligatory part of the curricula in all countries.

As can be seen from the national reports of the DEHEMS countries and the statistical overview, this profession is still highly feminised with a high proportion of women in primary education teaching studies, which is getting lower in secondary/vocational education teaching studies. The mobility of graduates from this professional field is the lowest compared to the mobility of graduates from other professional fields. Despite all of this, on average only one of two respondents from the DEHEMS countries reported that the study programme was a good basis for starting work, although on average three out of four of them are satisfied with their work. An important part of teaching includes lifelong learning that is usually provided by the state.

When we look at the analysis of the interviews conducted with different representatives of institutions providing teacher education programmes in DEHEMS countries, we see that most share a similar understanding of the career success of their graduates. The career success of teachers is first a matter of finding a job and then being good at their job, i.e. to be a good and qualitative teacher with well developed general competencies. Job satisfaction was also mentioned as one of the indicators of teachers' career success.

In almost all institutions, no formal and structured tracking of graduates' professional pathways is in place; therefore, most of their answers were based on their assumptions and experience from informal interactions with graduates. A lot of graduates continue their education due to the belief that this will help them find employment in the private or public sector. Even though most graduates work in their field as teachers, there is quite a large number of graduates who do not but instead take up roles in public administration, supervision, research, guidance, psychological services, curriculum development etc.

According to the answers, all education programmes include practical training, which has been growing in importance recently, and hence call for further development. Most respondents are aware that practical training provides students with opportunities to develop their professional and soft skills, which are the most valued and sought by employers. Next to practical training, the changes in didactics (workshops, seminars, coaching, mentoring, tutoring etc.) also have a big influence on the development of future teachers' competencies. However, in some countries they still see a need to further develop these areas, and to increase the extent of student-centred learning and practically-oriented curricula.

Most of the institutions are well aware of the importance of the internationalisation of their programmes and are actively participating in different international projects, programmes and forms of co-operation (mostly the Erasmus programme). They are also trying to support exchange programmes by simplifying credit transfer processes and the recognition of courses students have taken abroad and by offering their courses in English in order to make their programme more internationally relevant. However, they still see a lot of space and need to improve in the area, especially in Poland and Germany.

In some countries the informants also believe that their institutions are responsible for preparing their students for lifelong learning, which will only help them in becoming good teachers who will constantly develop themselves. Again this area was also mentioned as one that needs more focus and improvement in order to align their programmes with lifelong learning activities.

All institutions share the main strategic goal to develop good teachers and ensure they have a smooth transition from education to work. They are also very aware that in order to do so the crucial factors are good relationships and collaboration with stakeholders (employers, other universities, ministries, students and alumni) because that will provide them with possibilities for better apprenticeships/internships/practical training for students, possibilities to balance curricula content with labour market needs and students needs and to facilitate graduates' smoother transition to the job market.

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## 5.3 ENGINEERING

### 5.3.1 Introduction

Innovations in the field of engineering play a vital role for economic development and growth in the European Union. As outlined in the European Engineering Report 2010 provided by the Association of German Engineers (VDI), their role is twofold: "On the one hand, innovations are responsible for technical progress, which is a precondition of economic growth and prosperity. On the other hand, innovations improve a country's competitiveness in the global market, which also fosters growth" (VDI 2010). Willi Fuchs, Managing Director of the Association of German Engineers (VDI), describes the contribution of engineers to achieve the aims of Europe's 2020 strategy[45] as follows: "The Engineers' contribution to technological innovation applied in the market place is indispensable for achieving higher economic growth as well as for creating new jobs, securing clean energy supply, sustaining natural resources and tackling the challenges associated with climate change. Thus, they will play an important role in putting into practice all three priorities set out in the Europe 2020 strategy." [46]

This important contribution to economic growth and development expected from engineers is, however, dependent on a sound education via study programmes which are covering current needs and developments to be able work creatively on innovations. The European Commission clearly states that the appropriate education of engineers has to be ensured by the different countries: "At national level, Member States will need […] to ensure a sufficient supply of science, maths and engineering graduates and to focus school curricula on creativity, innovation, and entrepreneurship" (Com 2010). The VDI interprets this formulation as follows: "The 'Europe 2020 strategy' aims at turning Europe into a smart, sustainable and inclusive economy. Whether these objectives can be achieved will not least depend on the ability of the European countries to ensure that there is a sufficient number of well-qualified engineers to tackle important challenges" (VDI 2010).

The demand of both the European Commission and the European Engineering report therefore covers two major aspects: first, there is a call for the education of a sufficient *number* of engineers. At the same time, *innovation and creativity* and *a high level of qualification* to be able to deal with new challenges is seen as crucial.

The following chapter aims to provide an overview of the study conditions and provisions of engineers and their early career. For this, information on the socio-biographic background of students in the study fields of engineering in the DEHEMS countries will be described and analysed. Further, the study conditions and provisions in these countries will be compared. Another focus of the analysis is the transition to employment and the characteristics of the first job. At the end of this chapter the relationship between higher education and work will be studied[1]. The professional domain "Engineering" contains the following fields of study: *general engineering, mechanical engineering, mining, electrical engineering, chemical engineering, traffic/nautic engineering, manufacturing and processing and civil engineering*.

[45] The European Union (EU) has set five objectives on employment, innovation, education, social inclusion and climate/energy to be reached by 2020, the so-called "Europe 2020 strategy" which replaces the Lisbon Agenda. This strategy aims at turning Europe into a smart, sustainable and inclusive economy- See European Commission. COM(2010) 2020. COMMUNICATION FROM THE COMMISSION. EUROPE 2020 A strategy for smart, sustainable and inclusive growth, Brussels, 3.3.2010.

[46] Fuchs, Willi: „Preface of the European Engineering Report", in: Verein Deutscher Ingenieure e.V. in cooperation with Institut der deutschen Wirtschaft Köln (Ed.): European Engineering Report, April 2010, p. 1.

In the second part (4.3.6) of this report, altogether 37 interviewees from 17 higher education institutions) in six DEHEMS countries participated in 36 interviews[1]. The interviewees represent public and private higher education institutions that offer study programmes in different branches of engineering, such as electrical engineering, mechanical engineering, civil engineering, architectural engineering, chemical engineering and others. The range of participating higher education institutions differs from country to country: representatives of two higher education institutions were interviewed in Poland and in Slovenia, three higher education institutions took part in the interviewing in Turkey, in Austria and in Italy, and four higher education institutions in Germany. It is relevant to mention that in Austria and in Germany representatives of two different types of higher education institutions – universities and universities of applied sciences (offering more practical-oriented courses of studies) – were interviewed.

Most of the interviewees have an academic background in a definite branch of engineering and most combine or have combined in their professional life academic work with different managerial roles in a higher education institution (27 interviewees) that include positions of rector, vice rectors, deans/vice deans of faculties, heads of departments and so on. The remaining interviewees (10 interviewees) have some other academic background and were selected for the interview due to their relevance for the DEHEMS research questions by virtue of their position and experience in higher education management[1].

### 5.3.2 Statistical overview of the domain

Relevant information from the national reports and data from the HEGESCO and REFLEX projects serve in this chapter as a basis for the analysis of the socio-biographic background of students and graduates in the field of engineering in the six DEHEMS countries.

#### *5.3.2.1 Number of graduates*

From 2005 to 2009 the numbers of graduates in the field of engineering were growing across all DEHEMS countries, except in Italy, where they were descending (see Table 5.26). Looking at the percentage share of this field's graduates compared to all graduates, we cannot see constant growth in any of the DEHEMS countries. The highest percentage of engineering graduates compared to the total number of graduates can be noted in Italy and Austria at around 14%, followed by Germany with approximately 12%.

*Table 5.26: Number of graduates in the engineering field*

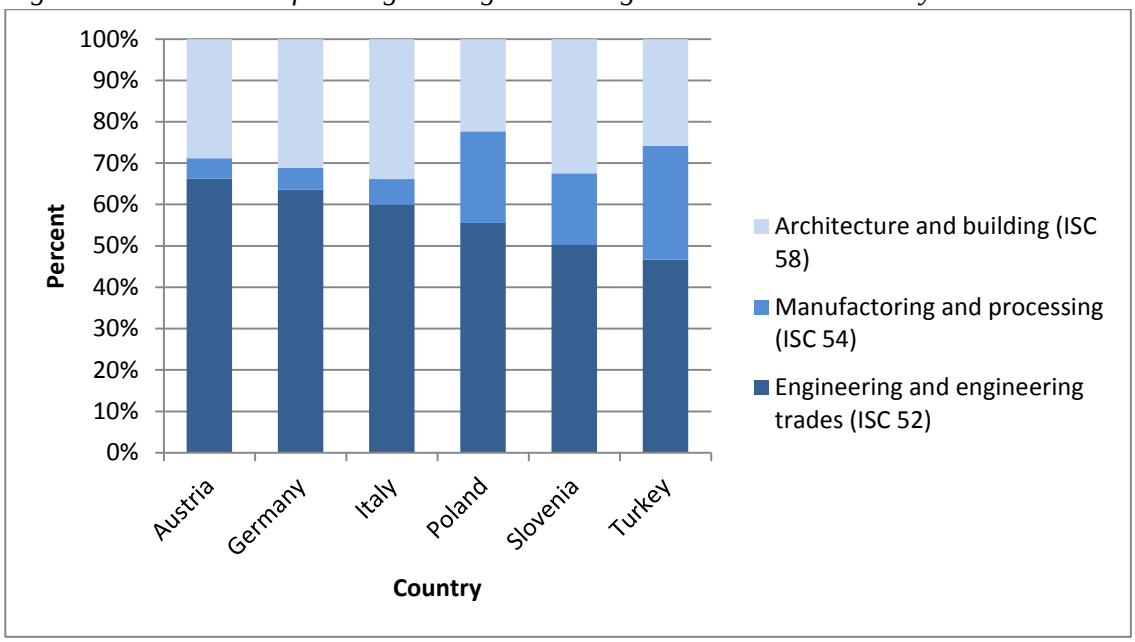
| | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Austria** | 3601 | 3910 | 4464 | 4787 | .. |
| **Germany** | 38135 | 39276 | 41956 | 45958 | 49978 |
| **Italy** | 56428 | 56518 | 55322 | 34953 | 34269 |
| **Poland** | 36387 | 42564 | 46328 | 47102 | 50686 |
| **Slovenia** | 897 | 823 | 872 | 922 | 1003 |
| **Turkey** | 21513 | 21918 | 23756 | 26333 | 28249 |
| ***% of tertiary graduates*** | | | | | |
| **Austria** | 14.54 | 14.60 | 15.84 | 13.71 | .. |
| **Germany** | 15.88 | 12.63 | 12.36 | 12.42 | 12.27 |
| **Italy** | 15.10 | 14.87 | 14.02 | 15.13 | 15.39 |
| **Poland** | 7.34 | 8.55 | 8.80 | 8.54 | 8.91 |
| **Slovenia** | 12.00 | 10.19 | 11.14 | 11.15 | 10.39 |
| **Turkey** | 11.90 | 9.29 | 9.10 | 9.38 | 9.32 |

Source: DEHEMS elaboration based on OECD (2011).

### *5.3.2.2 Subdomain structure*

In all six DEHEMS countries (see Figure 5.22), the majority of graduates from the engineering domain finished programmes in engineering and engineering trades, with the highest percentage in Austria, Germany and Italy (60% or above). The lowest popularity of this subdomain is noted in Turkey with only 48%. The least popular subdomain of engineering and construction in the DEHEMS countries is manufacturing and processing, with the biggest shares in Turkey (24%) and Poland (20%) and the lowest in Germany, Italy and Austria (around 5%). Approximately 30% of graduates across all the countries finished programmes in the architecture and building subdomain.

*Figure 5.22: Structure of the Engineering domain – graduates broken down by subdomains*




Source: DEHEMS elaboration based on OECD (2011).
Note: Latest available data for Austria for 2008.

#### *5.3.2.3 Gender distribution*

In all DEHEMS countries, the number of male students is much higher than the number of female students in the engineering domain. This is due to the fact that engineering is traditionally a technical- and practical-oriented domain in contrast e.g. to the domain of education and teaching studies. In the 2008/2009 academic year, in Austria, Poland and Turkey about 25% of the students were female, in Germany about 15%, in Italy about 21%, and in Slovenia about 27%. In the last few years, the number of female students has increased significantly at least in Italy (from 17.6% in 2004/2005) and in Turkey (from 21.5% in 2004/2005). The European Engineering Report that covers 27 European Union member states, the EU applicants Croatia and Iceland as well as Norway and Switzerland says: "While there is a serious shortage of science and technology experts in many vital business areas, women are a largely unused potential in the engineering profession". [47]

In the DEHEMS countries, the quota of female students is quite high in study programmes in the field of manufacturing and processing (54) such as textile engineering, and biotechnology, and in civil engineering (582) probably due to its close relationship to architecture. The data from these countries (e.g. Italy, Austria) which included study programmes of architecture in the domain of engineering demonstrate that the quota of female students is quite high in architecture.

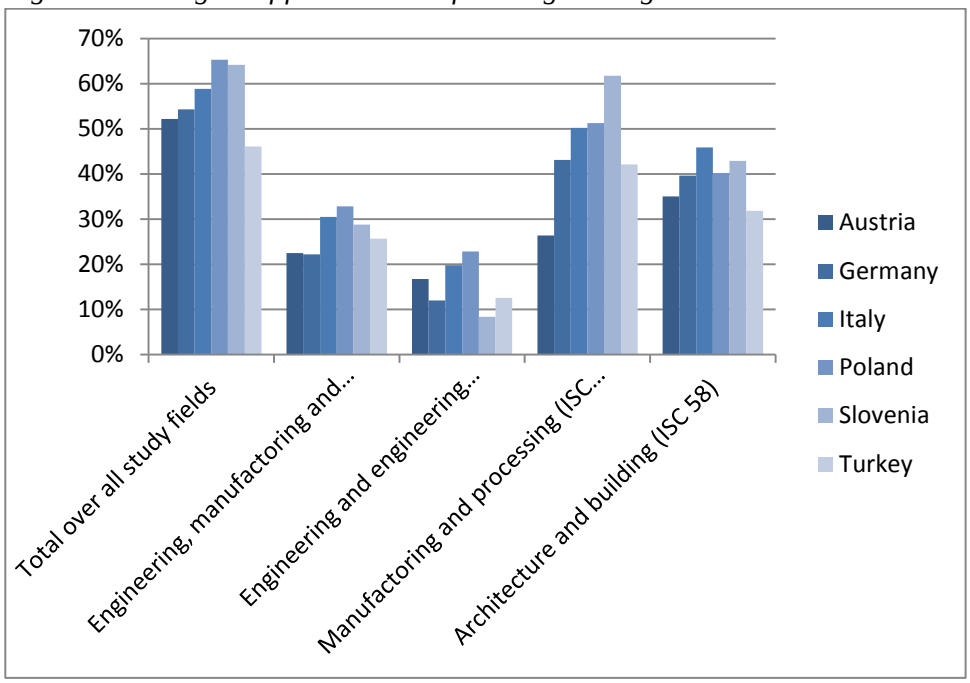
The increase in the number of female students over the last few years can be confirmed by the data from the HEGESCO and REFLEX projects that were collected in 2003 and 2008: In Italy, 19% of the students were female, in Austria 14%, and in Germany 15%. In Poland, Slovenia, and Turkey, the share of female students was 22%.[48]

According to OECD data (see Figure 5.23), across all six DEHEMS countries there is the high dominance of male students in the engineering domain (only around 27% of female students). The highest percentage of female students can be noted in Poland and Italy (slightly above 30%) and the lowest in Austria and Germany (slightly above 20%). When looking at the subdomains, the lowest feminisation can be noted in engineering and engineering trades (around only 15%), while manufacturing and architecture and building are relatively close with shares between 40 and 50%, which makes these two subdomains a little more popular among female students than programmes of the engineering subdomain. This is the case especially in Slovenia, where the manufacturing and processing subdomain has quite a high percentage of feminisation with 61%.

[47] See Verein Deutscher Ingenieure e.V. in cooperation with Institut der deutschen Wirtschaft Köln (Ed.): European Engineering Report, April 2010, p. 10. On average, only every 6th engineer was female in the countries included in this report, see page 11.

[48] See Engineering. Tables Reports by Country. Prepared by Harald Schomburg and Florian Löwenstein on data base: REFLEX and HEGESCO as of 02.11.2010. Table 93: Gender by Country – Engineering (percent) on the basis of question K1: Gender of the RELFEX and HEGESCO project, p. 57.

*Figure 5.23: Degree of feminisation of the Engineering domain*




Source: DEHEMS elaboration based on OECD (2011).
Note: Latest available data for Austria for 2008.

### *5.3.2.4 Further information on socio-biographic backgrounds (REFLEX and HEGESCO data)*

Data from the REFLEX project confirm some differences with regard to *the age of the graduates at the time of graduation* in 2000: Graduates from Turkey were the youngest at 24 years, followed by Poland at 25 years (arithmetic mean). In Italy and Austria, graduates were 27 years old, in Germany 28, and in Slovenia 29 years (arithmetic mean). [49] It has to be emphasised that all these data concern final degrees before implementation of the Bologna reform.

The *living situation* during the last year of the study programme varies extremely in the six DEHEMS countries. Italy is the country where most students lived with their parents during the last study year – 73% – even compared to the other 18 countries that were analysed in the REFLEX and HEGESCO projects. In Poland, Slovenia and Turkey, about 40% lived with their parents. In Poland, 20% lived with a partner, 18% alone and 18% in another constellation. In Slovenia, 18% lived alone and 38% with a partner. In Turkey, only 4% lived with a partner and 30% alone. In Germany and Austria, the situation is quite similar: 30% lived alone in Austria and 35% in Germany. 39% of the students in Austria lived with a partner; the corresponding figure for Germany is 33%. In Germany, 25% lived with their parents while in Austria the figure was only 15%.[50]

[49] See Engineering. Tables Reports by Country. Prepared by Harald Schomburg and Florian Löwenstein on data base: REFLEX and HEGESCO as of 02.11.2010. Table 94: Year of Birth by Country – Engineering (means) on the basis of question K2: Year of birth of the RELFEX and HEGESCO project, p. 57.

[50] See Engineering. Tables Reports by Country. Prepared by Harald Schomburg and Florian Löwenstein on data base: REFLEX and HEGESCO as of 02.11.2010. Table 106: Living Situation During the Last Year of Study Programme by Country – Engineering (percent) on the basis of question K7: "How did you live during the last year of your study programme?" of the RELFEX and HEGESCO project, p. 63.

Data from the REFLEX and HEGESCO projects show quite big differences with regard to **children** of graduates in the six DEHEMS countries. In Poland, the share was the highest: 45% had children (33% one child, 12% two children). In Slovenia and Germany, the situation was similar: In Slovenia, 24% had one child, 19% two children and 5% even three or more children. In Germany, 22% had one child, 10% two children and 1% three or more children. The figure for one child was similar in Italy (12%), Austria (14%) and Turkey (14%). In Italy (85%) and Turkey (83%) the shares of those having no children was extremely high. [51]

Data from the REFLEX and HEGESCO projects show big differences between the countries with regard to the **family background** of engineering graduates. Answers to the question about the highest education of the father show that 60% of all students of engineering in Germany had a father with a highest education level of ISCED 5 + 6. This was the highest figure – even compared to the other 18 countries that were analysed in the REFLEX and HEGESCO projects. 44% of the fathers of students in Turkey also had an ISCED 5 + 6 highest education level. In Poland (29%), Slovenia and Austria (24% in both countries) and in Italy (18%), the quotas were quite similar. Further, only 3% of the fathers of engineering students in Germany had an ISCED 1+2 highest education level, whereas 56% of the Austrian students indicated that their fathers' highest education level was ISCED level 1+2. In Italy, 44% of the fathers' highest education level was ISCED level 1+2. [52]

On the basis of these data, the following conclusions can be drawn: In Germany, students of engineering often have an academic family background, especially with regard to the higher education of the father. [53] In Austria and Italy, the higher education of the father did not play any significant role. Despite this lower education, their children decided to study and strive for an academic career. It might be that this generation of fathers was still part of the more rural societies of Italy and Austria that is changing into a society based on services. Moreover, it can be assumed that financial reasons also play a role: In Germany, it is often the case that parents finance the studies of their children.

#### *5.3.2.5 International students*

In Germany, the share of international students in the field of engineering is quite high: 16%. In some study programmes such as electrical engineering and mining engineering, the quota is even over 20%. This might be due to the often claimed attractiveness and high reputation of German engineering. Another factor might be the increasing number of English-taught courses in particular in the area of Master courses. In Austria, foreigners accounted for 12% of all graduates in the 2007/2008 academic year. There was quite a big difference between public universities (18.9% of all enrolled students) and universities of applied science (8.2%). At public universities as well as universities of applied sciences, the proportions of

[51] See Engineering. Tables Reports by Country. Prepared by Harald Schomburg and Florian Löwenstein on data base: REFLEX and HEGESCO as of 02.11.2010. Table 108: Children by Country – Engineering (percent) on the basis of question K9: "Do you have children?" of the RELFEX and HEGESCO project, p. 64.

[52] See Engineering. Tables Reports by Country. Prepared by Harald Schomburg and Florian Löwenstein on data base: REFLEX and HEGESCO as of 02.11.2010. Table 110: Highest education of Father by Country – Engineering (percent) on the basis of question K11a: "What is your parent's and, if applicable, partner's highest education?" of the RELFEX and HEGESCO project, p. 65.

[53] A recent study in Germany came to the conclusion that the social factor is still decisive for the opportunity for advancement in a career. See: Pollak, Reinhard: Kaum Bewegung, viel Ungleichheit. Eine Studie zu sozialem Auf- und Abstieg in Deutschland, Schriften zu Wirtschaft und Soziales, Band 5 im Auftrag und herausgegeben von der Heinrich-Böll-Stiftung, Berlin 2010.

foreign students and graduates were rising constantly when comparing the academic years from 2006-2008. [54]

There were no specific data available on the number of foreign students in the field of engineering in Slovenia and in Turkey. In Poland, in the group "technology, industry and construction" which is closest to engineering as defined above, the share of foreigners is only 4.6%.[55] In Italy, specific data on the share of non-Italian students only exists with regard to PhD students and graduates: The share of non-Italian PhD students in civil engineering and architecture as well as in industrial engineering is 6%. In information engineering the respective share is 10%.

### 5.3.3 Study conditions and provisions

#### *5.3.3.1 Study programmes*

About 1800 study programmes in engineering are offered in Germany, Turkey, Austria and Italy without counting the study programmes in engineering in Poland and Slovenia.

In the DEHEMS countries of Germany and Slovenia, the main study programmes of the engineering domain are: Mechanical engineering, chemical engineering, electrical engineering, and civil engineering. In Poland, instead of chemical engineering, there is managing and engineering production among the main study programmes; in Turkey, the programmes of mechanical engineering, electrical engineering, civil engineering, computer engineering, and industrial engineering were classified under the main study programmes in this domain. In Italy, the dominating programmes in the field of engineering are[56]: Industrial engineering, information technologies engineering and civil and environmental engineering.

[54] See Figure on the basis of questions H1a (Hegesco), H1a (Reflex) (How do you rate your own level of competence Mastery of your own field or discipline? Responses 6 and 7 on a scale of answers from 1 = "Very low" to 7 = "Very high' ) supports the high reputation of the study programmes in engineering in Austria and Germany. In this figure – possession of competence "Mastery of your own field or discipline" by country in per cent – Austria obtained the highest value with 77 %, and Germany the second highest value with 68 %.

[55] See also Figure on the basis of questions H1a (Hegesco), H1a (Reflex): Possession of competence "Mastery of your own field or discipline", by country (in per cent). Poland obtained the lowest value with 24 %. This supports the idea that study programmes in the field of engineering are not very attractive for foreign students in Poland because the students in Poland have not felt qualified as a "Mastery of their own field or discipline" after their studies.

[56] On the basis of the number of graduates, last available cohort. The Austrian partner has chosen a different approach. Thus, there were no data available with regard to the main study programmes (number of students and graduates).

*Table 5.27: Main study programmes in five DEHEMS countries*[57]

| | Germany | Slovenia | Turkey | Poland | Italy |
|---|---|---|---|---|---|
| Mechanical engineering | X | X | X | X[58] | |
| Chemical engineering | X | X | | | |
| Electrical engineering | X | X | X[59] | X | |
| Civil engineering | X | X | X | X | X |
| Computer engineering | | | X | | |
| Industry engineering | | | X | | |
| Managing and engineering production | | | | X | X |

Source: National reports.

### *5.3.3.2 Number of enrolled students*

The number of enrolled students in the field of engineering is slightly increasing in most DEHEMS countries. An exception is Italy where the number of students decreased between 2004/2005 and 2008/2009[60], and Turkey, where the number of enrolled students increased substantially due to new institutions of higher education that offer study programmes in the field of engineering.

In *Germany*, 285,158 students in total were enrolled in the 2008/2009 academic year in programmes in the field of engineering at universities and universities of applied sciences. The number of enrolled students was more or less stable in the period 2003-2007. However, a sudden increase of about 7% percent followed in 2008.

In the 2007/2008 academic year, tertiary education in the engineering domain was pursued by 39,580 students at institutions of higher education in *Austria*. The number of students rose by approximately 5% per year both from 2006/07 to 2007/08 and from 2007/08 to 2008/09.

In *Poland*, 215,190 students were enrolled in study programmes in the field of engineering in public higher education institutions and 15,328 in non-public higher education institutions in November 2008. When comparing the number of enrolled students in engineering in 2007/2008 and 2008/2009, one can detect a very small increase: 6.9% of all students were enrolled in the engineering domain in 2008/2009 while in 2007/2008 the figure was 6.8%.

The situation in *Turkey* is quite outstanding compared to the other DEHEMS countries. In the 2004/2005 academic year, 143,655 students were enrolled in study programmes in the field of engineering at universities while in the 2008/2009 academic year the number increased about 40% to 2005. This extremely high increase is due to new public and private universities that offer several engineering disciplines.

In *Italy*, the number of enrolled students in the field of engineering decreased slightly in contrast to the other DEHEMS countries: In the 2004/2005 academic year, in total 210,587 students were enrolled in the field of engineering. In the 2008/2009 academic year, the number decreased to 196,690. Compared to the

[57] Data for Austria not available.
[58] Mechanical engineering and machine building.
[59] Electrical and electronics engineering.
[60] In Slovenia, there is no data on the number of enrolled students in the field of engineering available.

total number of students enrolled in the 1st year in 2008/2009, the number is quite stable compared to 2007/2008. This discrepancy should mostly be attributed to students in the architecture and building sub-domain and is not a significant factor in the other study programmes in the field of engineering.

#### *5.3.3.3 Number of graduates and PhD*

In most DEHEMS countries (e.g. Germany, Slovenia, Turkey), the number of graduates in the field of engineering increased (2004 compared to 2008 – the year of examination. In Turkey, the number of graduates increased extremely by 24% between the years 2004-2008. In contrast, in Italy the number of BA (bachelor) graduates decreased. In Poland, 5.1% of all graduates in the 2007/2008 academic year finished their studies in engineering while one year before the number was 5.4% of all graduates.

In Germany, the number of PhDs is at 6% quite low (possible reasons: attractive employment opportunities; engineering as a practical-oriented field). The figures in Slovenia (5.4%), Austria (7.6%) and Italy (7.25%) are similar. It can only be concluded with regard to Turkey that 32.40% of the graduated students in engineering are enrolled in PhD studies. This high number of PhD students can be explained with the tight labour market conditions in Turkey: Holding a PhD, graduates are more qualified in their fields and can find a job more easily. In Poland, the number of PhD students in the study field engineering is not available; however the proxy of 'Technical' PhD students makes up 15.9% of all PhD students in Poland. One can assume that the figure for engineering would not differ very much.

#### *5.3.3.4 Mobility*

Data from the REFLEX and HEGESCO projects give important information on the mobility of students of engineering programmes living in the six DEHEMS countries: 31% of German interviewees had spent some time abroad for study. The number of Austrian interviewees is similar at 27%. In Italy, only 13% answered that they had studied abroad, in Poland 11%, in Slovenia 8% and in Turkey 6% (cf. Löwenstein/Schomburg, 2010: 59).

With regard to the international mobility of graduates of engineering, the following conclusions can be drawn: 38% of Austrian graduates had spent some time abroad after graduation for study or work. The shares of Italian graduates (29%), Polish graduates (28%) and Turkish graduates were quite similar (32%). The share of German graduates (18%) and Slovenian graduates (21%) was lower (cf. Löwenstein/Schomburg, 2010: 62).

These data show that it is obviously more common in Turkey, Italy and Poland to go abroad after graduation than during studies. One reason for the comparatively low number of German graduates might be that the average incomes in Germany were the highest in Europe at the end of the 1990s (together with Norway). Thus, the incentive to work abroad for financial reasons was not as high as for graduates of other EU member states (cf. Jahr et al.: 2002).

Since the data from HEGESCO and REFLEX are not up to date, it is worthwhile looking at other sources: With regard to Austria, interesting information on the mobility of engineering students is delivered by the study: "Arbeitssituation von Universitäts- und FachhochschulabsolventInnen (ARUFA)" (Working Situation of Graduates from Universities and Universities of Applied Sciences). 6% of graduates with the de-

gree "Diplom-Ingenieur" (engineer) studied outside Austria, 6% completed an internship outside of Austria and 13% had regular employment out of Austria (cf. Guggenberger et al., 2010).

Recent figures gathered in the "German cooperation project graduate surveys" (Kooperationsprojekt Absolventenstudien KOAB) for the 2008 academic year suggest that an increasing number of German students of engineering is interested in spending a temporary study period abroad, as 36% of the surveyed graduates of engineering stated that they had spent some time abroad during the course of their studies (cf. Kooij/Löwenstein 2010: 32). Among those graduates, 48% reported they had spent a study period abroad, 17% had worked on a project related to their studies and 52% had done an internship (multiple responses possible) (cf. Kooij/Löwenstein 2010: 33).

#### *5.3.3.5 Number of study programmes offered*

There are nearly 900 study programmes in the field of engineering at German higher education institutions. Most of them have already been transformed into Bachelor and Master programmes. Only around 7% (66) of the programmes lead to the traditional degrees of "Diplom" or "Magister". In Turkey, there are 623 first-cycle engineering programmes in 57 engineering disciplines. 269 study programmes are available in the engineering domain in Austria.

This number includes various interdisciplinary programmes, hence their allocation to one specific domain is open to discussion as ISCED classification numbers are not available for each particular curriculum. Consequently, these figures can only be taken as rough estimates and have to be interpreted very cautiously. In Italy, nowadays seven ISCED 5A three-year long first degree programmes (denominated Laure – L) and twenty-one ISCED 5A two-year long second degree programmes (Laurea Magistrale or Specialistica – LM) have been classified in the engineering domain. [61] Among L programmes, four are included in the engineering study area, whilst the remaining three are administered within the architecture study area.

Among the LM programmes, there are eighteen engineering study programmes and three architecture study programmes. Further, one ISCED 5A five-year long programme had been established: it allows students to reach a second level equivalent degree (denominated Laurea Magistrale a ciclo unico – LMCU).

There are no data available on the number of engineering study programmes in Slovenia and in Poland.

#### *5.3.3.6 Learning and teaching modes*

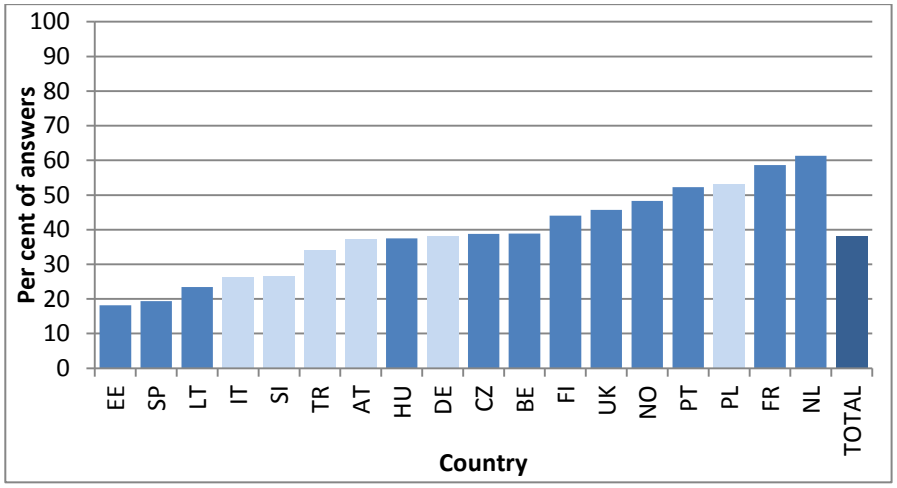
Engineering is a practical- and technical-oriented domain. As described, the first study stage in most of the programmes often focuses on theoretical basic study fields. The second study stage often shifts to the different practical areas. Then, analytical ability, creativity and teamwork are becoming more and more important. According to the HEGESCO and REFLEX data, the dominating mode of teaching in the engineering domain is via lectures – 69% (Poland) and 84% (Germany).

Major differences between the DEHEMS countries can be observed with regard to group assignments, project and problem-based learning and written assignments (see Figure 5.24): Team work and group as-

[61] The lower number of L programmes is due to willing to give students a more general knowledge, allowing them to master on more specific topics during the LM programmes.

signments were emphasised the most in Poland (53%). On the contrary, in Italy only 26% of graduates and in Slovenia only 27% of graduates reported that there was a great emphasis on team work in their study programme.

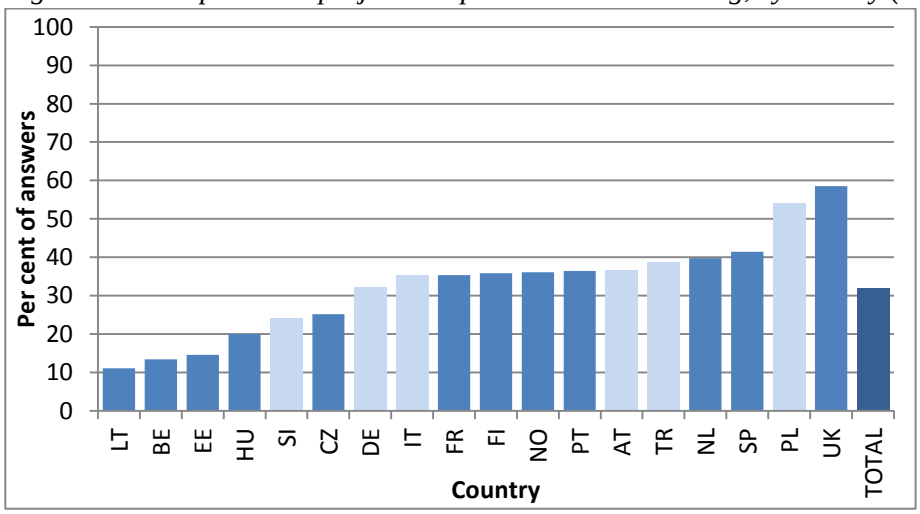
*Figure 5.24: Emphasis on group assignments, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A6b (Hegesco), A7b (Reflex): To what extent were group assignments emphasised in the study programme as a mode of teaching and learning? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

54% of Polish graduates pointed out that project and/or problem-based learning was to a high or very high extent emphasised in their study programmes. Again, only 24% of the Slovenian respondents said this. The differences between Germany (32%), Italy (35%), Austria (37%), and Turkey (39%) were not so great.

*Figure 5.25: Emphasis on project and problem-based learning, by country (in percent)*

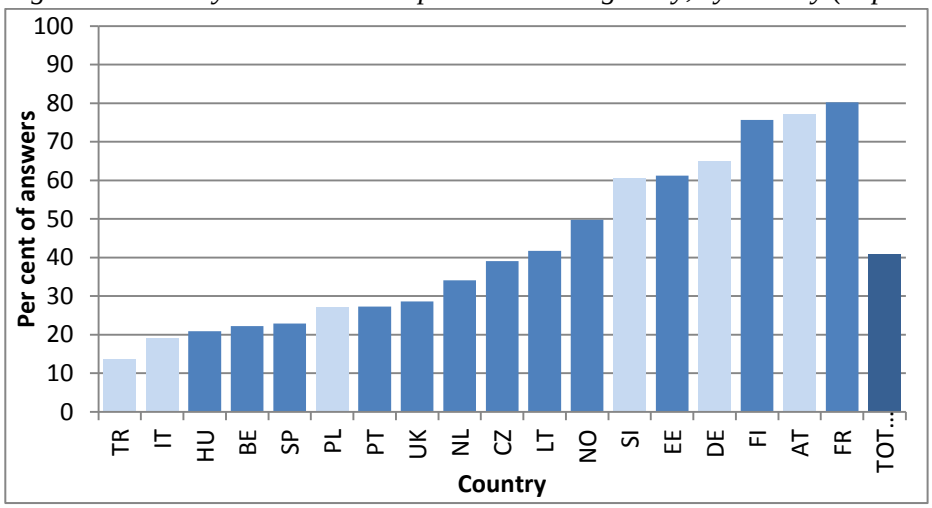



Source: Own elaboration based on REFLEX/HEGESCO data.
Question A6h (Hegesco), A7h (Reflex): To what extent was project and problem-based learning emphasised in the study programme as a mode of teaching and learning? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Since engineering is a technical- and practical-oriented domain, it is interesting to analyse the study-related work experiences during study and the participation in one or more work placements/internships as part of the study programme.

The interpretation of the REFLEX and HEGESCO data shows big differences between the six DEHEMS countries with regard to the question of study-related work experiences during study: 77% of the interviewees in Austria indicated that they had had study-related work experiences. In Germany, the figure was 65% and in Slovenia 60%. In Poland, the number was 27%. Italy and Turkey had the lowest shares with 19 and 14%, respectively.

*Figure 5.26: Study-related work experiences during study, by country (in percent)*



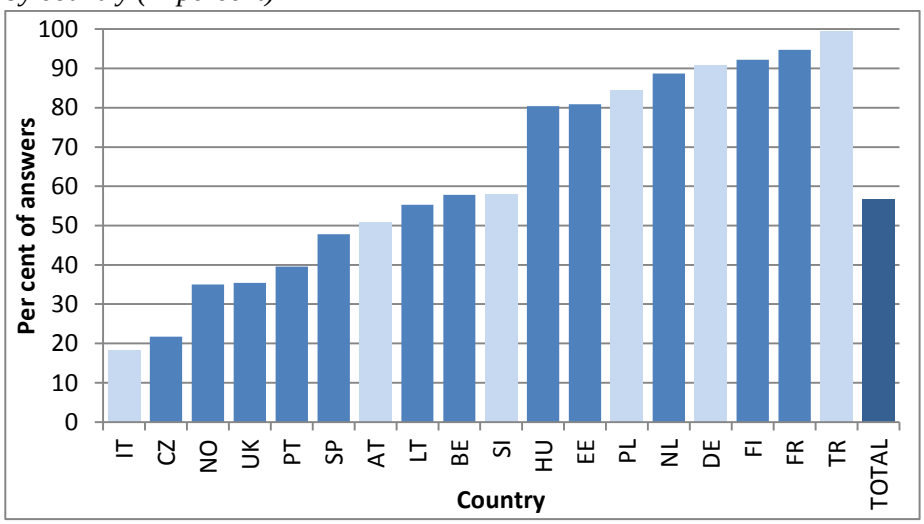

Source: Own elaboration based on REFLEX/HEGESCO data.
Question B3 (Hegesco), B3 (Reflex): Did you acquire any study-related work experiences? Responses "yes" on a scale of answers "yes" and "no".

100% of the Turkish graduates stated that they had taken part in one or more work placements/internships as part of their study programme. Due to the high unemployment rate especially among university graduates, students are voluntarily choosing to take part in placements/internships to increase their competitive power, although it is not compulsory. The shares in Germany (91%) and Poland (85%) were extremely high, too. Here, these work placements/internships were compulsory parts of the study programme in most cases. [62]

In contrast, only every second respondent in Austria stated that they had done one or more work placements/internships as part of the study programme. In the case of Austria, the analysis of study-related work experiences during study leads to the conclusion that students prefer working during study than doing an internship (see the above-mentioned high figure of 77%). The participation in one or more work placements/internships as part of the study programme in Slovenia was quite similar to that in Austria (58%). At the end of the scale, there was again Italy with only 18% of graduates who stated that they had taken part in one or more work placements/internships as part of the study programme. Apparently, practical experience – be it work or an internship – does not play a major role in study programmes in the domain of engineering in Italy. Only a few programmes offer practical training which is in any case not required.

[62] Bernd Müller underlines in his article: "Engineers made in Germany": "A broad foundation in mathematical and theoretical knowledge combined with expertise in realization is the German formula for training successful engineers." Müller, Bernd: "Engineers in Germany. Technik aus Deutschland ist ein Markenzeichen und weltweit im Einsatz.", in: DAAD Letter 3/10, S. 9.

*Figure 5.27: Participation in one or more work placements/internships as part of the study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A7 (Hegesco), A8 (Reflex): Did you take part in one or more work placements/internships as part of your study programme? "Yes" responses.

Since the REFLEX and HEGESCO data refer to those graduating in the years 1999/2000 and 2002/2003, it is worthwhile looking at the practical training phases during study in the six DEHEMS countries nowadays.

In Germany, many Bachelor programmes at universities of applied sciences take seven semesters as one semester of practical training in a company is included. But programmes at universities normally have a longer internship as a study requirement as well. Many universities also organise these – normally six month long – placements at companies they maintain contact with.

Most HEIs also demand a so-called pre-internship in the area of metal processing, metal working in which future students of engineering study programmes learn basic manual skills like welding and milling. To enrol in civil engineering, most HEIs demand a so-called pre-internship at a construction site.

In Austria, work placements at the Vienna University of Technology are not compulsory in the curriculum. Nevertheless, roughly four out of five students acquire relevant practical experience during their studies. Work placements are also officially recommended (TU Wien, 2010a).

In *Slovenia*, the university study programme of mechanical engineering does not include compulsory practical training but a student can opt for professional training amounting to 5 ECTS credits. This corresponds to a three-week guided practical in an industrial or research environment, resulting in project work. However, practical training is obligatory on the higher professional level. Practical training is an obligatory part of the study programmes of civil engineering on academic and higher professional levels. It is usually performed in the last year of study. In electrical engineering, practical training is part of the curricula and begins in the third year of the study programme.

In *Poland*, it is required that students undergo practical training in programmes for the first-cycle studies in the domain of engineering. The rules and form of training are left for the HEI to determine. The length of the practical training differs in the different subjects of engineering:

In *Italy*, as pointed out, practical training is not an integral part of the study programmes of engineering. Engineering in Italy is mainly a theoretical subject.

In the DEHEMS countries *Germany, Austria, Slovenia* and *Poland*, a major impact of the Bologna reform was observed. In the last few years, bachelor and master programmes were gaining more and more importance and replaced the former degrees such as the "Diplom" in Germany. Especially in Poland and Slovenia, the restructuring of study programmes was combined with a review of the curricula.

***Impact of the Bologna reform***

In *Germany*, the classical degree of study programmes in the field of engineering was a "Diplom-Ingenieur". In the wake of the Bologna reform, the new degrees are "Bachelor of Engineering" and "Master of Engineering" or "Bachelor of Science" or "Master of Science". A study about the acceptance of the Bachelor and Master degrees in the area of engineering (based on an employer survey) published in 2009 states that 93% of all study programmes in the area of engineering have already been transformed into Bachelor and Master programmes (cf. Konegen-Grenier/Koppel, 2009: 1)
The regular duration of most of the "classical programmes" for the diploma in engineering was 9 to 10 semesters (4.5 to 5 years). In the process of the Bologna reform, the study structure has changed to a 3-year (Bachelor) plus 2-year (Master) structure. At universities of applied sciences, the Bachelor sometimes takes seven semesters as one practical semester is included.

*Austria:* Compared to some other domains – e.g. medicine, education – the share of education in engineering provided by universities of applied sciences is relatively high. Bachelor and master programmes are more common at universities of applied sciences (95.7%) than they are at Austrian HEI in general (82.5%) (BMWF, 2009; also see Country Report Austria). Consequently, this indicates that engineering is a domain where the Bologna reform has been adopted to a wider extent than in Austrian tertiary education in general.

*Italy:* With regard to the impact the Bologna Process has had on the professional engineering domain, it should be noted that the higher education system had been renewed in depth after 1999. Engineering field study programmes had, before the legislative renewal, a five-year duration and were organised by sector. After the first two years of generalist and core courses, students approached the study of specific topics. Nowadays, first-level programmes have a three-year duration and students are endowed with both core and basic specific knowledge, then during the second-level programmes they mainly focus on specific topics. Despite the programmes' reorganisation, it should be underlined that the contents have not been modified.

*Slovenia:* In civil engineering, all academic study programmes now last 3 years whereas, before Bologna, it was 4 years. Students need to pass examinations more regularly, there is more seminar work and all subjects last only one semester (previously most lasted two semesters). In the framework of the Bologna reform, the contents of the study programmes were totally renewed after many years.

Before the Bologna reform, the duration of the university study programme in mechanical engineering was 4.5 years, now it is 3 years. The higher professional programme lasted 3.5 years, of which 6 months were intended for practical training. The big change in electrical engineering is the division of the study programme into two levels (3+2). The consequences with regard to the quality of the study programme cannot be predicted yet as the 2009/2010 academic year was the first year of the new Bologna study programmes.

*Poland:* The implementation of the Bologna system is quite successful in Poland and has achieved a relatively high level. First- and second-cycle studies were implemented in all disciplines excluding medicine, law, psychology, and architecture. The implementation of the national qualifications framework is still in progress but is highly advanced. An external quality assurance system is implemented. In 2001, the State Accreditation Committee – a legal body working for the quality of education – was established. The State Accreditation Committee is the only statutory body entrusted with the responsibility for evaluating the quality of higher education, and its opinions and resolutions have a legally binding effect.

*Turkey*: The programmes in the engineering domain were already arranged in three cycles before the Bologna reform started. A first-cycle (bachelor), second-cycle (master) and third-cycle (doctoral level) structure was established. This system is still in place. First-cycle engineering programmes have a duration of four years, second-cycle programmes have a duration of 1.5 years (master programmes without a thesis) or two years (master programmes with a thesis), while third-cycle programmes are offered with a duration of four years.

### 5.3.4 Transition to employment and first job

#### *5.3.4.1 Certification*

*Germany:* Graduation from an engineering study programme allows one to use the title "Engineer" in Germany. There are no additional elements, e.g. exams or working periods required to become a full member of the profession. The transition process from higher education to employment for graduates of engineering study programmes is individualised in Germany. After graduation, graduates apply directly for a job or continue studying for a PhD.

*Austria:* As an example, the profession of a civil engineer will be mentioned here: In Austria, graduates of a relevant engineering programme need to complete three years of work experience as well as a subsequent examination conducted by the Austrian Federal Chamber of Architects and Engineering Consultants to become a certified civil engineer. Depending on the desired special field (e.g. land surveying), additional special work experience has to be acquired (Bundeskammer der Architekten und Ingenieurkonsulenten, 2010).

There is no standardised transition process from engineering studies to the labour market. Despite this, the compulsory or voluntary phases of practical training and work experience provide opportunities for students and graduates to establish connections with the labour market. By carefully selecting institutions and fields of specialisations, students can not only find out about their preferences and pursue them accordingly. They also willingly or unwillingly design their curriculum vitae in a way that is likely to influence their job prospects or already establish themselves in certain fields of employment (cf. Löwenstein/Schomburg, 2010: 19). Since universities of applied sciences provide a relatively high share of education in this field and because this type of institution generally maintains closer ties to industry, the transition is likely to be smoother than in some other domains. Career centres (e.g. at the Vienna University of Technology) are also becoming more and more widespread across Austria which should improve the entry into the world of work for graduates of public universities as well.

In *Turkey*, the title of “engineer” can be used by individuals immediately after their graduation from a first-cycle engineering programme. Graduates can work in both the public and private sector according to

their professional skills. Further, there are 19 professional engineering societies in Turkey and membership in them is compulsory to practice the engineering profession, except for those engineers employed by the government.

In *Slovenia*, the situation with regard to civil engineering is comparable to the situation in Austria: Students of study programmes from the Faculty of Civil and Geodetic Engineering occupy different job positions after completing their study programme in civil engineering. If they want to perform job tasks as responsible engineers or responsible project managers, certification from the Chamber of Engineers as well as relevant work experience are needed. A professional examination can be taken three or five years after graduation.

In addition to passing a professional exam, candidates must also meet the requirements laid down by legislation, e.g. to pass respective *basic exams* in: project design; management of work (certain types of construction work) as well as management of individual works; and *supplementary exams* in responsible auditing of certain types of plans.

The objective of holding these basic and supplementary professional examinations is to establish whether a candidate is qualified to independently perform those engineering services for which they have taken the exam. Electrical engineering: Those who work as project managers need to pass additional exams of the Chamber of Engineers, for others, there are no additional requirements.

In *Italy*, the transition to the labour market in the engineering domain has no unique path. National legislation has set up rules about licenses to practice the profession but graduates have several employment opportunities not requiring licenses. Those wishing to enrol with the National Engineers Council and become licensed practitioners must take an exam. Both L and LM graduates can get a licence and practice but L graduates are allowed to enrol in the junior positions of the council, whilst LM graduates reach fully recognised practitioner positions. Further job opportunities are in the field of secondary-level education: National legislation has established rules to enter the educational sector and teach.

*Poland:* According to the Polish regulations, there is quite a considerable number of professions in which it is necessary to hold an appropriate certificate confirming qualifications and the right to perform the given profession. Recently, the Ministry of Science and Higher Education was appointed as a coordination institution responsible for gathering the necessary information and useful contacts in order to facilitate the transnational recognition of qualifications.

Poland has opted for a relatively detailed approach to the question of professional certification. Apart from several professions related to medicine and architecture that are covered by the EU-level coordination of qualification requirements, there are more than 300 regulated professions, with almost 100 related to the engineering domain of education. Detailed requirements may be found at the Ministry of Science and Higher Education website.

#### *5.3.4.2 Data on transition to the labour market and characteristics of the first job*

Data from the REFLEX and HEGESCO projects reveal some differences with regard to the duration of job search in the six DEHEMS countries. In Slovenia, for 59% of graduates in engineering the search for a job lasted less than 1 month after graduation, 19% were searching for 1-3 months and 11% for up to half a year (4-6 months). In Austria and Germany, the situation was similar: 27% (Austria) and 28% (Germany) of graduates were employed immediately after graduation, for 43% (Austria) and 44% (Germany) of graduates the job search lasted 1 to 3 months, and 12% (Austria) and 15% (Germany) were searching for a job for up to half a year (4-6 months). The situation in Italy was similar to that of Austrian and German graduates in engineering: 19% were immediately employed, 41% and 17% were searching for 1-3 and for 4-6 months, respectively (cf. Löwenstein/Schomburg, 2010: 17). Thus, the situation of engineering graduates in these countries was relatively good.

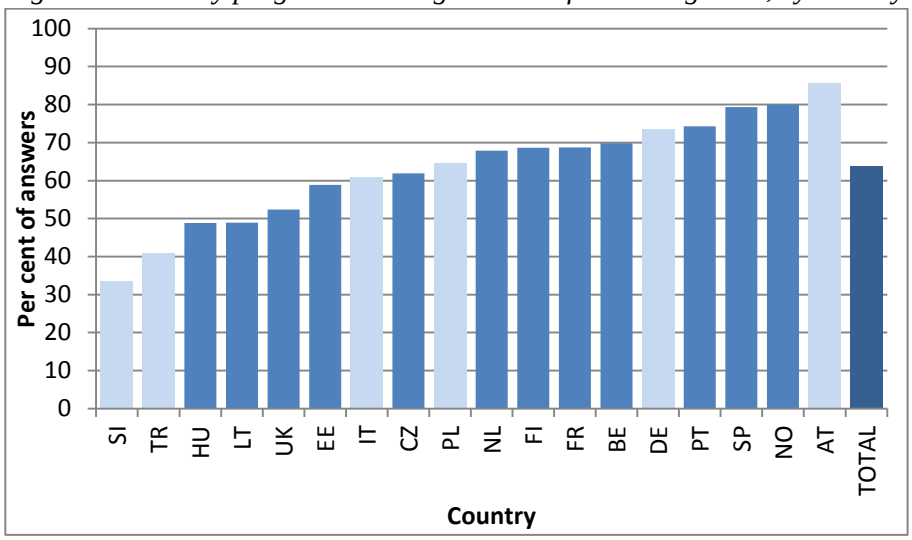
The answers of the interviewed graduates in Turkey underline the fact that the labour market situation for engineers was not easy in 2000: Only 19% found a job immediately, 14% searched for 1-3 months, 8% found one after 3-6 months. But 15% searched for 7-12 months, 26% for 13-24 months and 18% searched and even longer than two years (ibid.).

To find employment in engineering graduates most often contact employers on their own initiative; try to find it through family, friends and acquaintances; and through an advertisement in a newspaper; or they would be approached by an employer. In Poland, graduates most often contact an employer on their own initiative (almost twice as much as the average among the countries) but this happens far less often in Turkey. In Turkey, graduates most often find a job through their family or friends (far more often than in other countries). Compared to other DEHEMS countries, this method is not so popular in Austria, Germany and Slovenia. While across countries 12% of graduates were approached by employers, in Poland this happened only a few times, for 3% of graduates. On the other side, in Austria 20% of graduates were approached by employers so engineering graduates there in relatively strong demand compared to other countries.

If we compare the ways of finding employment in the field of engineering with other domains, we can note that public employment agencies (except in Germany) are far less frequently used in this field than across all domains. On the other side, graduates more often find a job through the Internet (except Slovenia); and through the help of the HEI (except for Turkey and Germany).

The responses to the question: "To what extent has your study programme been a good basis for starting work?" allows the following conclusions: 86% of the interviewed graduates in Austria agreed that their study programme had been a good basis for starting work. In Germany, the share of 74% was very high, too. In Poland (65%) and Italy (61%), the figures were similar and close to the average (64%). Turkey (41%) and Slovenia (34%) had the lowest shares. This figure for Turkey can be explained again in part by the difficult situation facing graduates of engineering programmes in the labour market. These study programmes are not practically oriented and the curricula are not shaped in a way that meets the needs of the world of work.

*Figure 5.28: Study programme as a good basis for starting work, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question I1a (Hegesco), I1a (Reflex): To what extent has your study programme been a good basis for starting work. Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

### 5.3.5 Lifelong learning

#### *5.3.5.1 Regulation of lifelong learning*

The way the lifelong learning process is regulated or required for graduates in the professional domain of engineering varies from country to country. [63]

In *Germany* there is no regulated lifelong learning process. Further education is expected and recommended but not demanded for engineers. In *Austria* many professions bind their members to the lifelong learning process. This also applies to the domain of engineering, where responsibility for the details of continuing education is assigned to the respective chambers. In general, regulations of professional associations stipulate that each member is obliged to complete a minimum amount of additional training each year and those members must continuously inform themselves about scientific progress and the state of the art in their respective fields.

In *Turkey* the education sector and the T.R. National Education Ministry work intensively on the topic of lifelong learning. The other official actors of lifelong learning are the Council of Higher Education, the Turkey Statistics Agency, the Ministry of Labour and Social Security, the Social Services and Child Protection Agency, the Turkey Business Organisation, and the Institution of Vocational Qualifications. The Turkey Lifelong Learning Strategy Document from 2009 introduces rules of lifelong learning on a legal basis. The universities themselves also take lifelong learning into consideration and are trying to review their curricula. Moreover, public and private universities and job associations present certification programmes for continuing education.

In *Poland* there are no special rules with regard to lifelong learning. The path of professional promotion is defined at the company level with each firm applying its own rules and requirements. What is typical for engineering occupations is the fact that in many cases promotion is based on experience. Therefore, de-

[63] See National Reports of the DEHEMS countries, chapter 6 and 8.

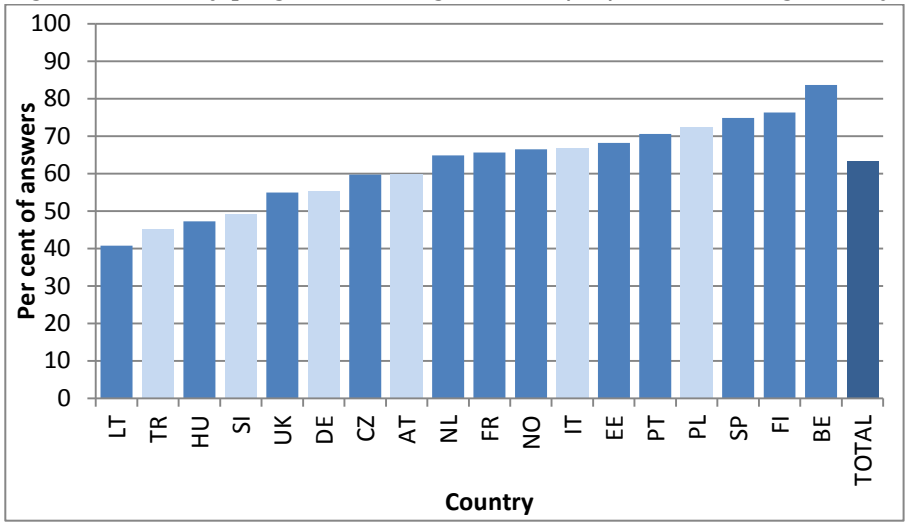
tailed records of one's professional career, the time and type of executed tasks are necessary. In *Italy* the lifelong learning system is not strictly regulated by law. Practitioners are not required to attend further courses. Nevertheless, they show high levels of participation in further learning activities, attended with the aim of continuously extending and updating their knowledge.

In *Austria*, many professions bind their members to the lifelong learning process. This also applies to the domain of engineering, where responsibility for the details of continuing education is assigned to the respective chambers. These chambers frame the kind and extent of continuing education their members have to undertake and prove the completion of. Further, the chambers have to approve education institutions and the courses they offer and the chambers offer a variety of courses themselves. In general, regulations by professional associations stipulate that each member is obliged to complete a minimum of additional training each year and that members must continuously inform themselves about scientific progress and the state of the art in their respective fields.
For example, members of the civil engineering profession can also become official technical experts. To maintain their officially accredited status they have to show evidence of the completion of an officially organised and accredited continuing education course every two years (Steiermark: § 28).

#### *5.3.5.2 Selected data from the HEGESCO and REFLEX projects*

Figure 5.30 shows the percentages of graduates who responded that their study programme in the domain of engineering was a good basis for further learning on the job. 72% of Polish graduates answered this question in the affirmative. The number in Italy was quite high, too (67%). The figures for Austria (60%) and Germany (55%) were again similar. Slovenia (49%) and Turkey (45%) were again at the end of the scale of all DEHEMS countries. One can assume that the figure in Slovenia would be higher after the review of curricula in the wake of the Bologna reform.

*Figure 5.29: Study programme as a good basis for further learning on the job, by country (in percent)*

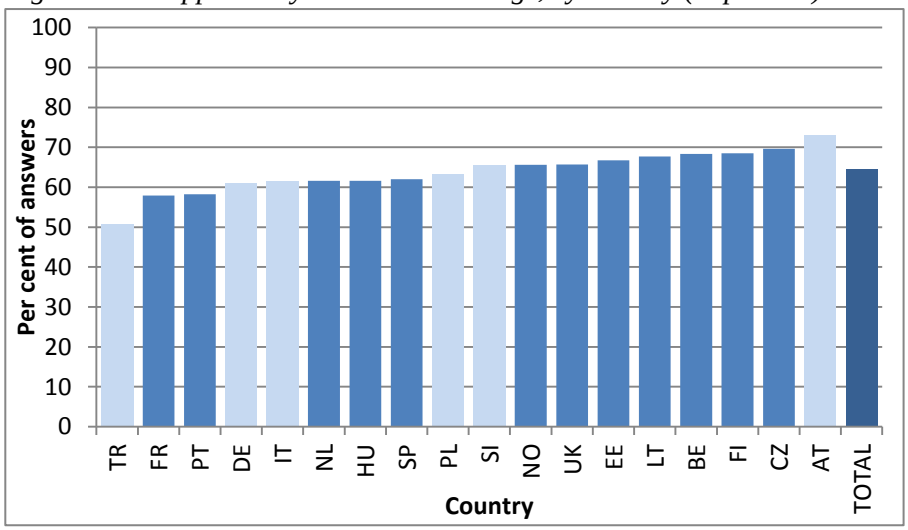



Source: Own elaboration based on REFLEX/HEGESCO data.
Question I1b (Hegesco), I1b (Reflex): To what extent has your study programme been a good basis for further learning on the job? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Regarding job characteristics, namely the opportunity to learn new things, Austria was again at the top of the DEHEMS and all the other REFLEX and HEGESCO countries with 73%. The figures were similar in

the other DEHEMS countries (between 61% and 66%), except for Turkey: Here again, the lowest number was reached (51%).

*Figure 5.30: Opportunity to learn new things, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question J1Bc (Hegesco), J1Bc (Reflex): Please indicate how important the following job characteristics are to you personally (opportunity to learn new things) and to what extent they actually apply to your current work situation? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent" (in section B – apply to current work).

### 5.3.6 Higher education management perspectives on graduates' professional careers – synthesis of the DEHEMS interviews

#### *5.3.6.1 Introduction: graduates have good opportunities to obtain adequate jobs*

Analysis of the interviews among the six DEHEMS countries demonstrates quite a smooth transition of graduates from higher education to the labour market. Even if the market is under pressure, graduates and engineers in general have a good chance of getting a job. As pointed out by one Austrian representative of a university "*After graduating from a technical study it is a bit like in the 'land of milk and honey'*". 91% of graduates have a job upon their graduation. Most students already have a job before they graduate. A significant number of graduates in Austria become self-employed.

In *Germany* young individuals also do not experience any problems getting a first adequate job after graduation (90% success), especially with graduates of mechanical engineering who have the best chances of all engineers. In most cases it is a gradual transition. Thus, the question is not getting a job but where to get a job. Some graduates have the possibility to climb the ladder relatively early after they have started working; others stay for some time in their positions. Income differentiation also plays a significant role in making a decision on where to get a job.

In *Italy* it takes less than four months to get a job after graduation and after one year unemployment is around 10 percent, with around 65% of graduates working and the remaining (22%) attending further study programmes. In *Turkey* graduates of engineering domain generally do not experience difficulties finding a job; however, there are some geographical differences in terms of employability. In industrial cities (e.g. Gaziantep) the transition to work is much smoother.

*Polish* graduates are also prepared for labour market requirements as 70% of first-cycle studies graduates are working at the time they graduate. This is an argument against the critique of the Bologna Process which claims that 3.5 years is too short a period to train engineers. Data from the Employment Service of *Slovenia* show that there is no unemployment among graduates of engineering study programmes. Placements during one's study often lead to employment after graduation.

In general, higher education institutions are not concerned with the employability of engineering graduates. One of the assumptions for the university administration not being strongly involved in keeping track of graduates in engineering on a formal level is expressed in one interview: *"It is not because this question is regarded as being of little importance, but because the faculty's authorities are pretty sure that the graduates don't have serious problems finding a job" (PL)*.

Although the above interviewee stressed that this assumption was mostly made intuitively, as can be seen from the above, interviewees from all participating countries highlighted an easy transition of graduates from engineering studies to the labour market. There is no need to do more on career counselling or counselling on the transition to work. The study programmes have been renewed in the framework of the Bologna reform and project courses have been introduced where students are confronted with realistic tasks that could be encountered in the real world. On one hand, this concept leads to practice and industry, on the other hand, it is research-oriented. Thus, study programmes as such are extremely practically-oriented and enable employability (DE).

#### *5.3.6.2 Understanding of career success*

***Professional success is defined by personal experience***

The employment success of higher education graduates has been one of the key research topics in studies of graduate employment and work. This section aims to reveal the interviewees' personal understanding of the professional success of graduates[1]. There is no unified view across the interviewed experts on what constitutes the career success of graduates in engineering, instead, a range of various interpretations was provided. Also, the views cannot be ascribed geographically as a specific viewpoint of the interviewees in one country; therefore, the results will be shown by country and arranged thematically.

The interviewees from Austria asserted that "*Success is if a graduate is able to further develop himself/herself in the job and is satisfied with the job. If you feel miserable with your job, you are not successful. There has to be a balance between using professional skills and professional development*". Another view is that success is not to reach the highest position possible. A successful career is different for everyone. One might not even want to obtain a position in upper management. *There is no general measure of success*.

German interviewees consider professional success as getting employment and climbing the ladder. This means in many cases that a graduate does not have special engineering tasks anymore, but tasks in general management that could be the task of any graduate with an academic degree. Another view, that is similar to Austrian views, is that professional success has to be defined on an individual level. Everybody should find a definition for himself and criteria on the way to be professionally successful. Graduates are successful in their professional life when firstly they have a possibility to work on a topic of great interest to them, secondly, when they have a good working team, and then after many empty levels comes income as a factor (relatively unimportant) of a successful professional career.

According to the Polish interviewees, the professional success of graduates can be described as *having a job, pursuing own professional interests at work, being appreciated by the employer, knowing what she/he wants to achieve, being accepted by the professional environment, having public trust, getting an attractive salary, having professional development prospects, getting a job at a desired location, participating in many international contests and receiving international awards for projects and being employed in a reputable company.*

Other sources claim that the etymology of the word is closer to the French expression meaning someone who is a genuine creator in the area of technology. A Polish representative of a higher education institution strongly supports this idea of the job of engineer. Therefore, in providing his definition of labour market success, he underlined the creative aspect of a potential graduate's job.

Interviewees from Turkey pointed out that being a good engineer is the key factor for career success. This means that a graduate should follow all new techniques and combine them in a productive way. Therefore, foreign language skills and international contacts are very important. Another viewpoint is that at the beginning of a professional path finding a job itself represents success and getting a desired job as well as being promoted at a later stage constitute long-term career success.

The viewpoint among Slovenian interviewees varies in the sense that some consider graduates' satisfaction with their position, even if it is different from their field of study, as success, whereas others underline the education-job match.

### *A diverse professional focus of graduates*

The professional orientation of higher education graduates is quite diverse in all DEHEMS countries because the spectrum of professional fields for engineering graduates is extremely broad. Engineering graduates from Turkey and Slovenia are employed in both private and governmental sectors. In the majority of respective countries (Austria, Germany, Slovenia, Turkey), graduates are especially required in high-tech companies and in areas where research and development activities dominate.

The interview responses show that graduates usually prefer to work in industry – in production, quality control and inspection departments, or public administration. Other occupational areas include marketing, manufacture, electrical and mechanical engineering, management, process design, consulting, planning and construction, business and economics. A German interviewee estimated that about half of all engineering graduates stay in an engineering profession. A considerable number of Turkish graduates work for leading international companies in various EU and non-EU countries. Many graduates continue working as academics at universities.

In Poland some general regularity among higher education graduates was observed: 25% of graduates are employed in jobs within their specialisation, 50% within their field of study and 75% in a general study area. Even though engineering faculties are assessed as strongly technical, graduates also work as exchange dealers or financial analysts.

### *Job satisfaction and the education-work match*

One of the most important measures of graduates' professional success is a subjective indicator – job satisfaction. Overall job satisfaction is determined as *"a pleasurable or positive emotional state resulting from an appraisal of one's job or job experiences"* (Locke, 1976, p. 13). This aspect was highlighted by the higher education experts in all DEHEMS countries. "*Success is if our graduates are satisfied with their*

*job*" (AT), "*Professional success means having a job that makes one happy and satisfied*" (DE), "*The necessity to get a satisfactory job after graduation*" (PL) and "*If graduates are satisfied with their job positions… then this is career success. If a graduate is satisfied he can work well, if he works well, he is successful*" (SL).

The definition of professional success also comprises other subjective indicators – the extent to which the qualifications correspond to the occupational structure *horizontally*, i.e. in terms of the match between subjects and occupational categories as well as adequate utilisation of skills acquired during one's study and *vertically*, i.e. in terms of the appropriateness of one's education level to the status of the occupation. "*A graduate is seen as successful if he/she is able to stay and further develops in the respective domain (whereas others, who are less successful, have to accept other jobs in other fields of occupation)*" (AT), "*The success of a graduate is working in the field of one's own studies*" (TR), "*Career success is when graduates are employed in the field from which they have graduated and if the knowledge, which was gained in the faculty is applied and offers them a chance of being successful*" (SI).

***Other insights***

In addition to the essential criteria of professional success mentioned above, the higher education experts pointed out other factors of success.

Austrian and Polish experts consider *technical know-how and soft skills* (teamwork skills, cross-linked thinking, autonomy etc.) as the most important skills concerning graduate employability. *Grades are not considered as significant criteria by companies when hiring someone; it's more about the personality match* (DE). The concept of employability is not about training narrowly-specified specialists since we do not know what a graduate's professional path is going to be. "*Employability means providing graduates with different skills, including soft skills*" (PL).

*International experiences* as well as personal contacts as highly significant aspects of getting employment and further professional success were emphasised by a German higher education expert. The labour market for higher education graduates consists of regional companies that closely cooperate with the faculties. Cooperation here comprises placements in such companies during studies as well as writing final theses in collaboration with companies. *"About 50% of the interviewee's graduates received their first employment via personal contacts of the interviewee with the industrial sector".*

In addition, well-paid and secure jobs were also mentioned as factors of career success. One Slovenian expert also referred to the social environment that career success depends on.

Summarising the results, it can be stated that the understanding of professional success by higher education experts in the engineering domain from DEHEMS countries varies. But what is common is that in their interpretations the majority of experts consider both *subjective* (adequate level of employment, a link between the field of study and competencies acquired during study and work tasks, job satisfaction) and *objective indicators* (employment status, income), which are essential to adequately measure the professional success of higher education graduates.

### *5.3.6.3 The role of HEIs in the future professional activities of graduates*

This section presents summary results on questions concerning how the institutions support their graduates' transition to work and their long-term career development. The questions cover the design of the

study programme, international orientation, practical orientation and practical elements of studies, research activities relevant for studies, cooperation with stakeholders and employers as well as career counselling. In light of the variety of the interviewees' positions and responsibilities in all HEIs, the following trend becomes clear with regard to the study programmes across the DEHEMS countries: either the interviewees speak and relate their expertise to a definite study programme/department in engineering, or they describe the overall situation in engineering programmes at their HEI[1].

### *Generating flexible graduates*

It is relevant to note that experts from all six countries highlight the fact that graduates of engineering experience a smooth transition to the labour market. Consequently, flexibility in the sense of being provided with a wide spectrum of knowledge as is, for example, the case in the domain of sociology, political science and psychology, not a primary concern of the academic study programmes in engineering. At the same time, however, the engineering field is facing constant technological change, and in this light the interviewees see a need for educating a 'flexible' specialist: "*It is not possible for the HEI to be able to provide students with really up-to-date practical knowledge and skills. It is the employer's role"*.

However, according to one interviewee in Poland, it is the role of higher education institutions to give students a very strong basis to able to absorb practical training in a fast and efficient way. Accordingly, a too narrow specialisation in engineering can cause problems in the further career of graduates: "*If graduates have focused too much on a special subject (e.g. laser technology) then it might be difficult to change their job or to find a job in another field*" (Germany).

Alongside this, the interviewees spoke about other forms of curriculum flexibility: a Polish expert noted that a curriculum in his higher education institution allows a definite degree of freedom for students in choosing their study paths: "*It is very important that students gain general knowledge and are taught to be open-minded and ready to adapt to changing environment rather than get specific skills, which become useless as time goes by*", whereas an Austrian interviewee pointed out the possibility of attending courses from a different level of programmes: "*Students may take courses that belong to a master programme while they are still in their bachelor study. [These courses can be credited afterwards] Therefore we can offer some flexibility in the system*".

At the same time, the interviewees stressed the constant introduction and enlargement of the modules/courses in competencies and skills development in the engineering studies curricula that make graduates more flexible in their career search: "*Courses on soft skills development are integrated in the faculty's curriculum: project management, teamwork, presentation skills, foreign language courses*" (Germany); "*In general, the 3rd and 4th year of the engineering programmes offer many elective courses to the students, which are designed according to the new developments and the popular and most needed subjects in the field*" (Italy); "*Also in courses at university, the training of soft skills for engineers is implemented e.g. giving presentations, training in rhetoric skills etc.*", "*Technical know-how and soft-skills [teamwork skills; cross-linked thinking; autonomy etc.] are the most important skills concerning graduate employability*. [According to one interviewee, companies tend to complain about graduates' lack of autonomy] (Austria).

However, the interviewees in Germany spoke of the reluctance of many students to participate in these courses, and as one explanation for this the experts highlight the restructuring and shortening of study programmes in the course of the Bologna Process, thus giving less space for students to take extra courses of study. If we understand 'flexibility' as including the international mobility of students, the participating HEIs report providing students in engineering with a possibility to complete a period of study (or, in some

cases, an internship) abroad, although the mechanisms for international exchange are developed on different levels across the countries. An interesting fact was highlighted by the German experts from both types of universities: the international mobility of engineering students in these HEIs is very low due to the primarily regional focus of the graduates' employment and the already mentioned restructuring of the study programmes. In this case, the international flexibility seems at present to have nearly no value for these students with a regional focus of employment.

### *International orientation*

The international dimension plays an important role in the view of the interviewees across all countries involved. It is possible to consider the international dimension from different points of view, such as the inward and outward mobility of students or staff, the offering of international study programmes, double degree programmes or in general courses in the English language, and last but not least the international orientation of research or networks and contacts with international institutions of higher education in general.

Overall, the interviewees in all DEHEMS countries agree that internationalisation plays a significant role in study programmes of engineering. This holds true for the fostering of study abroad experience or internships abroad, the internationalisation of studies through invitations of international teachers, offering courses or whole degrees in English and finally well-established international networks to support international contacts of students and staff. Especially the ERASMUS programme is seen as an important possibility to support students in going abroad. Yet the interviewees also perceive some drawbacks and challenges here. Many interviewees state that too few students take the opportunity to acquire international experience for various reasons, even though many possibilities are offered.

As the foci of the answers differ quite substantially by country, the feedback from the interviewees will be summarised accordingly.

Only a few and short comments can be found from the *Austrian* interviewees as regards internationalisation. However, these comments are favourable so that one might conclude that internationalisation is somewhat taken for granted. The interviewees state that international mobility is highly appreciated at their institution and seen as an important asset. One representative outlines that his/her institution has very lively international contacts which are supportive of students gaining international experience.

Except for one interviewee from *Germany*, who outlines that his/her institution has a clear regional focus, all interviewees strongly underline that they regard it as highly important that their graduates have acquired international experience during the course of their studies. One interview partner even describes international experience as a "must". The interview partner described different ways to support the international dimension in their institutions, such as participation in exchange programmes as the ERASMUS programme, establishing an international office at the faculty, the integration of dual degree programmes with partner institutions abroad and international study programmes offered in English. However, some interviewees also mention that the number of students going abroad each year is smaller than it should be and wonder whether administrative barriers keep the students from completing a study period or internship abroad. Further, the restructuring of the study programmes in the framework of the Bologna reform is seen somewhat cautiously as regards its effect on student mobility. One interviewee has the impression that the students are under great pressure to cope with their workload and regrets a lack of flexibility in the curriculum, even though he/she admits that the recognition of study achievements has become easier. Finally, one interviewee questions whether young (bachelor) graduates will still be able to easily find a job abroad was the case prior to the Bologna reform.

Also the interviewees in *Italy* agree that international mobility has an important positive effect. International activities are seen as important for fostering a graduate's competitiveness and have a positive effect on knowledge and skills in general. The interviewees state that different measures are offered to support students in gaining international experience, e.g. through participation in exchange programmes and cooperation with higher education institutions abroad. One interviewee explains that students often hesitate to go abroad since that would often result in the prolongation of their studies, even though he/she also underlines that a positive effect is perceived.

The interviewees from *Poland* agree that international mobility is most important and note that the institutions offer many possibilities for students to acquire international experience. However, it is mentioned that too few students actually take the opportunity to complete a period abroad. One interviewee said that his/her faculty offers more possibilities to go abroad than there are students willing to take up this option. The reason for this is seen in the fact that most students already start working in the last years of their studies. This view is shared by another interviewee who stated that students from Poland seem to be somewhat hesitant about going abroad as they are too involved in their studies in the first years and too busy with graduating or already working in the later stages, even though the university is internationally very well connected. One suggestion to tackle this drawback was to establish mentors to support students in acquiring international experience.

Overall, the interviewees from *Slovenia* see internationalisation at their institutions in a positive way. International mobility is supported by different measures at the institutions. The ERASMUS programme is seen as an important possibility in this regard. Some state that international mobility is already established, but should be enforced. The integration of international students and teachers is seen as being hindered by the fact that by law courses have to be offered in the Slovenian language, although institutions have found possibilities to deal with this, e.g. by offering joint team work for international and domestic students or special short-term courses offered by international teachers in English.

The *Turkish* interviewees outline that internationalisation is regarded as very important and that especially the ERASMUS programme is a very important measure in this regard as regards both inward and outward mobility. Further, bilateral agreements and courses offered in English are supposed to foster international exchange.

### *Practical orientation, cooperation with industry and internship are central tools for enhancing graduates' employability skills*

Overall, the interviewees across all countries agree that a practical orientation is an important trait of the study programmes offered in the area of engineering. This is often realised by close cooperation with industry. Many lecturers have practical working experience in companies. Further, there is often cooperation in research projects between universities and the industry. Another measure is that internships are integrated into the course of studies. Internships or industry placements are not always mandatory, but the overall feedback of the interviewees suggests that, after having completed their studies, most students will have completed an internship either during their studies, as a placement for their thesis or as an internship between the bachelor and master programmes. Further, practical parts are integrated directly into the course of study or as projects initiated and developed by the students as part of the study programme.

In general, many interviewees stressed that placements and internships are seen very positively by companies in the industry as it is regarded as a possibility to get in contact with qualified new staff and that graduates often find their first job via an internship: "*This obligatory internship is extremely important*

*since students often get their first job offer from the company where they did their practical phase*" (DE). However, two interviewees (one from Italy, one from Poland) explain that it is very difficult to find adequate offers for internships in the industry.

The statements of the interviewees in different contexts suggest that many faculties work in quite close cooperation with industry. In general, cooperation is perceived as important to foster the employability of the graduates. Joint research projects are named as well as the integration of lecturers who have broad experience in the industry. Other interviewees mentioned that companies act as sponsors of different activities.

Further, the higher education institutions cooperate with industry as regards internships or placements or for the realisation of bachelor or master theses. One interviewee from Germany stated they have a database of alumni and companies in the region that offer traineeships and that they are even representatives of employers on the examination board. This view is shared by an Turkish interviewee: "*If you are a regional university, you can have contacts from the world of work easily and they are very open to support your activities*" (Turkey). In addition, some interviewees pointed out that suggestions from the industry are taken into consideration when developing or adjusting curricula: "*For curricula development, employers should be included in the process*" (Turkey).

Also in Austria the cooperation between employers and higher education institutions is seen to be quite close. One interviewee mentioned that graduates often initiate joint research projects between their companies and the university or that topics for theses are generated jointly by a company and the university. In Italy, one interviewee explained that "*Relationships between public and private entities are not institutionalised and systematic, nonetheless they are wide, frequent and very useful. Scholars keep in touch with external organisations for research, internships and consultancy reasons*" (Italy). This view is shared by the other interviewees from Italy, except that one explained that contacts with international companies are good, but sees contacts with local employers as being quite unsatisfactory.

#### *Research activities are important for multiple aspects in relation to the labour market*

In general, research activities are seen beneficial for preparing students for their professional life in various aspects. First, the experts surveyed consider integration into research as an important measure to ensure the contents of the study programme are up to date and deal with current developments. Further, the interviewees stressed that involvement in research projects provides excellent opportunities for students to get in contact with the world of work and potential employers. Many graduates, as already mentioned, find their first job via these contacts. The interviewees pointed out that there are different opportunities for the students to get involved in research, such as working as a student assistant in research projects or in study projects directly integrated into the curriculum. Further, many students seize the opportunity to prepare their thesis in cooperation with a company: "*All of our students have to prepare a research project in their last semester. Teachers support them to cooperate with employers in those projects. And, the projects should also be applicable*". (Turkey)

Finally, the interviewees explain that the scope of research (e.g. applied research, basic research) depends on the scope and type of the higher education institution. One Italian interviewee saw a drawback here is they explained that (highly theoretical, innovative approach) research does not match the needs of local industry.

### *Recruitment services and career counselling*

The transition to work is generally seen as smooth and unproblematic, even described as "sensational" (AT). This might be the reason that it is not always seen as necessary to implement systematic procedures to support graduates' transition. Despite this, as regards perceived needs for improvement, many experts explained that more systematic support would be desirable. Many interviewees outlined that personal contacts of lecturers, in projects and through internships, often help students even find a job prior to graduation.

In *Germany*, the practical orientation of the study programme and contacts with employers through placements, lecturers, excursions or cooperation with companies in writing a thesis are seen as very important. Further, some faculties or employment centres offer courses to improve the soft skills of their graduates.

This view is shared by the *Austrian* interviewees. They also underline the importance of contacts though internships or writing a thesis at a company. Similarly to Germany, trainings, activities and workshops for soft skills are on offer. Further, special help was mentioned for students thinking about founding a start-up or becoming self-employed.

The *Italian* study programmes include seminars and lectures given by practitioners from companies through which students can get in contact with industry. Job centres as well as the faculties offer trainings, seminars, international programmes and contacts for internships or placements. The *Polish* interviewees, like the *Slovenian* and *Turkish* experts, pointed out that companies contact the professors or faculties to 'ask' for suitable students. According to the interviewees, institutions like career service centres are not common and, if a university has such an institution, their work is limited.

### *Contacts with former graduates*

The analysis of the ways higher education institutions get in contact with their former students and follow their professional path demonstrated some similarities among the countries involved, except Italy as this question was not addressed in the interviews. The spectrum of activities in this sphere includes alumni associations/clubs that offer special workshops and organise social events, large and small-scale graduate surveys as well as non-formal personal contacts with graduates.

Contacts with graduates in *Austria* are also maintained via recruiting events, electronic communication as well as the "Association of Friends and Graduates". A similar association exists in *Germany*. It is called "Aufbau" and is directed to supporting graduates of civil engineering. Moreover, contacts are kept by faculties which conduct regular surveys of the retrospective evaluation of the studies and their potential relevance for the professional activities of graduates. Although regular formal contacts with graduates are not maintained by Polish higher education institutions, the interviewees stated that they have a pretty good orientation regarding the professional path of their graduates.

In *Turkey* a new software programme is being developed under the supervision of the student registrar's office. It is aimed at creating a direct link with graduates. This programme will help follow and have feedback especially with regard to the competencies required in the respective field. The feedback on graduates is also received from employers as well as career centres. In *Slovenia* contacts among graduates and universities are kept through some professional assignments, co-mentorships, cooperation with faculties as guest lectors, demonstrators, research work. Despite the availability of various means to stay in touch with graduates, they are not followed systematically and formal contacts on the side of higher education institutions are not very developed yet.

***Student-centred teaching fosters soft skills***

Among other issues, it is worthwhile noting that many interviewees across all countries outlined the importance of innovative, student-centred teaching strategies such as project work and the integration of students into research projects. Special modules to foster teamwork, soft skills and meta competencies are already on offer or called for.

### *5.3.6.4 Developmental needs*

In *Austria*, many interviewees called for better study conditions in general, such as better funding and infrastructure and a high level of permanent staff and an improvement of teaching as such. This is reflected in the demand to focus, besides on technical skills, on soft skills and meta-competencies and the call to implement them in university courses as well as in the curricula. Further, it was demanded to enhance the transferable skills of students. Finally, the interviewees expressed the concern that it is important to attract more students and to enhance numbers of enrolment in general, but especially as regards women: "*We're fighting to get more ladies here. That's a topic we'll have for eternity*" (AT).

In *Germany*, similar to *Austria*, there is a call for better study conditions in general, but as regards somewhat different areas. The interviewees asked for a better composition of study plans and especially for a better structure of the Bachelor-Master system. More flexibility is seen as required as some courses do not need to be bound to a certain level. Further, it was pointed out that an increase of the number of students should not result in a decrease of study conditions and that better support for writing a PhD thesis should be given, as one interviewee outlined, who saw the danger that many graduates will complete their PhD abroad: *"What is missing are capacities in the mid-level faculty. It is extremely difficult for graduates to write a PhD thesis at a university in Germany. Thus, they try to do one abroad (e.g. in Great Britain). This is a big hurdle for those graduates who want to climb the ladder or those who want to stay in research"*. Finally, a need was perceived to improve career services, e.g. by job offers communicated via the faculty and to strengthen alumni activities in general.

The primary challenge in *Italy* is seen in the fact that more new students should enrol each year. Further, one interviewee explained that the knowledge and skills of new students needs to be improved upon enrolment, i.e. in secondary education. Many interviewees expressed a need to review and develop the curricula by taking the needs of stakeholders and employers into account. There was a call for a common strategy all over the country to "*identify productive sector needs and match them with higher education*" (IT).

In *Poland*, there was a call for more flexibility in higher education institutions regarding the possibility to review and adapt curricula, teaching modes or the recruitment of lecturers according to current needs: *"Like at most public, old-fashioned higher education institutions, at this university, any changes in curricula, teaching modes etc. are quite difficult to implement. That is a serious obstacle to dynamic adjustment to emerging problems"*. As regards knowledge and skills, especially the need to put a stronger emphasis on personal development, soft skills, and teamwork was advocated: *"The low level of graduates' abilities for group work and the lack of soft skills is the key problem indicated by employers. There should be more occasions to train these skills during the study process"*.

Like in Italy, one interviewee postulated that new students need to have better knowledge and skills upon enrolment.

Further, the interviewees expressed the need to establish the systematic follow up of graduates' career paths as well as systematic feedback of employers to use this knowledge for reviewing the curriculum.

*Turkish* interviewees especially mentioned the desire for more professional career counselling, possibly integrating the employer's view, as well as better cooperation with employers especially as regards sustainable research projects. In *Slovenia*, it is difficult to identify common trends among the responses from the experts. One might be the need to integrate more obligatory practical elements and experiential work into the course of studies as well as to improve the applicability of the final thesis: "*It would make sense to include obligatory practical training also for the academic level of study programmes*". Further, better infrastructure, such as more laboratories and equipment, was called for*: "There is a problem of providing adequate equipment and instruments which are needed for research work and also for work with students*". Finally, the interviewees asked to establish more professional career centres to systematically support graduates in their transition to the labour market.

### 5.3.7 Conclusion

Overall, the analysis of the study domain of engineering, the overview of the study conditions and provisions of engineers and their early careers reveal some common trends across all countries as well as individual characteristics that differ from country to country. While the general situation of students in the field of engineering, their transition to employment and the early career of the graduates can be seen very positively, there are quite substantial variations among the different countries as regards many details. This becomes obvious in the analysis of the study domain of engineering as well as in the feedback of the interviewed experts and actors in the field of engineering.

The requirements to become a full member of the profession in the engineering domain differ in the DEHEMS countries. In Germany and in Turkey, graduation from an engineering study programme allows one to use the title "engineer" without any additional steps. In Austria and in Slovenia, depending on the engineering programme, graduates need to fulfil defined qualifications to be a certified engineer, e.g. a certain number of years of work experience or an examination conducted by a competent body (e.g. the Federal Chamber of Architects and Engineering Consultants in Austria, the Slovenian Chamber of Engineers). In Poland, there is a considerable number of professions in the engineering domain for which it is necessary to hold an appropriate certificate confirming qualifications and the right to perform the given profession.

The transition process from higher education to employment for graduates of engineering study programmes is individualised in the DEHEMS countries. After graduation, graduates apply directly for a job or continue studying for a PhD.

The data from the REFLEX and HEGESCO projects on the transition process to the labour market and on aspects of lifelong learning permit the following conclusions. In all DEHEMS countries, except Turkey, the situation of engineering graduates in the labour market was relatively good. Most graduates found a job within three months after graduation. The study programme has been regarded as a good basis for starting work in Austria and in Germany. In contrast, Turkey and Slovenia revealed the lowest shares of those answering this question in a favourable way. Again, in Austria and in Germany graduates were extremely satisfied with their current job whereas the surveyed graduates in Italy and Turkey judged their situation much more critically.

Nearly all surveyed graduates in Poland agreed that their knowledge and skills were being utilised in their current work to a very high level. Regarding job characteristics, namely the opportunity to learn new things, graduates from Austria rated their situation most favourably whereas graduates from Turkey were the most sceptical. Similarly, the share of graduates who had taken part in a work-related training course within the last 12 months was the highest in Austria and the lowest in Turkey and Italy.

Overall, the results of the REFLEX and HEGESCO projects on the transition process to the labour market and on the characteristics of the first job show that the situation of graduates in the field of engineering is seen very positively in Austria and Germany, while graduates from Italy and Turkey rate their situation quite critically.

The analysis of the national reports of lifelong learning revealed that in some DEHEMS countries such as Germany, Poland and Italy, further education is expected and recommended but not demanded for engineers. In other countries such as Austria, many professions in the domain of engineering bind their members to the lifelong learning process where responsibility for the details of continuing education is assigned to the respective chambers. In Turkey, a Lifelong Learning Strategy Document was approved which introduces rules of lifelong learning on a legal basis.

It is difficult to identify common trends across the DEHEMS countries in the responses of the experts interviewed in the field of engineering. Yet it is overall possible to conclude that the interviewed experts agree with regard to the high employability of graduates in the area of engineering, the smooth transition to the labour market and good career prospects. Even though there are some variations by country and it is possible to perceive a certain tendency that experts from Austria and Germany see an even better employment situation than experts from Italy, Poland, Slovenia and Turkey, the view across all DEHEMS countries may be described as very positive.

The professional orientation of graduates is very diverse in the view of the experts. This is, first, due to the broad range of professional fields in the area of engineering and, second, the different economic landscapes in the DEHEMS countries. However, in most countries (especially Germany, Austria, but also Turkey and Slovenia), graduates work in areas where research and development are the dominant activities. As regards the view of professional success, the responses are even more diverse while it is not possible to identify certain tendencies by country. The reason might be the abovementioned diversity of professional activities and economic environments. Further, one might conclude that the perception of professional success is influenced to a relatively high extent by personal experience. Two aspects, which can be identified across all countries, however, are satisfaction in one's job as well as the match of education and work. The correspondence of education and work tasks as an indicator of professional success is underlined both as regards the horizontal match, i.e. professional subjects and knowledge and skills, and vertical match, i.e. an adequate level of employment and status.

Across all DEHEMS countries the interviewed experts agree that graduates in the field of engineering experience a smooth transition to the world of work as they quickly find an adequate job directly or soon after graduation. Many interviewees, again across all the countries involved, underline that contacts with employers, e.g. during internships, facilitate the process. Moreover, the interviewed experts agree that a practical orientation is an important trait of study programmes offered in the area of engineering. Consequently, cooperation between industry and faculties is often close and perceived as very important, e.g. via the integration of lecturers with practical experience or cooperation in research projects and is seen as very beneficial to the employability of graduates. Internationalisation plays an important role in the view of

experts in all DEHEMS countries. This includes the mobility of both students and staff as well as establishing international study programmes and an international orientation of teaching and research in general. While the feedback differs quite substantially from country to country, many experts agree that especially offers for student mobility could be used more frequently.

As the transition to work is seen as smooth and unproblematic, it is not surprising that career counselling or recruitment services are mostly realised in an informal way, e.g. by helping students to get in contact with employers for internships or writing the final thesis. Across all the countries involved, these contacts are seen as very important for an unproblematic transition to work.

In spite of the generally very positive view, the interviewed experts still describe some needs for development and improvement. Again, it is very difficult to identify common trends across the different countries. A few suggestions can however be identified in many countries: Many interviewees call for greater flexibility within the study programmes in general, i.e. to have the possibility to include courses that foster soft skills and meta competencies. In many countries, the experts express a concern that it would be important to attract more students to enrol each year. Finally, many experts call for better study conditions as regards various aspects, e.g. better funding and infrastructure, but also better learning and teaching conditions such as a higher level of permanent teaching staff.

*Arzu Akkoyunlu Wigley, Sibel Aksu Yildirim, Selda Onderoglu, Bugay Turhan*

## 5.4 MEDICINE

### 5.4.1 Introduction

The aim of this section is to explore the general characteristics of medicine and related studies, which includes *the study field of medicine, dental studies, medical diagnostic and treatment technology, therapy and rehabilitation and pharmacy*. As in other sections of this report, the general characteristics of the profession will be examined by using the both databases of HEGESCO and REFLEX and national reports.

The ensuing insights will to some extent help answer if there is a need to modernise and harmonise medical education and training across Europe with the argument that such a trend enhances cooperation between international medical research institutions. This addresses general policy concerns in higher education such as quality assurance, effectiveness, accessibility, openness, coherence and the incorporation of ICT and the implications for health-care delivery and education/training (MEDINE2).

Recently, medical education in Europe has been subject to comprehensive changes. In this respect, most medical schools/faculties in the European region have, especially over the last decade, been actively engaged in reforming their medical programmes (WFME, 2005:3). Following the Bologna Process, Directive 2005/36/EC of the European Parliament and of the Council provides a framework for mutual recognition on the basis of the coordination of minimum training conditions. It is stipulated that basic medical training shall comprise a total of at least 6 years of study or 5,500 hours of theoretical and practical training provided by or under the supervision of a university (Hensen, 2010:144).

Also the TUNING Project has aimed to promote harmonisation in the HE sector. In 2004, the Tuning (Medicine) Task Force generated and focused on learning outcomes for primary medical degree qualifications in Europe. The work has been done under the auspices of the MEDINE Thematic Network for Medical Education in Europe (Tuning Project – Medicine: 9). It has had a considerable impact. For example, the 2009 version of "Tomorrow's Doctors", guidance for medical schools from the UK General Medical Council, currently under consultation[64], is heavily based on the Tuning outcomes, as referenced in the document. However, there is wide variability in the extent to which medical schools across Europe have adopted an outcomes-based approach to their teaching and assessment. Where such approaches have been adopted, there is considerable variation in the outcomes being used. This means it is difficult to be sure that all medical graduates in Europe are competent in core aspects of medical practice. Also the MEDINE2 Thematic Network in Medical Education in Europe is built on the work of Tuning Medicine (MEDINE) 2004-2007.

In contrast with the two-cycle programmes within the Bologna Process framework, programmes in medicine are still mostly provided in a single cycle lasting 5 to 6 years and lead directly to a master's degree (or equivalent). Seven out of 45 countries, namely, Belgium, Denmark, the Netherlands, Portugal, Armenia, Iceland and Switzerland have adopted the two-cycle system but there is great variability and ongoing concerns about the comparability of the degrees. At present, a real two-cycle system (undergraduate and graduate) in the Bologna sense is still rarely implemented in medical education across Europe (Hensen, 2010:143).

64 See http://www.gmc-uk.org/

One objective, the adoption of a system essentially based on two main cycles, undergraduate and graduate, in medical education is regarded as problematic by several countries and many medical schools and seen as potentially harmful to the quality of medical education. Implementing this objective will require careful analysis and considerations (WFME, 2005:4). Similarly, WFME (2005) points out that medical education is costly and most countries need medical doctors they can afford to educate. Diverting students from the path to a full medical qualification must be regarded as a debatable educational policy (WFME, 2005:7).

In this context, the idea of the Bologna three-cycle model for medical education has been controversial, with concerns arising about loss of curriculum integration and the employment status of first-cycle graduates. While many elements are non-controversial when applied to medicine, problems have been identified with issues such as the proposal for a two-cycle model. Those opposing implementation of the process have expressed serious concerns that the result would be a retrograde step reinforcing the separation of basic and clinical sciences in the curriculum.

### 5.4.2 Statistical overview

#### *5.4.2.1 Number of graduates*

Table 5.28 (OECD data) shows that from 2005 to 2010 the numbers of graduates in field of health and welfare grew in Poland, Germany and Austria. When looking at the share of these graduates compared to all graduates, we note the growth of the field of medicine in Italy and Poland. Italy also has the biggest shares of health and welfare graduates with around 15%, while Austria and Poland have the smallest shares among the DEHEMS countries.

*Table 5.28: Number of graduates in the Health and welfare field (medicine)*

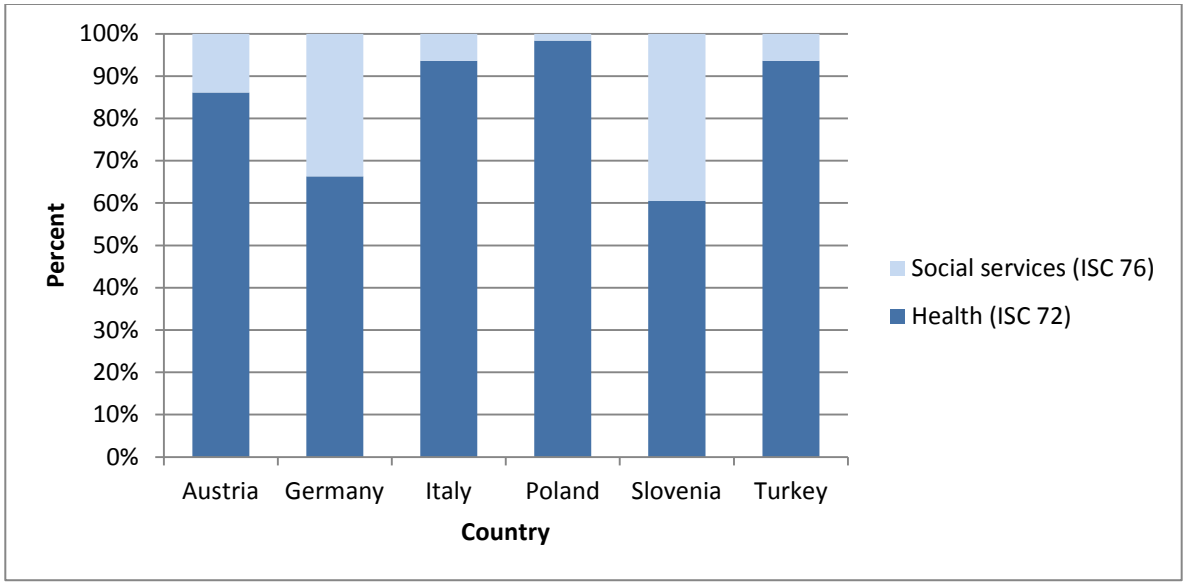
| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Austria** | 2165 | 2352 | 2313 | 3384 | .. |
| **Germany** | 31447 | 31375 | 32471 | 34573 | 36181 |
| **Italy** | 53440 | 53934 | 59527 | 34854 | 34976 |
| **Poland** | 35544 | 39457 | 43818 | 47477 | 51227 |
| **Slovenia** | 802 | 853 | 448 | 521 | 536 |
| **Turkey** | 17133 | 13834 | 17190 | 18148 | 18809 |
| ***% of tertiary graduates*** | | | | | |
| **Austria** | 8.7 | 8.8 | 8.2 | 9.7 | .. |
| **Germany** | 13.1 | 10.1 | 9.6 | 9.4 | 8.9 |
| **Italy** | 14.3 | 14.2 | 15.1 | 15.1 | 15.7 |
| **Poland** | 7.2 | 7.9 | 8.3 | 8.6 | 9 |
| **Slovenia** | 10.7 | 10.6 | 5.7 | 6.3 | 5.6 |
| **Turkey** | 9.5 | 5.9 | 6.6 | 6.5 | 6.2 |

Source: Own elaboration based on OECD (2011).

### *5.4.2.2 Subdomain structure*

According to OECD data (Figure 5.32), among DEHEMS countries the structure of the health domain seems to be fairly similar in Turkey, Poland, Austria and Italy where 85% or more graduates finished programmes in health subdomains. Also in Germany and Slovenia the majority of graduates were enrolled in programmes in health subdomains only in smaller shares (60-65%), meaning that Social services in this two countries are more popular than in other countries.

*Figure 5.31: Structure of the Health domain (Medicine) – graduates broken down by subdomains*




Source: Own elaboration based on OECD (2011).
Note: Latest available data for Austria for 2008.

### 5.4.2.3 Gender Distribution

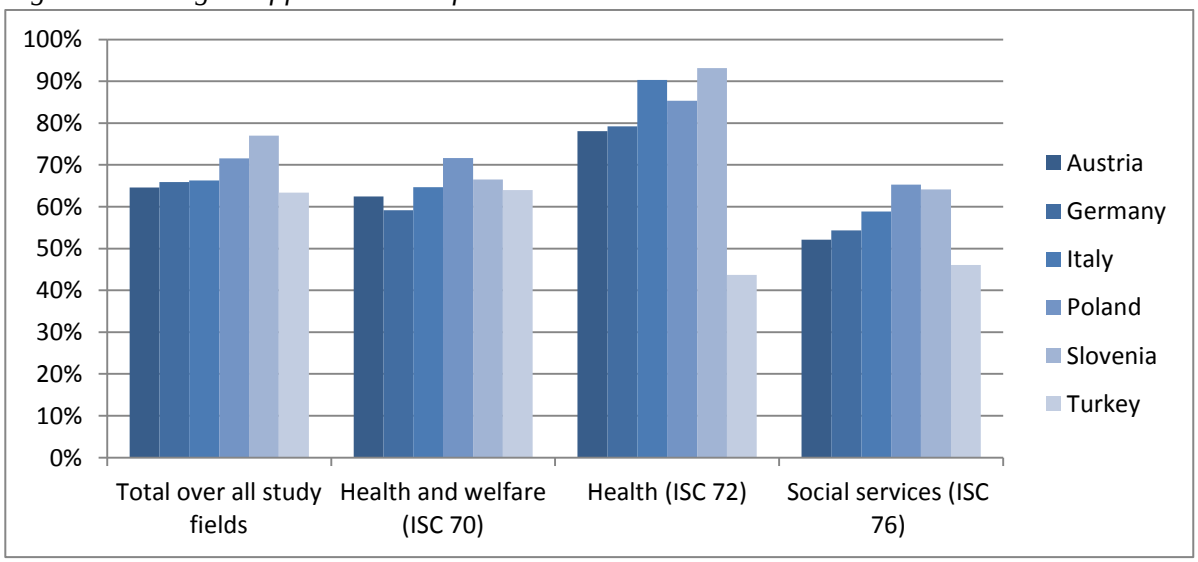
Statistical data from the DEHEMS national reports show that the percentage of women in all study programmes in this domain is very high in DEHEMS countries. In Germany, the share of women in all study programmes in this domain is over 50% - especially in nursing and "other medical therapy-programmes" - both traditional female fields. Similarly in Austria, 64.8% of all students in Health and Social services are female in public universities, while this ratio is 57.3% for private universities.

In Poland 69.8% of all students enrolled in the study field Medicine and Pharmacology are female. In Slovenia 76.3% of such students are female. Although there is more balanced distribution in Turkey, the female ratio is still greater than the male ratio in some fields. In the medicine field, the male share is 57%, in Physical Therapy and Rehabilitation it is 52%. However, in the faculties of Dentistry and Pharmacy the number of female students is greater than male students. The share of females in dentistry is 53% while in Pharmacy it is 51%.

In addition to the high percentage of women in the field, another striking fact is that in some countries the number of women in the field has also increased in recent years. For example, in Germany, medicine and dentistry has continuously expanded over the last decades. Today, some comments are made that this higher number of women is a problem for the German health system. It is argued that women go less into surgery and more often leave their job for family reasons. Both factors support the often claimed (but unproven) shortage of doctors in Germany. In Turkey, parallel to the increase in the overall number of students in the domain, the number of female students has also risen. In comparison with the 2004-2005 academic year, in 2008-2009 there was a 12% increase in the number of female students in medicine, 22% in density and 10% more female students in pharmacy.

According to OECD data (Figure 5.33), we can say that the distribution of female students in the medicine domain is quite similar to the distribution across all study fields (60-70%). However, when looking at the subdomains we note a much higher percentage of female students in the health subdomain (around 85%), especially in Italy and Slovenia (90% or more). Meanwhile, in the subdomain of Social services this percentage is a slightly above 50%, the highest being in Slovenia and Poland (above 60%).

*Figure 5.32: Degree of feminisation of the Medicine domain*




Source: Own elaboration based on OECD (2011).
Note: Latest available data for Austria for 2008.

#### *5.4.2.4 Family Background*

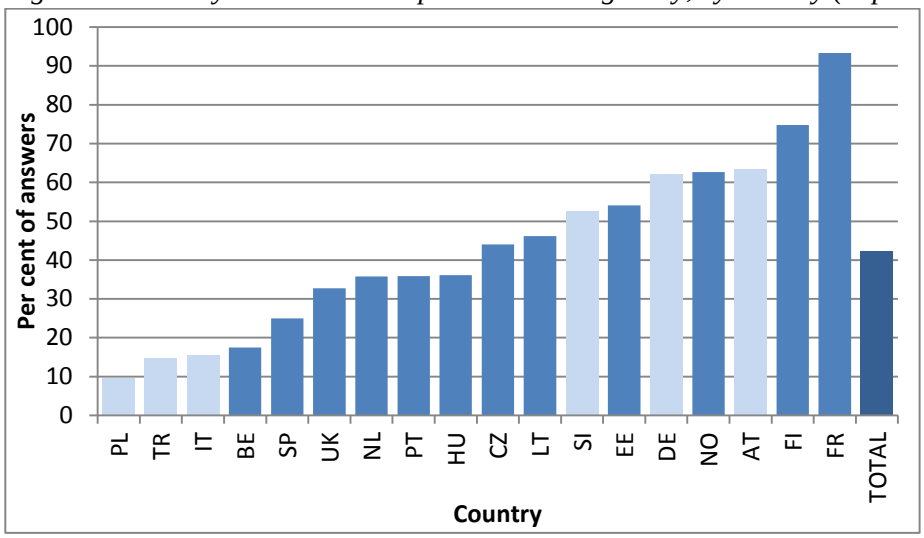
Studies on the determinants of education show that family background is one of the important factors regarding access to schooling. There is a big variation among the HEGESCO and REFLEX countries with respect to the highest education level of the parents of medicine students (Schomburg and Löwenstein, 2010: Table 107). However, a higher education of the father does play a significant role in the medicine domain. In 15 out of the 17 countries, the ratio of all medicine students with an academic family background is over 30%. Answers to the question about the highest education of the father show that 85% of all medicine students in Germany have a father with the highest education level of ISCED 5 + 6. Other countries where the relevant ratio is over 60% are Japan, Spain, France and Belgium. In that sense, PT constitutes an exception because 64% of all medicine students in PT have a father with the highest education level of ISCED 1 + 2.

#### *5.4.2.5 Student Mobility*

There has been a significant increase in student mobility over the last 10-15 years. The total number of mobile tertiary education students has risen 61% since 1999 and was estimated at around 2.7 million in 2005 (WES, 2007). According to the European Union, student and teacher mobility is an important factor for growth and employment. The European Commission states that "Learning mobility is an important way in which young people can strengthen their future employability and acquire new professional competences, while enhancing their development as active citizens" (EC, 2010: 2). The Commission's Green Paper on Learning Mobility (July 2009) launched a public consultation on how best to tackle obstacles to mobility and open up more opportunities for learning abroad (EC, 2010: 2).

The HEGESCO and REFLEX countries do not constitute a uniform bloc in terms of study-related work experience. There is a big variation between the countries in this respect. For example, in FI 77% of the graduates had acquired study-related work experience during their studies, but in Belgium this figure was 19% (Figure 5.34). It is also evident from the table that the ratios of graduates who had acquired study-related work experience during their studies for four DEHEMS countries, namely Italy, Germany, Slovenia and Austria, are well above the average for HEGESCO and REFLEX countries. 84% of graduates reported that they took part in one or more work placement/internships as part of their study programme. This ratio is over 68% in all DEHEMS countries, except Italy.

*Figure 5.33: Study-related work experiences during study, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question B3 (Hegesco), B3 (Reflex): Did you acquire any study-related work experiences? Responses "yes" on a scale of answers"yes" and "no".

Data concerning the mobility of medicine students from HEGESCO and REFLEX countries shows that student mobility during the period of study is very high in some DEHEMS countries like Austria (64%), Germany (62%) and Slovenia (53%), although it is only 10% in Poland and 15% in Turkey and Italy.The other striking fact about mobility is that mobility during the study time period is much higher than mobility after graduation (Schomburg and Löwenstein, 2010: Tables 98 and 100).

For example, mobility during the period of study is 46% in Germany, but this rate decreases to 8% after graduation. This is true for the DEHEMS countries, except Turkey. 18% of Turkish graduates have spent some time abroad since graduation for study or work, whereas only 10% studied abroad during the study period. The explanation of the 10% who studied abroad during their study period for Turkey is that university students are financially dependent on their families during their study period; thus they do not ask for extra money to study abroad. The Erasmus programme has had a very positive effect on this ratio since students have begun to be funded under Erasmus for their study abroad period. Turkey began to participate in the Erasmus programme in 2004. After graduating, students there begin to earn money and thus are able to spend some time abroad to study or they find scholarships for their study period abroad.

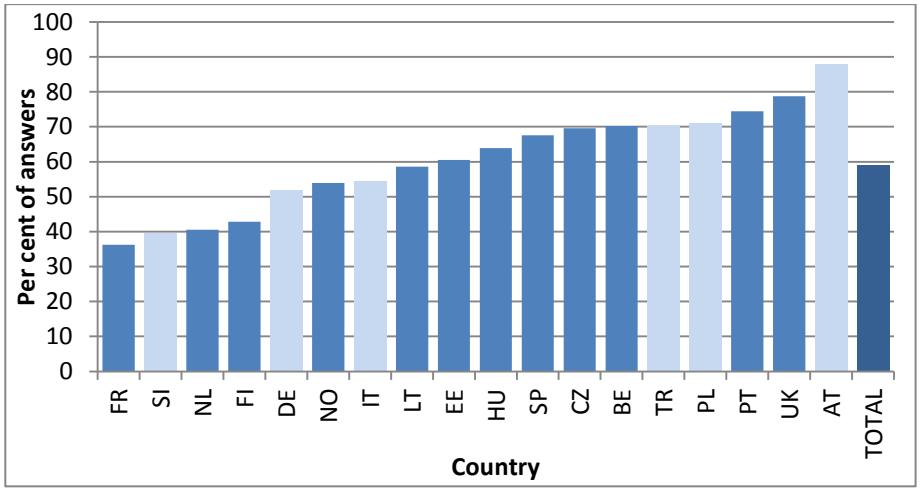
### 5.4.3 Study provisions and conditions

#### *5.4.3.1 Programme Characteristics*

In the HEGESCO and REFLEX countries 81% of the graduates indicate that their programme was regarded as demanding to a very high extent. With respect to the DEHEMS countries, 99% of Austrian graduates provided the answers of the demandingness of their study programme, but on the other hand Slovenian graduates had the lowest percentage among DEHEMS countries, that is 70%. The percentages of graduates from other DEHEMS countries range from 84% and 89%. Comparing to other domain, we can say that study programmes of medicine are regarded as quite demanding.

Regarding the academic prestige of study programmes from the field of medicine we can note that in Austria 88% of the medicine graduates think their study programme was regarded as academically prestigious, while on the other hand this percentage in Slovenia is only 40% what is also below European average.

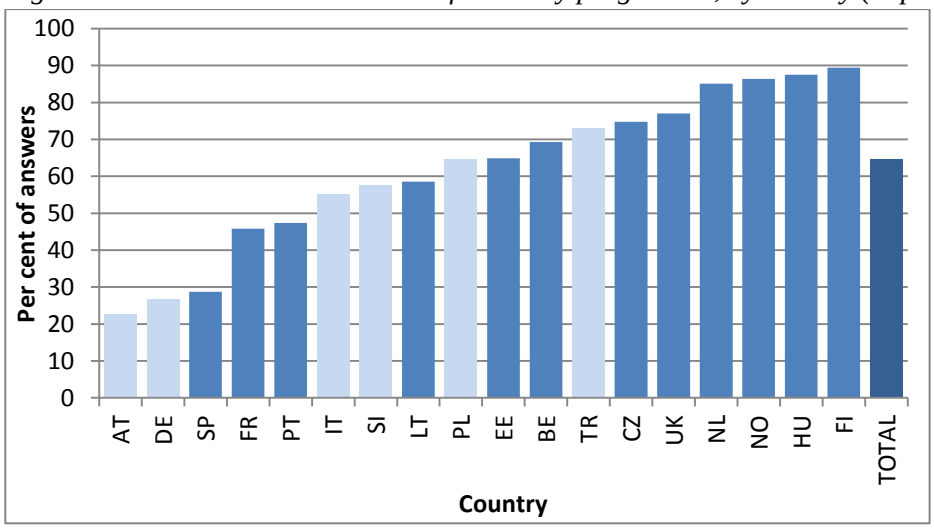
*Figure 5.34: Academic prestige of the study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5f (HEGESCO), A6f (REFLEX): To what extent was the study programme academically prestigious? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Although there is wide variation among the countries concerning the extent to which graduates reported the programme was vocationally oriented, 65% of graduates reported that it was vocationally oriented to a very high extent. The vocational orientation of higher education programmes varies from 23% in Austria to 89% in Finland. Surprisingly, in some countries where the vocational orientation of education is emphasised, the share of graduates reporting the programme was vocationally oriented to a very high extent was low (23% for Austria and 27% for Germany) (Figure 5.36).

*Figure 5.35: Vocational orientation of the study programme, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A5e (HEGESCO), A6e (REFLEX): To what extent was the programme vocationally oriented? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

In summary, in terms of the programme characteristics, results of the HEGESCO and REFLEX surveys indicate that medical education in the surveyed countries is very demanding but not as academically prestigious at the same level. Although there are variations between countries, in general graduates of medical sciences think that their programmes are vocationally oriented. There are some differences in higher education in medical sciences among different countries. In that respect, the survey results show that neither the HEGESCO nor REFLEX countries can be considered as a homogenous group.

#### *5.4.3.2 Teaching and Learning Modes*

The methods used in medicine programmes most often mentioned are lectures (4.0), theories and paradigms (3.62), the teacher as the main source of information and multiple-choice exams (3.09). There are also some differences in characteristics between countries in the domain of medicine: There is the highly above-average (3.09) use of multiple-choice exams in Germany (4.52) and Poland (3.91), while Italy it is well below-average (2.26).In Austria (2.30) oral presentations are less characteristic for medicine than in other DEHEMS countries. In Italy, we can note the reverse situation with the highest use of oral presentation among countries (3.43).

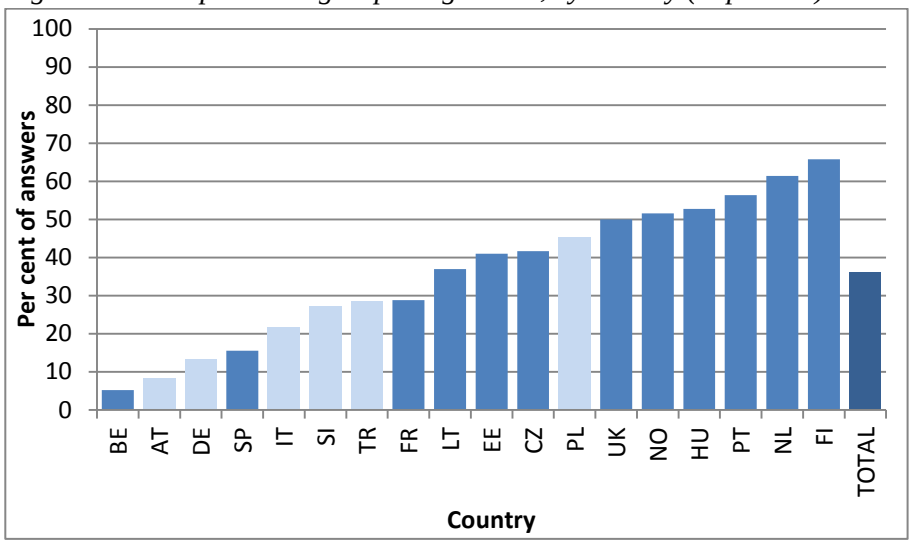
*Table 5.29: Average score of assessments of study programme characteristics in the medicine domain (mean of possible answers ranged from 1 to 5- see REFLEX/HEGESCO questionnaire)*

| | Non-DEHEMS | AT | DE | IT | PL | SI | TR | Total |
|---|---|---|---|---|---|---|---|---|
| **Extent to which the following characteristics were emphasised in the study programme:** | | | | | | | | |
| Multiple-choice exams | 3.1 | 3.2 | 4.5 | 2.3 | 3.8 | 3 | 3 | 3.1 |
| Oral presentations | 2.7 | 2.3 | 2.6 | 3.4 | 2.8 | 3.1 | 3 | 2.8 |
| Written assignments | 2.6 | 2.3 | 2.5 | 2.8 | 2.7 | 3.3 | 2.7 | 2.7 |
| Problem-based learning | 2.5 | 1.8 | 2 | 2.4 | 2.7 | 2.4 | 2.4 | 2.4 |
| Teacher as the main source of information | 3.4 | 3 | 3.1 | 3.8 | 3.2 | 2.9 | 3.6 | 3.4 |
| Theories and paradigms | 3.7 | 3.5 | 3.5 | 3 | 3.8 | 3.6 | 2.7 | 3.6 |
| Research project | 2.1 | 1.9 | 1.8 | 2.4 | 2.3 | 2.4 | 2.3 | 2.2 |
| Group assignments | 3.2 | 2 | 2.5 | 2.4 | 3.3 | 2.8 | 2.7 | 3 |
| Lectures | 4 | 3.9 | 4.3 | 4.1 | 3.8 | 4.1 | 4.2 | 4 |
| Academically prestigious programme | 3.7 | 4.5 | 3.5 | 3.6 | 3.7 | 3 | 3 | 3.6 |
| Employers familiar with the content of the programme | 4 | 3.9 | 3.7 | 3.2 | 3.6 | 3.2 | 3.4 | 3.8 |
| **To what extent has your study programme been a good basis for:** | | | | | | | | |
| Personal development | 3.7 | 3.5 | 3.6 | 3.8 | 3.4 | 3.5 | 3.6 | 3.7 |
| Performing your current work tasks | 3.8 | 3.5 | 3.3 | 3.4 | 3.4 | 3.5 | 3.8 | 3.7 |
| Starting work | 4.1 | 3.6 | 3.4 | 3.6 | 3.5 | 3.1 | 3.9 | 3.9 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Across all six DEHEMS countries, medicine graduates quite often (3.7-4.0) see their programme as a good basis for personal development, for performing current work tasks and for starting work.
In terms of the modes of teaching and learning, according to the graduates' assessment most emphasis is given to lectures. A third of all graduates reported a strong emphasis on group assignments and a quarter of graduates emphasised written assignments. (Figures 5.36 and 5.37).

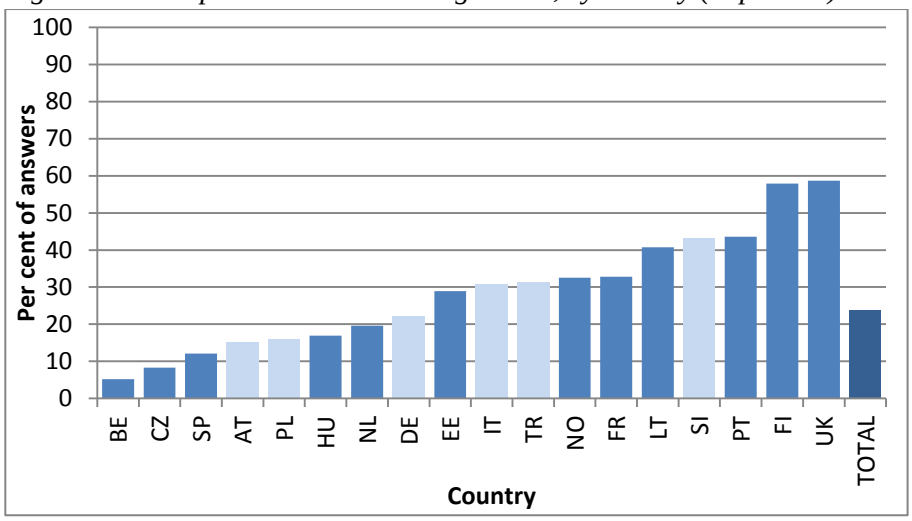
*Figure 5.36: Emphasis on group assignments, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A6b (HEGESCO), A7b (REFLEX): To what extent were group assignments emphasised in the study programme as a mode of teaching and learning? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Especially in terms of the emphasis on group assignments, the countries show quite a similar pattern. Although in general the emphasis on participation in a research project (average 12%) and problem-based learning (average 17%) is not very high, one positive aspect reported by the graduates is that a multiple-choice exam is not a very common evaluation method.

*Figure 5.37: Emphasis on written assignments, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question A6i (HEGESCO), A7i (REFLEX): To what extent were written assignments emphasised in the study programme as a mode of teaching and learning? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Therefore, one can conclude that although there are variations between countries, traditional lecturing and multiple-choice assessment are not the main modes of teaching and assessment methods in the field of medicine. DEHEMS countries fit into this picture to a large extent, but Poland and Turkey are exceptions in the sense that the ratios reported for multiple-choice exams by graduates are above the sample average.

Results of the country reports show that in the DEHEMS countries medicine, pharmacy and dentistry are traditionally taught in universities. In Austria and Germany, some programmes are mainly offered by a university of applied sciences. In Germany, other programmes like medical therapy, health sciences/management or nursing are offered by a university of applied sciences.

An important characteristic of the domain is that study programmes and education are regulated in all DEHEMS countries. In Germany, programmes are centrally regulated by the "Approbationsordnung" (Approbation is the official licence to practice as a medical doctor). In Italy, the professional domain is characterised as being regulated by a consolidated and legal system and by the presence of more stakeholders than any other professional domain. Other than higher education institutions, the ministry of education, university and research (MIUR, Ministero dell'istruzione, università e ricerca), in charge of governing this sector, planning and implementing national policies and monitoring universities activities, and the National Universities Committee (CUN, Consiglio Universitario Nazionale) in charge of approving programmes, many other institutions such as the ministry of health, local governments and professional associations are involved in decisions on the professional domain and consequently on higher education programmes. The national standards for pre-graduate medical education for Turkey were developed by the Turkish Accreditation Committee for Medical Education (TACME).

The average study time in medical sciences is 12 semesters in all DEHEMS countries but Germany (13 semesters). The average study length in dentistry is 10 semesters in Italy, Poland and Turkey but in Germany the average study length is currently 11 to 12 semesters. The average study time in pharmacy is the longest in Poland (11 semesters) and 9 semesters in Austria and 10 semesters in other DEHEMS countries.

A very important element of this domain in all countries is practical training. For example, in Germany the first practical period is the so-called "nursing traineeship" (Pflegepraktikum). Most students already do this before starting their study (sometimes even as pre-condition for their application). This traineeship must be three months long (it can be split) and must be finished by the first state exam (after two years of study). In addition, medical students have to do a first-aid course. In the clinical phase, students have to complete another four months of clinical traineeships (famulaturen) during their university holidays. Finally, there is one year of practice (48 weeks) in which students work as kind of "assistant doctor" in a hospital. The focus here is on training in doctoral competencies and working with patients.

Similarly in Austria, a very important element of doctors' education is practical training. Like in the theoretical part of the curriculum, the compulsory clinical traineeship ("Famulatur") has to cover different fields of medicine. Depending on the curriculum, between 18 and 37 weeks of a practical training period are required to complete the degree. In Turkey, the medical curriculum is composed of three-year premedical and three-year medical parts The medical part forms the second three years of medical education and contains compulsory clinical traineeship in different fields ($4^{th}$ and $5^{th}$ years) and an internship period ($6^{th}$ year). So in Turkey practical training forms an important part of medical education. In Italy, the programme consists of a minimum 6 months' internship. In Slovenia, practical training is an important part of the study programme and is implemented in the second half of the sixth year of the study programme. In Poland, the rules and forms of practical training are left up to HEIs to determine, and vary from one institution to another.

Although the data provided by the countries do not allow us to compare the size of the field in terms of the number of universities, one can still say that the size of the medicine and pharmacy field is considerable in all DEHEMS countries. In total, 22 Austrian higher education institutions provide studies in this domain[65]. These 22 HEIs comprise nine public and three private universities as well as ten universities of applied sciences. In Germany, the number of HEIs offering programmes in the field of medicine is around 38, in dentistry it is around 30 and in pharmacy it is around 24. For Turkey, the respective figures are 57, 22 and 12. In Poland, there are 79 (31 public and 48 non-public) institutions of higher education offering study programmes in the field of "Medicine and Pharmacology".

Another important fact is that the number of students in this domain rose in Turkey and Germany. Especially in Turkey, there is a dramatic increase in the number of students. If we compare the number students registered in 2004-2005 and 2008-2009, there is a 10% increase in the total number of students enrolled in medicine (ISCED 721). In dentistry, the total number of enrolled students increased by 16%. In Physical Therapy and Rehabilitation, a 31% increase in the total number of enrolled students is observed. Finally, in Pharmacy there is a 13% rise in the total number of enrolled students. Although the number of students in Germany has been steadily growing since 2003, it seems that this increase is due to the expansion of study programmes in the area of medical therapy and health sciences and not because of the traditional fields like medicine and dentistry. On the contrary, there has been a slight decrease in the number of enrolled students in recent years. But with the number of studies enrolled[66] going down from 20,277 in 2006 to 19,754 in 2007, and 19,148 in 2008 (uni:data), this may still be seen as a moderate decline if not a more or less stable figure.

If we consider the number of foreign students as an indicator of the internationalisation of the education, the country reports show that the DEHEMS countries do not constitute a uniform bloc in this respect. For example, in Austria the number of foreign students in the health sector was 23.7% in 2010. On the other hand, the low numbers of the foreign student quota for 2009 (only 256, 67 and 56, respectively, for medicine, dentistry and pharmacy is an indicator of the extent of internationalisation in Turkey.

#### *5.4.3.3 Impact of the Bologna Process in DEHEMS Countries*

Although the Bologna reform has had some impacts on medical disciplines in DEHEMS countries, no radical changes have been brought by Bologna in terms of duration, degrees and the contents for most programmes in this domain. One can say that medical disciplines in DEHEMS countries are retaining their classical traditions in terms of duration and degrees. In general, the greatest impact seems to be felt in the study programmes like promoting the introduction of new programmes in Italy and "reform study programmes" in the field of medicine in Germany. Country-specific details of the impact of the Bologna Process can be summarised as follows;

[65] To obtain this number the authors of this section browsed through the web sites of all officially listed public universities {BMWF, 2010 #891}, private universities {Akkreditierungsrat, 2010 #893}, and universities of applied sciences {Oesterreichische Fachhochschul-Konferenz, 2010 #892} counting each institution providing at least one programme in the domain. Institutions with only interdisciplinary curricula were also counted (e.g. biomedical engineering). Many of these institutions provide not only studies leading to an academic degree but also other post-secondary education. However, some post-secondary courses or certificate programmes are found at other institutions not included here.

[66] The statistics refer to two different sources. The time comparison data obtained from {BMWF_uni:data, 2010 #899} shows "studies enrolled at public universities", i.e. students being enrolled in more than one study programme are counted several times and only public universities are covered. Consolidated data, i.e. where students enrolled in more than one study programme are counted proportionally and also other institutions are included, stems from {StatisticsAustria, 2009 #856} but is only available for the academic year 2007/08. The difference between the two databases is significant as is illustrated by the numbers for 2007/08 with 19,754 enrolled studies and 24,556 students, respectively.

In *Germany*, so far the classical medical disciplines (medicine, dentistry and pharmacy) have been immune to any change as a consequence of the Bologna reform. With the exception of a few master courses introduced as part of the lifelong learning programmes of universities, all classical medical disciplines still have the state exam for the degree. There is a discussion to also change these disciplines to the BA/MA-structure, but so far only one university has announced a plan to offer medicine as a Bachelor course together with a university from the Netherlands[67].

At least in medicine and pharmacy, there is currently a debate about introducing the new Bachelor and Master courses. In pharmacy, the first Bachelor programmes are being developed. Still, holders of the pharmacy BA will not be allowed to work as chemists selling prescription drugs since the permit to do this still requires students to pass the state exam after five years of training. It is expected that the level of specialisation in the course will increase if the Bachelor/Masters system is introduced like for normal degrees. Possible additional subjects could be molecular medicine, biotechnology, nutritional science and business studies.

Another development which can roughly be described as a consequence of the Bologna reform is the introduction of so-called "reform study programmes" in the field of medicine. These programmes are still "state-examined", but are more modern in their didactics. The pre-clinical and clinical phases are less separated: the students are learning case-based which means they are learning the chemical, biological, physical and anatomical basics with the help of case studies (e.g. a patient comes in with a stomach ache etc.).

*In Austria,* in recent years significant changes have affected this domain. In the Universities Act of 2002 the medical faculties of the universities of Vienna, Graz and Innsbruck were granted additional autonomy and were transformed into medical universities[68]. Although this process is not a formal part of the Bologna reform, it is thematically linked and occurred contemporaneously with the implementation of many Bologna-related changes to Austria's tertiary education.

Even so, medicine and dental studies are 'exempt' from Bologna. This means that although formally the studies are structured as a bachelor's with a subsequent master's programme, it is impossible to complete only the bachelor part since it is legally forbidden to grant a bachelor's degree[69]. What also distinguishes medicine studies is that they amount to 360 ECTS credits altogether, thereby lasting 12 semesters as opposed to the average of 300 ECTS credits or 10 semesters (6+4) for other bachelor's and master's programmes. Pharmacy curricula, on the other hand, have not yet been transformed into a Bologna structure. Currently, the programme is only offered as a nine semester 'diploma' study.

*In Italy*, it should be noted that some aspects of the higher education system in this domain have been renewed. Compared to other professional domains, medicine and pharmacology have not been subject to any deep reorganisation brought about by a legal reform with major changes occurring in terms of the duration, degrees and contents of most programmes. The existing medicine and pharmacology programmes have not been reorganised. As already mentioned, they have been considered to be coherent with the professional domain and suitable to train students to become practitioners. Nevertheless, it has been recognised there was not adequate attention to some professions, some of which more have recently seen greater demand from the labour market. The Bologna Process has therefore impacted the medicine and

67 University of Oldenburg: http://www.aerztezeitung.de/praxis_wirtschaft/unternehmen/article/529381/oldenburg-will-bachelor-studiengang-medizin.html

68 See ([Republic of Austria, 850])

69 ([Kasparovsky, 2010 886]: p. 173; [Republic of Austria 850])

pharmacology professional domain by promoting the introduction of new programmes emphasising professions such as biotechnology technician and researcher, herbalist, drugs scientific informant, quality control technician, or nutritionist.

*In Poland,* the share of BA diplomas reaches 46.8% and MA diplomas 14.3%. The remaining 38.9% are diplomas of the long-cycle programme studies. It is worth noting that Medicine, Dentistry and Pharmacy are exempt from the Bologna reform, and are keeping 100% of diplomas of the long-cycle programmes.

As in the other fields of HE programmes, implementation of the Bologna Process in *Turkey* involves intensive work in this domain. All faculties and departments in this domain participate in Bologna studies so they are developing their programmes in line with the Bologna principles. However, undergraduate medical education in Turkey lasts six years. Medical school/faculty graduates may choose to either work in a primary health care setting without specialisation or to specialise in family medicine or some other specialty. There are about 29,000 physicians without postgraduate professional training working in the national primary health care system (28% of all physicians). These physicians are called "practitioners", rather than general practitioners (GP) or family physicians (FP), i.e., physicians with specialised training in family medicine/general practice.

The qualifications in these study fields are prepared by working committees composed of deans and education experts. Programme outcomes with the learning outcomes of the courses will be required from each faculty/department in the near future. The curriculum is being converted into semester-based courses in many courses in the programmes, and national and ECTS credits are being allocated to the courses. The physical therapy[70] and rehabilitation programme and the pharmacy programme was credit-based already before Bologna; now a credit-based system is also present in medical and dentistry programmes in many universities.

Bologna three-cycle degree systems are not yet implemented in this domain, except in the physical therapy field. Medical and dentistry education retain their one-tier degree structure as a six- and five-year programme consecutively. Graduates of the five-year dentistry programme are accepted as MSc graduates and may continue their studies directly for a PhD degree.

The pharmacy programme was four years and has recently been developed as five years in line with the Bologna reform. The pharmacy programme is also a one-tier degree programme and in most disciplines graduates may be directly admitted to PhD programmes. In a few programmes a pharmacy programme graduate may continue their postgraduate studies in an MSc programme and then in a doctoral programme.

### 5.4.4 Transition to employment and first job

In this chapter, the transition to employment and the characteristics of the first job of graduates of medicine in the six DEHEMS countries will be analysed and compared. First, the requirements to become a full member of the profession will be described. Also, the transition process is individualised or defined by national legislation and will be discussed. Second, the respective data of the HEGESCO and REFLEX projects will be interpreted.

[70] Physical therapy and rehabilitation programme had already a three cycle degree system before Bologna namely bachelor (4years-240ECTS), masters (2years-120ECTS) and doctoral (4years-240ECTS) and this structure is retained.

#### *5.4.4.1 Certification*

*Germany:* Medical graduates can directly apply for their "approbation" after successfully passing the second (since the change brought by the study reform, before it was the third) state exam and hence are a full member of the profession. But at that point in time they cannot open their own practice. The public health insurance only accepts medical doctors with a finished specialisation (on average five years of work in a specific department of a hospital and passing an exam) like surgery, internal medicine or general medicine. A medical graduate without such a specialisation can only open a private practice which means that patients insured via the public health system must pay by themselves and obtain no refund from their insurance. Dentistry graduates can also apply for their approbation after successfully passing the second state exam. The graduates can then directly work as a dentist and open their own practice. There is no further education demanded to open one's one dental practice. But, of course, there are possibilities for further education like oral surgery and orthodontics. Some universities also offer special postgraduate courses for dentists. Pharmacy is the only subject in which a practical period is demanded following the last official exam. The second state exam marks the end of the study part. Afterwards, students have to complete 12 months of practical training: 6 months must be completed in a pharmacy and the other 6 months in a hospital, in the pharmaceutical industry, at a university or another research institute (always under the supervision of a fully-trained chemist) in order to apply for their approbation. Afterwards, they can work as a pharmacist/chemist and open their own pharmacy.

Before October 2004 all medical graduates had to complete another 1.5 years of practical period after graduation to obtain the license as a medical doctor – the so-called "Doctor in internship" (AiP - Arzt im Praktikum) phase. During this phase, medicine graduates were paid relative poorly: around €1,000 gross income per month but worked a great number of hours. In comparison: after abolition of the AiP graduates are directly employed as residents/assistant doctors and paid three times as much.

It has to be kept in mind that due to the sample limit of "CHE Alumni-Ranking Medicine" only graduates with the earliest graduation in 1996 are included, which means those who could collect a maximum of four years of professional experience (without the calculation of a practical year). Accordingly, half of the graduates in human medicine (54%) reported being employed in their first job after graduation. The first employment of those graduates who started to work after the "Doctor in Internship" (Arzt im Praktikum/AiP) period looks like this: nine out of ten graduates (92%) worked full-time and nine out of ten (89%) had a limited-time contract, a further 10% had a permanent position or received the status of a civil servant. Only 0.5% were freelancers or independently working.

*Austria:* There is no standardised transition process from medicine and pharmacy studies to the labour market in Austria. Despite this, the various phases of practical training and work experience provide opportunities for students and graduates to establish connections with the labour market. By carefully selecting institutions and fields of specialisation, students can not only find out about their preferences and pursue them accordingly. They also willingly or unwillingly design their curriculum vitae in a way that is likely to influence their job prospects or already recommend themselves in certain fields of employment. Although a compulsory practical training period is already implemented in the curricula in the form of clinical traineeships, the degree does not suffice to become a full member of the profession. After studying medicine in Austria, graduates need a certificate issued by the Austrian Medical Chamber to practise as a doctor. This certificate can either be permit to work as a medical specialist or a general practitioner. Both permits require a working period at accredited hospitals and a subsequent final exam organised by the

Austrian Medical Chamber. To become a general practitioner medicine graduates have to gain experience as a "Turnusarzt".

After studying pharmacy in Austria graduates have to complete one year of additional education in a pharmacy as well as a subsequent examination conducted by the Austrian Chamber of Pharmacists to become a full member of the pharmacist profession. Further, five years of pharmaceutical work experience in a pharmacy is required to be legally entitled to lead a pharmacy. Graduates of dental studies become full members of the profession on completion of their studies and are entitled to practise as dentists (Zahnaerztegesetz, § 6-7). As indicated above, the profession is embedded in the Austrian health care system where social insurance institutions play a major role.

*Poland:* Programmes offered in the field of medicine lead to a degree of *lekarz* (physician), which is the equivalent of a *magister* degree (MA) in Poland. The right to practice medicine is acquired after completing a postgraduate internship and passing the State Medical Examination (*Lekarski Egzamin Państwowy, LEP*). Programmes offered in the fields of dentistry, pharmacy and medical analytics lead to a degree of lekarza-dentysty (dental practitioner), which is the equivalent of a *magister* degree (MA). The right to practise the profession of dental practitioner is obtained after completing the annual postgraduate internship and passing the dental state examination (*Lekarsko-Dentystyczny Egzamin Państwowy, LDEP*). No special certificates are needed to work as a medical analytic after graduation from studies in pharmacy and medical analytics. Programmes offered in the field of dental technology lead to a degree of BA (*licencjat*). No special certificates are needed to work as a dental technician after graduation from studies in dental technology. Programmes offered in the field of physiotherapy currently include programmes leading to two degrees: *licencjat* (the equivalent of a BA) – after the first-cycle programme and *magister* (the equivalent of an MA) – after the first-cycle programme. There are no further formal requirements to take a job as a physiotherapist.

All rules for practising medicine are set by the Law on the Professions of Doctor and Dentist. The postgraduate paid internship lasts 13 months. Until the LEP was passed, a physician had a limited license to practice medicine (in practice, they could not alone lead the process of medical diagnostics, issue prescriptions etc.). The title of medical specialist in a particular medical speciality is achieved upon completion of training lasting typically 5-6 years. Until 1999, a two-tier system of specialisation was in force. After two to three years of training, a doctor received the title "doctor of the speciality", such as a doctor of internal medicine. If he/she decided to continue their training, they could obtain the title of "medical specialist" of a given speciality, such as medical specialist in internal medicine (a so-called "second degree specialisation"). It was necessary to have a specialisation of the second degree in order to become the head of a hospital ward or to assume other kinds of positions within the healthcare system. Currently, a one-tier system is in operation. It is possible to obtain the title of a specialist in the course of specialisation training typically lasting 5-6 years. Currently, physicians may specialise in 40 main areas and then 28 detailed specialisations (after undergoing a specialisation in a main area).

*Italy* The national legislation governs the transition to the labour market for most professions. Medical doctors, dentists and pharmacists are required to pass an exam and join the national associations to practice. Qualifying examinations are run by universities. Nursing and caring profession degrees qualify graduates to join their own association and practice professions. Graduates from remaining recently instituted programmes have free access to the labour market. It should be underlined that most health services in Italy are delivered by public entities. National law requires public organisations to arrange public selections for any available job position. Graduates from this domain are, therefore, often required to do further exams to be selected for such job positions.

*Turkey* After six years of medical education, with the last year being an internship, Turkish doctors take a nationwide examination to enter the residency programmes. The Specialty Exam is held twice a year; the number of residents to be admitted is announced in a booklet distributed by the Student Selection and Placement Centre. This standard examination allocates them to a residency programme according to their exam score. After the announcement of the results, the physicians apply to the relevant faculties/training hospitals of the Ministry of Health and are appointed as residents of that medical faculty/training hospital of the Ministry of Health. Those physicians who do not pass the examination but want to specialise are granted a practitioner's position in the national primary health care system by the Ministry of Health.

Completing the residency programme requires the preparation of a thesis and success in a two-step examination (written and oral). The residency training scheme may involve variations in different universities and governmental training hospitals across Turkey.

Also there is no definitive transition process from higher education to the labour market in Turkey. For instance, after six years of medical education, medical school graduates may choose to either work in a primary health care setting without specialisation or to specialise in family medicine or some other specialty. Entrance to a specialisation programme in a certain field, i.e. ophthalmology, internal medicine, obstetrics and gynaecology, is made through a nationwide exam for physicians; successful physicians are appointed as residents in medical faculties or in training hospitals of the Ministry of Health.

The duration of specialisation programmes may vary, i.e. the obstetrics and gynaecology specialisation programme is 4 years, while for plastic surgery it is 6 years. After completion of this specialisation programme a specialist may open their own private practice, work in government/private hospitals or continue studies in a university as an academic. A specialist working in a government hospital or in a university may additionally open their own practice.

Graduates from faculties of dentistry can work in different areas. First, this is quite an individualised way; they can work in their private practice or in some private healthcare institutions. Secondly, dentists can work in public institutions depending on the Ministry of Health or in faculties of dentistry and other public institutions. Another way for dentists to work is in para-medical areas like commercial firms that produce and sell products for oral healthcare or medical devices. After graduation, students who have completed their education successfully can continue their academic career by attending master and doctorate programmes.

*Slovenia* After completion of the study programme, students have to continue with a specialisation which usually lasts 4 years or more and is obligatory. Specialisation is regulated by the Medical Chamber of Slovenia. As a public authority the Chamber plans, monitors and supervises the apprenticeship, specialisation and other forms of postgraduate professional training to its members and provides a qualification for appointment and appoints mentors.

After completion of the study programme in general medicine, students can be employed as practitioners. This apprenticeship is implemented as part of a programme prescribed by the Ministry of Health and regulated and supervised by the Medical Chamber. Every practitioner works under the supervision of a mentor. Apprenticeship is accomplished with a professional exam which is a condition to enrol in the specialisation.

Students of dental medicine also have to complete an apprenticeship which lasts one year and is under the authority of the Ministry of Health. The apprenticeship finishes with a professional exam which is the last step before becoming a registered dentist.

#### *5.4.4.2 Search duration*

The search duration of graduates in medicine for their first job is half of what it is in all domains, it stands at 2.1 months. However, the duration differs from country to country. Countries with the longest search durations are Slovenia and Turkey, where graduates search for their first job on average for three and a half months. Polish and German graduates spend the shortest time on job hunting among the DEHEMS countries, namely only 0.9 of a month in Germany and 1.4 months in Poland. Still in all countries graduates from the field of medicine usually spend much less time job searching than in any other domain.

*Table 5.30: Search duration of graduates in the field of medicine*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (months)** | 2.1 | 2.2 | 0.9 | 1.9 | 1.4 | 3.6 | 3.5 | 1.4 | 1.6 |
| **SD** | 3.7 | 2.8 | 1.6 | 3.3 | 1.6 | 6.1 | 5.6 | 3.4 | 3.5 |
| **Medicine/All domains** | | | | | | | | | |
| **Mean (ratio)** | 0,517 | 0,991 | 0,406 | 0,599 | 0,694 | 0,751 | 0,433 | 0,531 | 0,521 |
| **SD** | 0,545 | 0,784 | 0,374 | 0,524 | 0,668 | 0,906 | 0,560 | 0,675 | 0,620 |

Source: Own elaboration based on REFLEX/HEGESCO data.

*Table 5.31: Ways graduates find work in the field of medicine*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Through advertisement in newspaper | 4,8 | 2,9 | 2,9 | 4,6 | 3,5 | 6,9 | 3,2 | 7,6 | 6,8 |
| Through public empl. ag. | 2,5 | 1,5 | 0,0 | 0,9 | 0,0 | 4,4 | 12,9 | 2,0 | 2,2 |
| Through private empl. ag. | 0,6 | 1,5 | 0,0 | 0,9 | 0,0 | 0,5 | 0,0 | 2,0 | 1,6 |
| Through the Internet | 2,0 | 0,0 | 4,8 | 3,2 | 0,0 | 0,0 | 3,2 | 3,2 | 2,8 |
| Contacted employer on own initiative | 35,1 | 67,7 | 49,5 | 19,9 | 37,9 | 36,8 | 6,5 | 30,1 | 31,5 |
| Approached by employer | 12,9 | 10,3 | 11,4 | 13,9 | 0,0 | 13,7 | 22,6 | 11,2 | 11,7 |
| Through work placement during higher education | 7,0 | 1,5 | 10,5 | 7,9 | 13,8 | 5,9 | 3,2 | 12,9 | 11,3 |
| Through family, friends or acquaintances | 11,5 | 8,8 | 8,6 | 16,7 | 20,7 | 6,4 | 16,1 | 12,1 | 11,9 |
| Through help of higher education institution | 7,0 | 2,9 | 2,9 | 11,6 | 13,8 | 2,5 | 22,6 | 7,5 | 7,4 |
| Set up my own business | 2,0 | 0,0 | 0,0 | 5,1 | 0,0 | 0,5 | 3,2 | 1,2 | 1,4 |
| Other | 12,6 | 1,5 | 9,5 | 15,3 | 10,3 | 16,2 | 6,5 | 10,0 | 10,7 |
| Through previous work | 2,1 | 1,5 | 0,0 | 0,0 | 0,0 | 6,4 | 0,0 | 0,2 | 0,8 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Medicine/All domains** | | | | | | | | | |
| Through advertisement in newspaper | 0,398 | 0,174 | 0,213 | 0,654 | 0,308 | 0,530 | 0,266 | 0,536 | 0,505 |
| Through public empl. ag. | 0,596 | 1,235 | 0,000 | 0,479 | 0,000 | 0,599 | 3,154 | 0,453 | 0,491 |
| Through private empl. ag. | 0,418 | 1,073 | 0,000 | 0,333 | 0,000 | 0,671 | 0,000 | 0,418 | 0,426 |
| Through the Internet | 0,282 | 0,000 | 0,614 | 0,736 | 0,000 | 0,000 | 0,191 | 0,393 | 0,366 |
| Contacted employer on own initiative | 1,572 | 2,628 | 2,155 | 0,977 | 1,035 | 1,520 | 0,519 | 1,487 | 1,509 |
| Approached by employer | 1,199 | 0,780 | 1,030 | 1,286 | 0,000 | 1,070 | 2,632 | 1,070 | 1,106 |
| Through work placement during higher education | 1,189 | 0,190 | 1,220 | 1,565 | 3,658 | 0,834 | 1,063 | 1,284 | 1,281 |
| Through family, friends or acquaintances | 0,576 | 0,650 | 0,922 | 0,716 | 1,066 | 0,378 | 0,485 | 0,779 | 0,707 |
| Through help of higher education institution | 1,383 | 0,476 | 0,790 | 1,321 | 5,560 | 0,907 | 4,814 | 1,373 | 1,379 |
| Set up my own business | 0,682 | 0,000 | 0,000 | 1,020 | 0,000 | 0,327 | 1,538 | 0,803 | 0,737 |
| Other | 1,749 | 0,392 | 0,578 | 1,513 | 12,023 | 2,059 | 6,143 | 2,058 | 1,928 |
| Through previous work | 1,574 | 0,826 | - | 0,000 | 0,000 | 1,464 | - | 0,561 | 1,086 |
| Total | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |

Source: Own elaboration based on REFLEX/HEGESCO data.

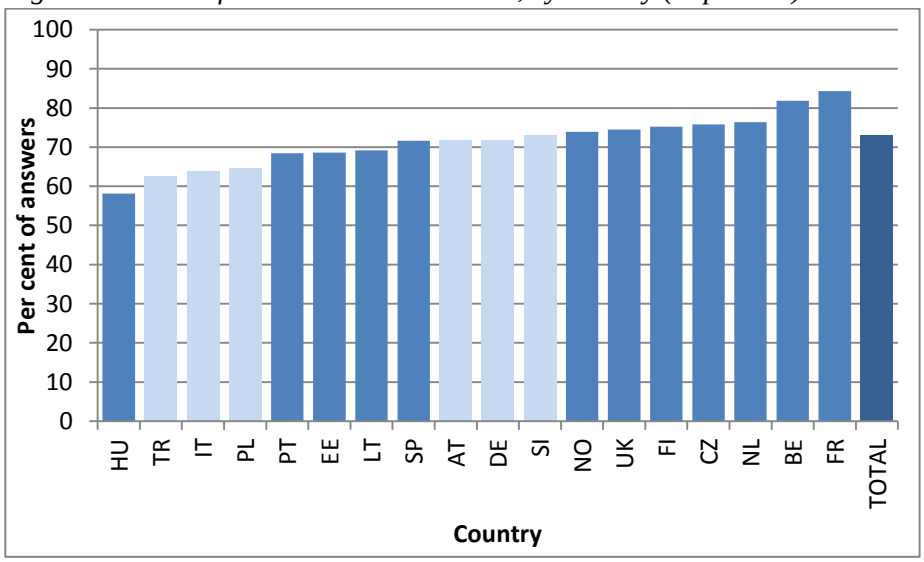
Note: Each number in the top part of the table shows share of a given way of finding job in the population of graduates in employment – they sum up to 100. In the bottom part is a ratio of a share for business to the general population showing specifics of channels of finding job for business domain graduates.

The way most often used by medicine graduates to find employment is by contacting employers on own initiative (35%). Often they are also approached by an employer (12.8%), they use family, friends or acquaintances (11.5%) or other ways to get a job (12.5%). Especially high percentages of graduates finding a job by contacting an employer on their own initiative are seen in Austria (67.6%) and Germany (49.5%), while in Turkey the share is very low at just 6%. Turkish graduates more often (12.9%) use public employment services to get a job, however this way is not significantly used in the DEHEMS other countries. Even more often (22.6%) Turkish graduates are approached by employers and become employed in that way. For this way of finding employment, they have the highest share among DEHEMS countries, with the lowest being noted in Poland where none of the interviewed graduates was approached by an employer. Finding employment through friends and family is far more often used in Poland, Italy and Turkey than in Germany, Austria and Slovenia. Other ways of getting employed were most often mentioned by Slovenian and Italian students.

If we compare the ways of finding employment in the field of medicine with other domains we can note that medicine graduates more often find work by contacting an employer on their own initiative (except in Turkey); with the help of the HEI (except in Germany and Austria); through previous work (except in Germany and Austria) and in other ways. On the other side, graduates of medicine less often use private and public employment agencies (except in Austria and Turkey); family and friends; the Internet or set up their own business (except Turkey) to get employed.

In all countries, over 70 percent of graduates reported they are satisfied with their current work. These shares are the highest in Slovenia and in Germany, but the lowest in Turkey. The difference in this respect is not very high between countries (Turkey is an exception in that only 58% of graduates are very satisfied with their job) (Figure 5.39).

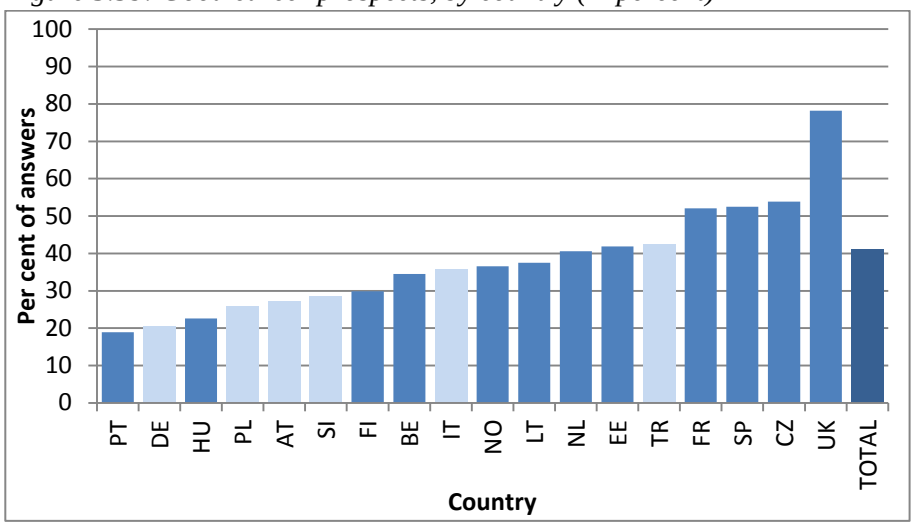
*Figure 5.38: Satisfaction with current work, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question F13 (HEGESCO), F13 (REFLEX): How satisfied are you with your current work? Responses 4 and 5 on a scale of answers from 1 = "Very dissatisfied" to 5 = "Very satisfied".

One surprising result in terms of the quality of employment is that only 41% of graduates think that their job offers good career prospects to a high extent. This ratio is lowest in Germany (20%) and highest in the UK (78%).

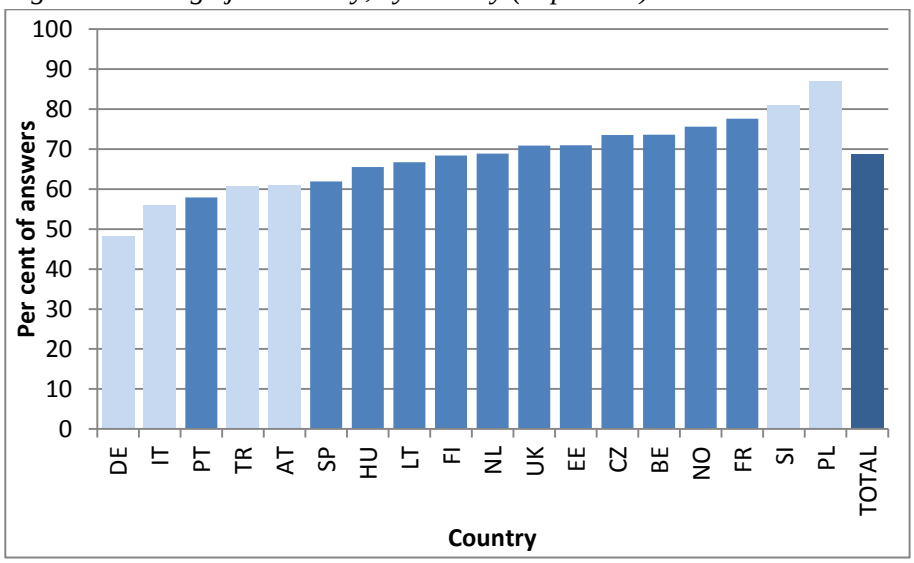
*Figure 5.39: Good career prospects, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question J1Bf (HEGESCO), J1Bf (REFLEX): Please indicate how important the following job characteristics are to you personally (good career prospects) and to what extent they actually apply to your current work situation? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent" (in section B – apply to current work).

Another indicator of the quality of employment is the level of job security described by graduates (Figure 5.40). In this respect, one can easily say that 69% of the working graduates reported that job security is very high in medical sciences (Figure 5.41).

*Figure 5.40: High job security, by country (in percent)*




Source: Own elaboration based on REFLEX/HEGESCO data.
Question J1Bb (HEGESCO, J1Bb (REFLEX): Please indicate how important the following job characteristics are to you personally (high job security) and to what extent they actually apply to your current work situation? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent" (in section B – apply to current work).

More than 70 percent of graduates from Italy would decide to choose the same study programme again if they had a chance and also other DEHEMS countries have similar figures – from 61% up. Those who are

the most successful are allocated to higher education institutions in accordance with their ranking. Therefore, students may not be studying in the departments they actually prefer. Graduates from the HEGESCO and REFLEX countries also reported if they had been included in follow-up training at their work. Over three-quarters of graduates from Slovenia, Austria and Germany had taken a work-related training or course in the last year. But in Turkey less than 50 percent of graduates said they had obtained additional trainings or courses.

*Table 5.32: Study programme as a basis for starting work: medicine vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Medicine (%)** | 50.4 | 56.5 | 49.6 | 57.9 | 54.8 | 37.9 | 60.6 | 75.3 | 68.3 |
| **All (%)** | 46.1 | 62.8 | 54.4 | 48.5 | 52.9 | 32.9 | 36.2 | 57 | 53.7 |
| **Medicine/All (ratio)** | 1,091 | 0,899 | 0,911 | 1,195 | 1,036 | 1,152 | 1,674 | 1,322 | 1,271 |

Source: Own elaboration based on REFLEX/HEGESCO data.

50% of medicine graduates throughout all DEHEMS countries answered that their programme has been a good basis for starting work to a high or very high extent. The lowest result can be noted in Slovenia (38%) and the highest in Turkey (61%). These results are more or less comparable with all domains' results with the deviation of 5%. Only in Turkey can be noted quite big difference between medicine and all domains, where medicine graduates are far more likely to perceive the programme as good basis for starting work than graduates from other domains.

*Table 5.33: Utilised knowledge and skills in current work: medicine vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Medicine (%)** | 85,1 | 79,1 | 86,4 | 83 | 83,9 | 89,3 | 81,3 | 86,8 | 86,3 |
| **All (%)** | 70,9 | 75,1 | 72,7 | 69,4 | 66,8 | 71,6 | 69,2 | 70,2 | 70,4 |
| **Medicine/All (ratio)** | 1,201 | 1,053 | 1,189 | 1,195 | 1,255 | 1,248 | 1,174 | 1,238 | 1,227 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Graduates of medicine more often (85%) believe that in their current work they utilise the knowledge and skills they gained in the programme when compared to all domains. The highest percentage of such opinions is noted in Slovenia with 89% and the lowest in Austria with 79%.

### 5.4.5 Lifelong learning

More than half (58%) of the interviewed graduates of medicine perceive their programme as a good basis for further learning on the job, which is slightly higher than across the domains where the average stands at 50%. The biggest share of medicine graduates believing the programme is a good basis for further learning on the job is noted in Poland and Turkey (above 67%).

*Table 5.34: Study programme as a good basis for further learning on the job: medicine vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Medicine (%)** | 58.4 | 64.25 | 60.4 | 56.9 | 67.7 | 54.3 | 69.7 | 74.6 | 70 |
| **All (%)** | 50.5 | 55.6 | 49.3 | 52.1 | 64.3 | 49.2 | 37.5 | 59.2 | 56.6 |
| **Medicine/All (ratio)** | 1,155 | 1,155 | 1,225 | 1,091 | 1,054 | 1,105 | 1,859 | 1,260 | 1,236 |

Source: Own elaboration based on REFLEX/HEGESCO data.

81% of graduates in medicine had work-related training in the past 12 months in their first job. We see the highest results in Austria and Germany (above 90%) and the lowest in Poland and Turkey where only around 70% of graduates had had work-related training in the past 12 months. Comparing the results of this field with the results across all domains, we can conclude that in medicine more graduates have work-related training than in other domains.

*Table 5.35: Work-related training/course in the past 12 months in the first job: medicine vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Medicine (%)** | 80.9 | 94 | 90.4 | 76.2 | 71 | 80.4 | 68.8 | 80.2 | 80.4 |
| **All (%)** | 60.3 | 68.9 | 65.8 | 48.4 | 67.7 | 68.4 | 48.3 | 65.1 | 63.6 |
| **Medicine/All (ratio)** | 1,343 | 1,365 | 1,374 | 1,575 | 1,048 | 1,176 | 1,425 | 1,232 | 1,264 |

Source: Own elaboration based on REFLEX/HEGESCO data.

### 5.4.6 Higher education management perspectives on graduates' professional careers – synthesis of the DEHEMS interviews

#### *5.4.6.1 Understanding of career success*

In the field of medicine, although the graduates have different career paths in a broader perspective, many graduates work in their professional field. On the other hand, graduates of medicine begin with their specialist medical training after the state examination generally in all DEHEMS countries. Other a small share finds employment for example in the pharmaceutical industry etc. However, the majority of doctors still work in practice but they combine this work with pedagogic activities and/or research, which can also mean the peak of their career. Some interviewees mentioned that career success also means when doctors become directors of a hospital or health centre when the study programme matches their professional occupation. On the other hand, in an example from a Turkish interview around 10% of medicine graduates are successful in the TUS exam (Examination for Speciality in Medicine) and continue their education to be a specialist. The rest of them start working as a practitioner with obligatory service organised by the Ministry of Health. Therefore, success in one's career does not have a single definition because one's career path is not very much in the graduates' hands.

***Diversification of views***

The purpose of this section is to summarise the opinions of the HEI's representatives with regard to the career success of the graduates or their opinion concerning when a graduate is successful in his/her professional career in the field of medicine. The analysis of the obtained answers from DEHEMS countries shows that there is no firm agreement on the understanding of career success. There are some reasons underlying the different perspectives about career success in the field of medicine. The main reason is that health care professionals work in different positions (clinics, research, private, public etc.) and they need different competencies and skills to be successful in their profession.

The interviewees provided a range of various understandings of career success. A representative of a Turkish higher education institution sees career success as when "*graduates can work where they wish to, this is career success. In medicine if they can work scientifically, if they can continue research, this also means a successful career path".* Despite the varieties of opinions on career success, it was still possible to identify several key dimensions which are elaborated further.

Some interviewees define career success in terms of the time needed to enter the labour market: *"If one can reach his/her career aim even early, it can be fully accepted as success"* (from Turkey). The aim may change from one person to another. In the medical field there are different options for a graduate. They may continue their studies in basic medical sciences (preclinical area), choose one of the clinical areas and be a specialist and then work in government hospitals as a clinician or universities as a clinician and teaching staff and researcher at the same time, or after being a specialist they may do private practice.

***Success depends on finding the proper path within the domain***

Generally, there is an agreement regarding the fact that the study programmes do not prepare graduates for a single occupational profile but there are varieties within the domain. An Austrian interviewee focused on flexibility as *"A university is something particular. It is not only professional training. … So we also put a lot of emphasis on conveying a basic scientific education. So the students know how to acquire information with new media, how to read a study, how to conduct a study themselves"*. One German interviewee described flexibility in this way: "*There is an attempt to implement all these aspects in the study programme to prepare students for their professional life. This also means that they can cope with these difficulties".*

***A successful graduate deals well with several stakeholders***

There is no uniform information from the interviews about the link between career success and job satisfaction in the field of medicine. One German interviewee, for example, remarked about satisfaction: "*All professional expectations should be fulfilled. Another factor is that graduates meet the requirements of the patients, the employers, the health insurance institute and last but not least of politics and society. This is an extremely difficult balancing act in many directions.* Also a Slovenian interviewee described career success as: "*The graduate is successful if he is satisfied with his every day work – this is fundamental and is not connected with the position he occupies".* Therefore, it can be concluded that the satisfaction of the graduates, patients and employers is an important acceptable indicator of career success.

### *5.4.6.2 The role of HEIs in the future professional activities of graduates*

***The clear mission of HEIs in this domain is to cultivate a good doctor***

The majority of interviewees across the DEHEMS countries agrees that study programmes in the field of medicine traditionally provide the specific knowledge needed in the profession. Therefore, the programmes have a clear ambition; is to train students to become doctors. An interviewee from Germany says "*The aim of higher education in medicine – the first degree – must be to educate a doctor*". Similarly, an Italian interviewee expressed something similar: "*The university programme shall provide students with the theoretical and practical knowledge necessary for being responsible professionals when they finish their studies".* So one can say that it is commonly accepted by the interviewees from DEHEMS countries that in comparison to other professional domains like Political Science and Sociology where students are educated for a range of different professional positions, students are trained to perform their specific pro-

fessions. Similarly, unlike some other disciplines, graduates end up working in a position related to their university education and do not have a hard time finding a job in DEHEMS countries.

Medicine is a tightly regulated field of study to a great extent in all DEHEMS countries. As stated by an Italian interviewee: "*The planning and updating of current programmes is very much dependent on legal constraints".* Similarly a Polish interviewee said: *"The range of subjects is strictly defined by Polish legislation. In addition, very limited room for manoeuvre exists".* In addition to the requirements set by governments, other requirements are also taken into account in different counties. A Polish interviewee stressed that programmes of studies are regulated according to European Frames of Qualifications and a Turkish interviewee stated that the medical curriculum is developed in accordance with the requirements of the Turkish Association of Medical Doctors.

Despite the regulated nature of the curriculum in the field, modernisation attempts are being made in some countries. For example, in 2002 Austrian universities completely redesigned the old system of the classical theoretical training method. One of the Austrian interviewees explained the aim as *"to enforce more practical experience and psychological aspects. This leads to the training of more appropriate graduates to meet the high quality demand in the field".*

As a natural consequence of being a regulated field, the core curriculum is the same on the national level in DEHEMS countries. For example, in Germany core curricula (new Order Regulating Licences to Practise Medicine) have been introduced since 2003. A Turkish interviewee stressed that *"the medical curriculum includes more or less the same topics in all medical faculties; the difference comes from the different teaching techniques".* Curricula are not very flexible, most of the courses are compulsory and only a limited number of courses are elective. The extent varies between countries, some countries are relatively stricter in this respect, for example in Turkey there are 90% of obligatory subjects and 10% elective.

### *Enhancing the traditional focus of the medicine programme*

There is development in this field in terms of enhancing the traditional focus of training students as medical doctors. First of all, recently there is a strong emphasis on increasing the competencies of graduates and applying these competencies in the relationship with the patient. The importance of soft skills is emphasised in the medicine education in some countries like Germany and Austria. One German interviewee pointed out that "*Social competencies are taught intensively by the learning format 'KIT' (communication, interaction, ability to work in a team. The interviewee underlined that psycho-social competencies are highly important for those graduates who have contact with patients".*

A similar aim of increasing the soft skills of graduates was expressed by an Austrian interviewee: *"For example, among students problems are encountered when it comes to soft-skills (communication and presentation skills). A step in that direction was the introduction of lessons from Communication Technology or Savoir Vivre into the canon of programme choices".* A Turkish representative also said that *"However there is a tendency of introducing new teaching techniques in all medical faculties within the limits of their infrastructure. This approach is mainly used to give graduates generic competencies such as team working, self-learning ability, ethics etc. which are believed to be important factors in the smooth transition of graduates into professional life in both the short and long term*".

### *The need to further develop an international orientation*

One can say that the international orientation of teaching staff and students is very high in this field. Students of human medicine are traditionally highly mobile in most DEHEMS countries. There is support for students' international experience, especially within the framework of the Erasmus programme. The ma-

jority of HE institutions in this field support the international orientation of their students within the framework of the Erasmus programme and recognise the credits gained abroad. It is a common view stated by the German interviewees that about 30% of all students of medicine go abroad at least once during their studies. *"Medicine is the subject with the highest rate of international mobility – 30 percent of all students of this HEI have stayed abroad for some time during their study time, e.g. in the framework of the practical year (PJ, Praktisches Jahr) or one or two clinical electives (Famulatur*)". One interviewee points out that the modularised system of the field enables mobility. Similarly, internationalisation via the Erasmus programme is very common in Poland, Italy and Turkey. Another currently popular way of internationalisation in Turkey is summer practices abroad. The internationalisation of curricula itself for example as a result of the Bologna Process was not mentioned by any interviewees, so one can conclude that internationalisation in this field is mostly realised through the the mobility of students.

### *The importance of a practical orientation: practical experience in medicine is the main component of the profession and is inseparable from theory*

The practical orientation and practical parts of the study programme are the main parts of the programmes in all DEHEMS countries. Medical studies must due to their very nature give access to many practical sessions in all DEHEMS countries. Since theory and practice are inseparable, practical experience in medicine is the main component of the profession. Due to these facts, a very strong emphasis is given to practical training by the interviewees. One interviewee from Germany stated that "*The aim was and still is to improve the practical orientation and the practical parts within the study programme*". Curricula in the medicine field in DEHEMS countries contain a heavy practical component. For example, in Germany the study programme is scientifically oriented and theoretical in the first stage and afterwards it is practice oriented with entry to the clinical part. In Poland, the HEI implements a mandatory programme of practical experience. In Turkey, 70% of the teaching/learning hours at least must include practical experience. Similarly, it is stated that in Italy "*Students interesting in pursuing further education and in acquiring further practice can opt to serving as Guest Doctors (generally for 1 year). In this year of practice they can work at a hospital and are followed by senior staff".*

### *Despite budget cuts, research for students can best be conducted in university hospitals*

The result of the interviews show it is a characteristic of higher education in the domain of medicine that research is undertaken in university hospitals. Another result in this respect is that student participation in research activities is limited in many DEHEMS countries. Students often take part in research projects which are run by academic staff. It was pointed out by an Italian interviewee *"Student participation in research projects is limited to those students who decide to face the challenge of an experimental dissertation".* Another issue raised during the interviews is the financial difficulties that have a negative effect on research activities. An Austrian interviewee emphasised that "*The budgets of universities are shut down beyond recognition, this is actually very dangerous".*

### *Limited co-operation with private employers especially in this field*

Since medical graduates most often find employment in state-run hospitals, there is limited co-operation with private employers especially in this field. Due to the fact that the ministry of health is the main employer in some countries, there is no contact with private employers. But in some countries, there is cooperation with other stakeholders to a certain extent. For example, a Turkish interviewee pointed out: "*That department also centrally develops the medical curriculum in accordance with the requirements of the Turkish Association of Medical Doctors".* Similarly, a Polish interviewee explained the above mentioned facts as "*Directors of hospitals and health maintenance organisations are invited as guest speakers to the HEI. Private employers' visits are much rarer".*

#### *5.4.6.3 Future developmental needs*

Despite the variety of developmental needs emphasised during the interviews, which are particularly country-specific, the most emphasised ones can be listed as follows; change and modernisation of the content of the curriculum, increasing scientific skills and competencies, new teaching methods and financial difficulties. Especially the first two were emphasised by almost all of the DEHEMS country representatives.

***Increase curriculum interdisciplinarity and flexibility within the existing tradition***

As stressed before, medicine is a regulated field of study to a great extent in all DEHEMS countries and as a result the content of the curriculum is also tightly regulated. The need to change the content of the curriculum in a more flexible way is one of the main concerns voiced during the interviews. This fact is expressed by an Austrian interviewee as "*currently, the programme is very close to a 'school system' so we would like to re-introduce more academic freedom and flexibility*". The issue of adaptation of a new curriculum is pointed to by a German interviewee as "*The curriculum can always be improved and adapted to new developments".* As far as the question of the ways in which the programmes have to change is concerned, few interviewees pointed out modification of the content to gain an interdisciplinary character. In the words of one German interviewee "*this interdisciplinary character is extremely important so that students learn how to deal with members of other occupational groups such as nursing staff, physical therapists or speech therapists*".

***Increasing graduates' scientific skills and social competencies***

As stressed before, during the interviews there was a strong emphasis on increasing the competencies of graduates and applying those competencies to the relationship with the patient. In connection with this, there was a consensus among the interviewees on increasing the social competencies of graduates. The words of one Polish interviewee summarise this need very well *"Doctors today are given all the knowledge they need to become doctors, except the most essential".* He continued: *"Likewise, students should receive not only a purely methodological education which stresses the knowledge of the human anatomy and medical processes, but a greater toolset of interpersonal skills and greater communication skills, required in the least to work with patients*". Similarly, the need to develop the scientific skills of graduates arose during the interviews. In order to increase the ability of graduates to understand scientific studies and analyse the results in a critical manner, the need to develop courses to train the scientific skills and competencies of students was mentioned during the interviews.

***Introduction of new teaching methods and continuing medical education***

The implementation of modern approaches to teaching and learning as well as continuing medical education are indicated as one of the major developmental needs in the medicine field. This need was expressed by a Polish interviewee as "*That which can be done within the outside regulations imposed is a change in the approach of teachers to the subjects they teach. In the case of many subjects, openness to new methods of transferring knowledge would serve them well. This is occurring, however we would like it to occur at a faster pace*".

Similarly, Slovenian and Turkish interviewees also pointed out the need to implement new teaching methods in this field. The need for further or continuous medical education is another point raised by the German and Turkish interviewees in particular. A German interviewee wishes to design medical studies to be more academic and to shift certain disciplinary problems to further education. This would thereby reduce

the comprehensive disciplines to the benefit of the integrated development of competencies and personality.

***Persisting allocation of funding: reducing the number of students or increasing resources***

It was stated during the interviews that an important problem in this field is the financing of medical services and medical education. Due to the insufficiency of the allocated funds, there is a danger that medical doctors will not be able to use the most advanced techniques and this will cause lower job satisfaction than expected. As a Polish interviewee put it: "*It appears that there are actually two medicines. One is the academic world of the most advanced solutions known in the world, the other is the reality involving stringent financial constraints*". Similarly, the insufficiency of the funds allocated to medical education is another concern. This concern was expressed by an Austrian interviewee as "*We need either to reduce the number of students or increase the resources massively*".

There are also country-specific developmental needs. Improvements in relations with the alumni and the establishment of career centres seem to be a developmental need specific to Turkey.

### 5.4.7 Conclusion

The DEHEMS countries reveal some differences in terms of the gender differences, family background and student mobility. Regarding gender differences, statistical data from the DEHEMS national reports show that the share of women in all study programmes in this domain is very high in DEHEMS countries. In addition to the high proportion of women in the field, another striking fact is that in some countries the number of women in the field has also increased in recent years. Studies on the determinants of education show that family background is one of the important factors when it comes to access to schooling. Although there is a big variation among the HEGESCO and REFLEX countries with respect to the highest education level of the parents of the students of medicine, a higher education of the father does play a significant role in the medicine domain. In 15 out of the 17 countries, the ratio of all students of medicine who have an academic family background is over 30%.

The HEGESCO and REFLEX countries do not constitute a uniform bloc in terms of study-related work experience. Ratios of those graduates who had a study-related work experience during their study for four DEHEMS countries, namely Italy, Germany, Slovenia and Austria, are well above the HEGESCO and REFLEX countries' average. 84% of the graduates reported they had taken part in one or more work placement/internships as part of their study programme. This ratio is over 68% in all DEHEMS countries, except Italy.

Data on the mobility of medicine students from HEGESCO and REFLEX countries shows that student mobility during the period of study is very high in some DEHEMS countries like Germany (46%), Poland (42%) and Austria (30%). The other striking fact about mobility is that mobility during the study time period is much higher than mobility after graduation.

In terms of programme characteristics, one common fact among the DEHEMS countries is that the graduates reported their programme was vocationally-oriented. Although there is a large variation among the countries in the extent to which graduates reported the programme was vocationally-oriented, 56% of the graduates reported that it was vocationally-oriented to a very high extent. The vocational orientation of higher education programmes ranges from 15% in Austria to 81% in the Netherlands. Surprisingly, in some countries where the vocational orientation of education is emphasised, the share of graduates report-

ing their programme was vocationally oriented to a very high extent was low (15% for Austria and 25% for Germany).

In relation to programme characteristics, the results of the HEGESCO and REFLEX surveys indicate that medical education in the surveyed countries is very demanding but not as academically prestigious at the same level. Although there are variations between countries, in general graduates of medical sciences think that their programmes are vocationally-oriented. There are some differences in higher education in medical sciences between different countries. In that respect, the survey results show that neither HEGESCO nor REFLEX countries can be considered as a homogenous group.

The methods used in medicine programmes most often mentioned are lectures (4.0), theories and paradigms (3.62), the teacher as the main source of information and multiple-choice exams (3.09). There are also some differences in characteristics among the countries in the domain of medicine.

Across all six DEHEMS countries, graduates of medicine quite often (3.7-4.0) see their programme as a good basis for personal development, for performing current work tasks and for starting work. In terms of the modes of teaching and learning, according to the assessment of the graduates most emphasis is given to group assignments and written assignments to a large extent. Almost half of all graduates reported a strong emphasis on group assignments and similarly 59% of graduates emphasised written assignments.

Therefore, one can conclude that although there are variations among the countries, traditional lecturing and multiple-choice assessment are not the main modes of teaching and assessment methods in the field of medicine. DEHEMS countries fit this picture to a large extent, but Poland and Turkey are exceptions in the sense that the figures reported by the graduates for multiple-choice exam are above the sample average.

Concerning the number of students in the field, another key fact is that the numbers of students in this domain have increased in Turkey and Germany. Germany and Poland have the highest number of students among DEHEMS countries. Although the Bologna reform has some impacts on medical disciplines in DEHEMS countries, no radical changes have been brought by Bologna in terms of duration, degrees and contents for most programmes in this domain. One can say that medical disciplines in DEHEMS countries retain their classical tradition in terms of duration and degrees. In general, the greatest impact seems to be felt in the study programmes like promoting the introduction of new programmes in Italy and “reform study programmes” in the field of medicine in Germany.

One can say that the transition to employment is relatively quick in this field. The search duration of graduates in medicine for their first job is half of what it is across all domains, and stands at 2.1 months. However, the duration differs from country to country. Countries with the longest search durations are Slovenia and Turkey, where graduates search for their first job on average for three and a half months.

If we compare the ways of finding employment in the field of medicine with other domains, we see that medicine graduates more often find work by contacting an employer on their own initiative (except in Turkey), with the help of the HEI (except in Germany and Austria), through previous work (except in Germany and Austria) and in other ways. On the other side, graduates of medicine less often use private and public employment agencies (except in Austria and Turkey), family and friends, the Internet or set up their own business (except Turkey) to get employed.

Satisfaction with work is also relatively high in this field. In all countries, over 50 percent of the graduates reported they are satisfied with their current work. These shares are the highest in Slovenia and in Germany, but the lowest in Turkey. The difference in this respect is not very high between the countries (Turkey is an exception as only 53% of graduates there are very satisfied with their job).

Although high earnings are indicated as one of the characteristics of the job by the majority of graduates, there is a big variation among the countries where the share of graduates indicating this fact ranges between 39% and 92%.

Those who are the most successful are allocated to higher education institutions in accordance with their ranking. Therefore, students may not be studying in the departments they actually prefer. Graduates from the HEGESCO and REFLEX countries also reported if they had been included in follow-up training at their work.

50% of medicine graduates across all DEHEMS countries answered that their programme has been a good basis for starting work to a high or very high extent. Graduates of medicine more often (85%) believe that in their current work they utilise the knowledge and skills they gained in their programme when compared to all domains.

There is a diversity of understanding about what the career success of graduates means for the representatives of HEIs of medical sciences. Some interviewees saw it through very subjective dimensions as to whether one is satisfied in the workplace or not, while others defined it through different dimensions such as the duration of employment, success in a professional exam or the ability to deal well with different stakeholders (patients and administration). However, it can be tentatively suggested that there is a strong link between these dimensions.

Although graduates of the medicine domain have different career opportunities in the field of medicine, the lion's share of graduates work in their own professional field. But it is difficult to say what are the appropriate professional destinations that would match the study programme. The majority of interviewees across the DEHEMS countries agrees that study programmes in the field of medicine traditionally provide the specific knowledge needed in the profession. So one can say that it was commonly accepted by the interviewees from DEHEMS countries that, in comparison to other professional domains like Political Science and Sociology where students are educated for a range of different professional positions, students are trained to perform their specific professions.

Similarly, unlike some other disciplines, graduates end up working in a position related to their university education and do not have a hard time finding a job in DEHEMS countries. Medicine is a tightly regulated field of study to a great extent in all DEHEMS countries. As a natural consequence of being a regulated field, the core curriculum is the same on the national level in DEHEMS countries.

Despite the regulated nature of the curriculum in the field, there are modernisation attempts in some countries. There is development in this field in terms of enhancing the traditional focus on training students as medical doctors. First of all, recently there is a strong emphasis on increasing the competencies of graduates and applying these competencies in the relationship with the patient. One can say that the international orientation of teaching staff and students is very high in this field. Students of human medicine are traditionally highly mobile in most DEHEMS countries. The practical orientation and practical parts within the study programme are the main parts of the programmes in all DEHEMS countries.

Medical studies must due to their very nature give access to many practical sessions. As a result, a very strong emphasis was given by the interviewees to practical training. Since medical graduates most often find employment in state-run hospitals, there is limited co-operation with private employers especially in this field. Since the ministry of health is the main employer in some countries, contacts with private employers are very rare.

Due to differences in the structure of DEHEMS countries as well as the special characteristics of the HEI institutions, the priorities of the DEHEMS countries are not exactly the same. Therefore, there is a wide spectrum of answers including the aim to facilitate the employability of women and increase the physical capacity and infrastructure of education. Despite the variety of developmental needs stressed during the interviews, the most emphasised ones can be listed as follows: *change and modernisation of the content of the curriculum, increasing scientific skills and competencies, new teaching methods and financial challenges*. Especially the first two were emphasised by almost all the DEHEMS country representatives.

*Gabriela Grotkowska, Leszek Wincenciak, Tomasz Gajderowicz.*

## 5.5 SCIENCE

### 5.5.1 Introduction

The professional domain of Science contains different fields of study in the countries involved in the DEHEMS project. In all of these project countries, Science domain study programmes include the following fields of study (according to the ISCED classification): Life Sciences (42), Physical sciences (44), Mathematics and statistics (46) and Computing (48). The programmes most commonly offered belong to the fields of: *biology, biochemistry, astronomy and space sciences, physics, chemistry, geology, meteorology mathematics, statistics, and computer sciences.*

In this domain synthesis chapter, information on the socio-biographic background of the students and graduates in the study fields of Science in the DEHEMS countries will be described and analysed. Study conditions and provisions in these countries will be compared. An important part of this chapter will be devoted to the transition of graduates to employment and the characteristics of their first jobs.

The basis for this domain synthesis was the six national domain reports of the participating countries. As statistical material, data from the HEGESCO and REFLEX projects will be used and analysed. In some cases, where appropriate, data from the Eurostat Labour Force Survey and OECD educational data will also be used.

In the domain of Science, similarly to other domains analysed in the DEHEMS project, the international research team conducted 36 interviews with HE experts. The group of interviewees varied widely and included people with different backgrounds, experience and positions within the national HE systems. Generally, these were members of academic staff with significant teaching experience, members of HE management and career centres' experts. Most of them represented HE management at the level of faculty (dean, vice-dean), which means they were usually both HE managers and academic staff members with extensive teaching experience[71].

[71] The interviewees in the domain of Science were mainly selected from among public higher education institutions. One of the key features of the domain of Science is its strong internal diversification. The study process in Science subdomains differs not only due to the specifics of particular disciplines, but also differences in labour market conditions. The interviewees represented four subdomains of Science: Life Sciences (42), Physical Sciences (44), Mathematics and Statistics (46) and Computing (48). The structure of the sample varied between the countries. All in all, the research team conducted 22 interviews with representatives of Life Sciences (biology, chemistry, and biotechnology), 8 interviews with experts in HE in Physical Sciences, Mathematics and Statistics and 6 in Computing Science.

### 5.5.2 Socio-demographic statistical overview

#### *5.5.2.1 Number of graduates*

The number of graduates of the Science domain for the six DEHEMS countries is shown in Table 5.36 below. As can be seen from the OECD data, the numbers are quite different for the various countries, even if we make a correction for the total population of graduates or population of a country. At the bottom of Table 5.36 we see that the share of the Science domain in the total graduates population remains quite stable over time and for Italy, Poland, Slovenia and Turkey in general it does not exceed 10%. A notable difference can, however, be observed for Austria and Germany with significantly higher shares in the range of 13 to 16.5%.

*Table 5.36: Number of graduates in the Science domain*

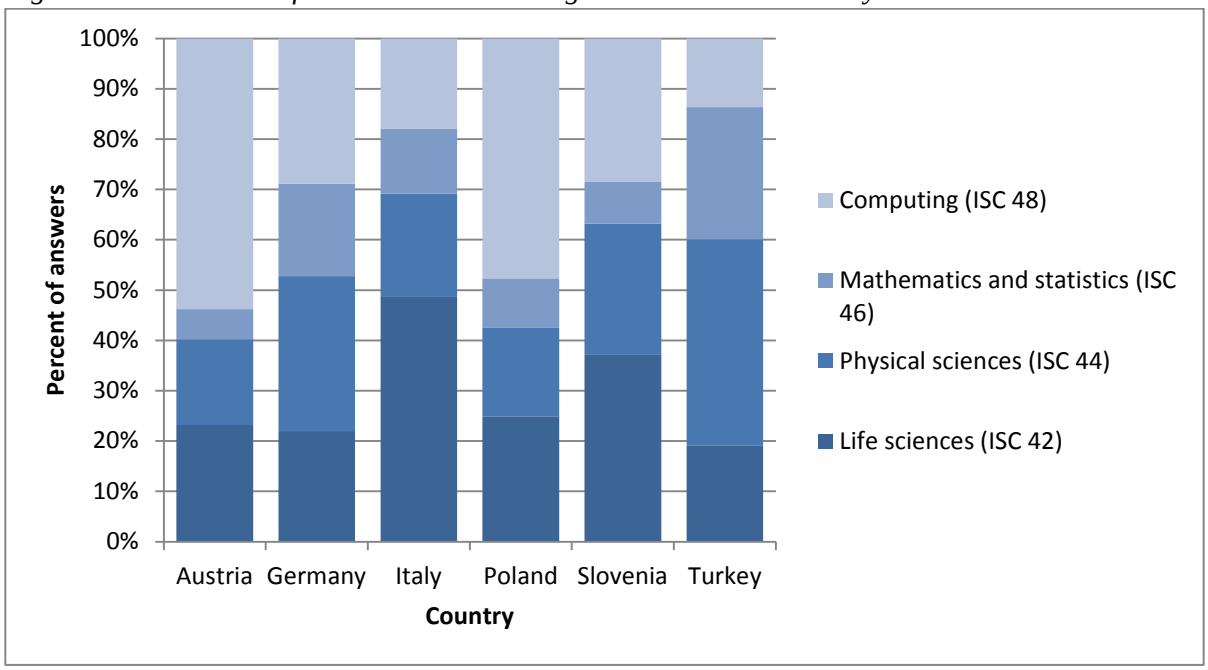
| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Austria** | 3 377 | 4 379 | 4 324 | 4 610 | n.a. |
| **Germany** | 36 884 | 47 112 | 53 291 | 61 028 | 67 083 |
| **Italy** | 26 165 | 26 369 | 27 416 | 15 924 | 15 965 |
| **Poland** | 33 531 | 42 824 | 42 931 | 42 575 | 39 321 |
| **Slovenia** | 512 | 468 | 546 | 521 | 571 |
| **Turkey** | 18 479 | 19 459 | 22 231 | 24 578 | 26 588 |
| **% of total number of graduates** | | | | | |
| **Austria** | 13.6 | 16.3 | 15.3 | 13.2 | n.a. |
| **Germany** | 15.4 | 15.2 | 15.7 | 16.5 | 16.5 |
| **Italy** | 7.0 | 6.9 | 6.9 | 6.9 | 7.2 |
| **Poland** | 6.8 | 8.6 | 8.2 | 7.7 | 6.9 |
| **Slovenia** | 6.8 | 5.8 | 7.0 | 6.3 | 5.9 |
| **Turkey** | 10.2 | 8.2 | 8.5 | 8.8 | 8.8 |

Source: Own elaboration based on OECD (2011).

#### *5.5.2.2 Subdomain structure*

For the six DEHEMS countries, the shares of graduates of the Science domain broken down by subdomains are shown on Figure 5.41. The subdomain structure of the Science domain is diversified among countries under scrutiny. In Poland and Austria the domain structure is highly biased towards Computing, with shares reaching 50% of totals for the domain. The structure of the domain in Italy is, on the other hand, strongly biased towards the Life Sciences subdomain (48.7% of all domain graduates). Turkey and Germany have a more balanced structure of the subdomains.

*Figure 5.41: Structure of the Science domain – graduates broken down by subdomains*

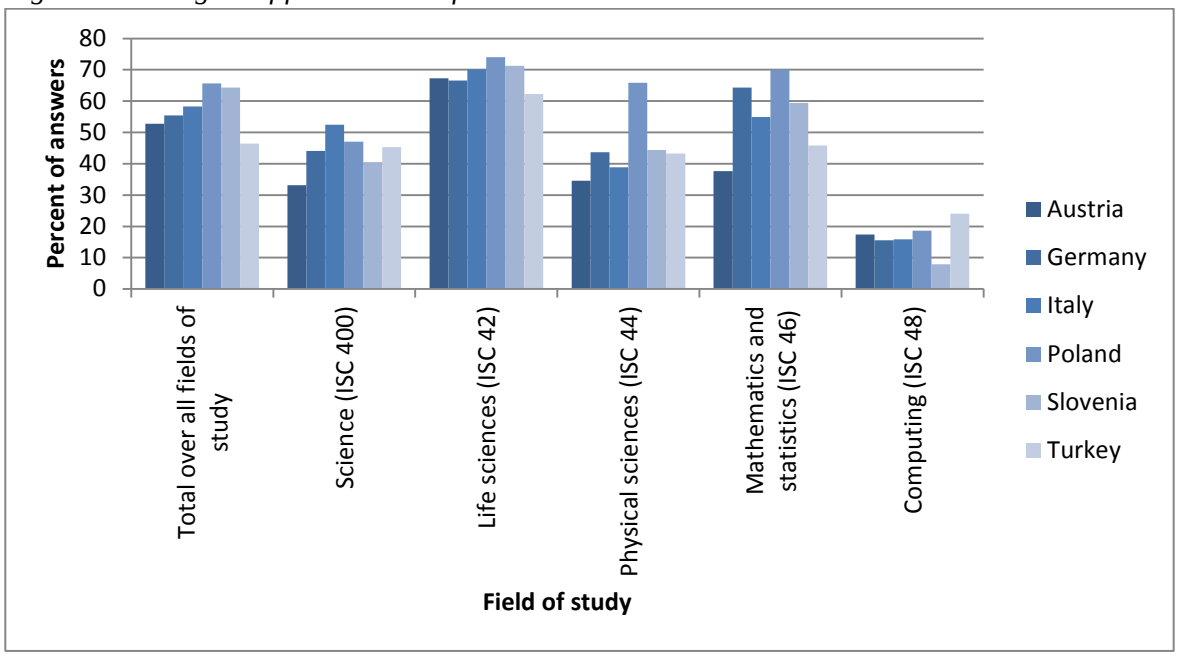



Source: Own elaboration based on OECD (2011).
Note: Last available data for Austria for 2008.

### *5.5.2.3 Gender*

Generally, in the total population of graduates (across all domains) we can observe a modest extent of female domination, except for Turkey (where the share of women in the total graduate population is below 50%). Figure 5.42 presents the degree of feminisation of the Science domain broken down by subdomains for the six DEHEMS countries. A specific feature of the domain of Science is that it exhibits male domination. This is especially visible in the subdomain of Computing. The only exception to this characteristic is Italy, with a share of women in Science graduates of 52.8%. This is a consequence of the profound domination of the Life Sciences subdomain in Italy, while in the other countries this subdomain constitutes a much smaller share of graduates. The lowest share of female graduates is observed in Austria – only 33.1%. The diversification of feminisation rates across subdomains is also shown in the same graph.

*Figure 5.42: Degree of feminization of the Science domain*




Source: Own elaboration based on OECD (2011).
Note: Last available data for Austria for 2008.

### *5.5.2.4 Family background*

Students from the Science domain are generally characterised by a higher share of those whose parents were also well educated. This means a relatively high level of replication of education patterns. There are, however, some country differences. In Poland, Slovenia and Turkey this transgenerational education replication is even stronger than the average (see Table 5.37).

*Table 5.37: Highest education of father and mother by country for graduates of the Science domain(in percent)*

| | ISCED 1+2 | ISCED 3+4 | ISCED 5+6 | Total |
|---|---|---|---|---|
| **Austria** | 16.7 | 19.3 | 64.0 | 100 |
| **Germany** | 7.3 | 26.1 | 66.7 | 100 |
| **Italy** | 3.3 | 39.3 | 57.4 | 100 |
| **Poland** | 4.9 | 19.5 | 75.6 | 100 |
| **Slovenia** | 0.6 | 27.6 | 71.8 | 100 |
| **Turkey** | 3.5 | 16.1 | 80.5 | 100 |
| **Total** | 5.7 | 26.7 | 67.6 | 100 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Most graduates in the Science domain live with partners, are starting their own families (see Table 5.38). However, there are countries like Turkey and Italy where the shares of those living with their parents are relatively high. In Austria and Germany there are large shares of graduates living alone.

*Table 5.38: Graduates of Science domain by family background (in percent)*

| | Living with parents | Living alone | Living with partner | Total |
|---|---|---|---|---|
| **Austria** | 3.7 | 31.5 | 64.8 | 100 |
| **Germany** | 2.8 | 28.3 | 68.9 | 100 |
| **Italy** | 37.2 | 18.5 | 44.3 | 100 |
| **Poland** | 14.5 | 15.7 | 69.9 | 100 |
| **Slovenia** | 11.5 | 14.1 | 74.4 | 100 |
| **Turkey** | 46.0 | 12.5 | 41.5 | 100 |
| **Total** | 22.9 | 19.8 | 57.4 | 100 |

Source: Own elaboration based on REFLEX/HEGESCO data.

### *5.5.2.5 International students*

Table 5.39 shows the distribution of international and foreign students in tertiary programmes by field of education. In all six DEHEMS countries, the Science domain exhibits a relatively low level of internationalisation. In Germany, the Science domain has the highest share of international/foreign students among all six DEHEMS countries, where it reaches 16.4%. On the other hand, in Poland and Italy it is just 4.8% and 5.4%, respectively.

*Table 5.39: Distribution of international/foreign students by field of study (in percent)*

| | Science | Humanities, arts and education | Health and welfare | Social sciences, business and law | Services | Engineering, manufacturing and construction |
|---|---|---|---|---|---|---|
| **Austria**[2] | 11.9 | 23.2 | 9.1 | 38.3 | 1.5 | 13.5 |
| **Germany**[1, 2] | 16.4 | 25.7 | 6.2 | 27.7 | 1.5 | 20.5 |
| **Italy**[1, 2] | 5.4 | 19.4 | 20.0 | 33.7 | 1.8 | 17.6 |
| **Poland**[2] | 4.8 | 19.8 | 29.7 | 36.9 | 3.5 | 4.6 |
| **Slovenia** | 7.8 | 19.8 | 8.1 | 44.0 | 3.1 | 15.6 |
| **Turkey** | 10.0 | 22.0 | 14.6 | 32.7 | 4.2 | 14.4 |

Source: Education at a Glance 2011: OECD Indicators - OECD 2011.
Notes: 1 - Excludes tertiary-type B programmes; 2 - Year of reference 2008.

### *5.5.2.6 PhD graduates*

The numbers of PhD graduates in the Science domain – in absolute and relative terms (related to the number of tertiary graduates in the same field) are shown in Table 5.40 below. We can see that there are quite important differences among the six DEHEMS countries with respect to this characteristic. The smallest ratio of PhD graduates to tertiary graduates is observed in Poland at only around 2.2% and Turkey at 2.8%. The Science domain of study in both countries is not very popular among those who plan advanced research careers. On the other extreme, we have Slovenia with a ratio reaching 22.4%, meaning that nearly every fourth graduate of the field is successfully finishing PhD studies. Austria, Germany and Italy have comparable ratios of around 10-11%. It is also worth noting that in Germany this ratio dramatically decreased over the last 5 years in the period under study from 18% in 2005 to 10.5% in 2009. This is howev-

er a result of a dynamic increase in the number of tertiary graduates since the number of PhD graduates also slightly increased in nominal terms.

*Table 5.40: Number of Ph.D. graduates in the Science domain (in percent)*

| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Austria** | 492 | 476 | 429 | 490 | 560 |
| **Germany** | 6691 | 6355 | 6531 | 6954 | 7066 |
| **Italy** | 2337 | 2535 | 2680 | – | – |
| **Poland** | 907 | 1982 | 997 | 927 | 847 |
| **Slovenia** | 92 | 90 | 118 | 113 | 128 |
| **Turkey** | 453 | 397 | 500 | 576 | 739 |
| **% of tertiary graduates** | | | | | |
| **Austria** | 14.6 | 10.9 | 9.9 | 10.6 | – |
| **Germany** | 18.1 | 13.5 | 12.3 | 11.4 | 10.5 |
| **Italy** | 8.9 | 9.6 | 9.8 | – | – |
| **Poland** | 2.7 | 4.6 | 2.3 | 2.2 | 2.2 |
| **Slovenia** | 18.0 | 19.2 | 21.6 | 21.7 | 22.4 |
| **Turkey** | 2.5 | 2.0 | 2.2 | 2.3 | 2.8 |

Source: Own elaboration based on OECD (2011).

### 5.5.3 Study conditions and provisions

Study programmes in the four study subdomains in Science are offered by different types of HEIs, starting from general universities, through specialised universities (technological universities) and narrowly profiled higher education institutions. The number of programmes offered differs from country to country, depending on the size of the education system and number of higher education institutions. In **Slovenia,** 8 programmes are offered in Life Sciences, 4 in physical science, 3 in mathematics and statistics and 3 in computing. Programmes are offered by 5 HEIs (10 different units and faculties). In **Austria**, there are more than 134 different study programmes in Science. They are offered by 9 public universities, 16 universities of applied sciences and 2 private universities or institutions. In **Turkey** there are 13 programmes in all fields, offered by 89 science and letters faculties and 8 science faculties. In **Italy** there are 43 HEIs offering programmes within the ISCED 4 field of education. Programmes are mainly taught by faculties of mathematics, physics and natural science. With regard to some study areas, such as chemistry, faculties of chemistry administer programmes, whilst biology study area programmes are often jointly administered by faculties of mathematics, medicine, engineering, depending on the study emphasis. Statistics programmes are administered by five faculties of statistics or by faculties of business and economics and political science. In **Germany**, there are around 2,050 study programmes in the professional domain of Science. The highest number (611) was seen in the study field computer sciences. The number of offered study programmes in the other study fields (biology, mathematics, physics, chemistry and geosciences) is similar (ranging from 269-326). There were no data available for study programmes in the field of environmental sciences. In **Poland,** 299 programmes are offered in the field of Science by 148 HEIs. More than one-third of the total number involves programmes in the subdomain of Computing (ISC 480). A characteristic feature of the Polish system is that more recently joint programmes have emerged, combining the programme contents of different fields (mathematics and economics, medical physics). The institutions offering programmes in the field of Science are mainly public universities with the exception of the Computing subdomain, which is offered by private HEIs as well (covering almost 50% of the student population).

As for the programme content, bachelor's programmes mainly serve the purpose of imparting broad knowledge. Although students may choose electives and specialisations, they are usually not intended to give any genuine expertise. Master's programmes, in contrast, are usually highly specialised. A significant distinction may be made when looking at the type of institution offering the programme, i.e. whether it is a university with a more academic approach or a university of applied sciences, which usually pursues a strategy of vocational orientation. This is a very important distinction particularly in the computing sub-domain.

As for the programme characteristics, the key data source is the REFLEX/HEGESCO database containing information on graduates' assessment of their study programme. Comparing to other study domains (Table 5.41), Science is characterised by a relatively high average assessment of the role of research projects (the highest average score among all domains) and an assessment of the programme as academically prestigious (similar to engineering, but less than medicine). At the same time, it is described by the graduates as not being well known to employers and characterised by a lower than average extent of the use of multiple-choice exams, oral presentations and group assignments (the lowest average score in all three characteristics among all the domains).

There are also large differences among particular countries in the characteristics of higher education in the domain of Science.

*Table 5.41: Average score of the assessments of study programmes characteristics and teaching and learning modes in Science domain (mean of possible answers ranged from 1 to 5- see REFLEX/HEGESCO questionnaire)*

| | **Non-DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** |
|---|---|---|---|---|---|---|---|---|
| **Extent in which the following characteristic was emphasized in the study programme:** | | | | | | | | |
| Multiple choice exams | 2.1 | 1.6 | 1.4 | 1.7 | 2.8 | 1.6 | 2.2 | 2 |
| Oral presentations | 2.6 | 3 | 3.2 | 3.4 | 2.9 | 2.9 | 2.6 | 2.7 |
| Written assignments | 3.2 | 3.5 | 3.4 | 3.3 | 3.3 | 3.6 | 2.9 | 3.2 |
| Problem based learning | 2.7 | 2.9 | 2.6 | 2.6 | 2.8 | 2.5 | 2.7 | 2.7 |
| Teacher as the main source of information | 3.5 | 3.5 | 3.4 | 3.9 | 3.5 | 3.3 | 3.4 | 3.5 |
| Theories and paradigms | 3.8 | 3.6 | 3.5 | 3.3 | 3.8 | 3.8 | 3.2 | 3.7 |
| Research Project | 2.3 | 2.5 | 2.2 | 2.5 | 1.9 | 2 | 2.6 | 2.3 |
| Group assignments | 2.9 | 3.1 | 3 | 2.6 | 3.2 | 2.5 | 2.6 | 2.9 |
| Lectures | 3.8 | 4.2 | 4.2 | 4.2 | 4 | 4.1 | 4.1 | 3.9 |
| Academically prestigious programme | 3.1 | 3.4 | 3.4 | 3.4 | 3.3 | 3.2 | 3.4 | 3.2 |
| Employers familiar with the content of the programme | 2.8 | 2.8 | 2.6 | 2.7 | 2.9 | 3 | 2.3 | 2.8 |
| **To what extent has your study programme been a good basis for:** | | | | | | | | |
| Personal development | 3.7 | 4.1 | 3.9 | 3.8 | 3.7 | 3.4 | 3.4 | 3.7 |
| Performing your current work tasks | 3.3 | 3.6 | 3.2 | 3.2 | 3.2 | 3.3 | 2.9 | 3.3 |
| Starting work | 3.5 | 4 | 3.4 | 3.3 | 3.6 | 3.2 | 2.9 | 3.4 |

Source: Own elaboration based on REFLEX/HEGESCO data.

The most noteworthy results are:

- the incidence of multiple-choice exams – with Poland well above the average (140% of the average score) and Germany, Austria and Slovenia well below the average;
- the incidence of oral presentations – in Italy, Germany and Austria it is significantly higher than the average incidence in other countries;
- use of research projects as a teaching tool – it is particularly low in Poland and Slovenia, while well above the average in Turkey;
- the incidence of group assignments, which are widely used in Poland but much less frequently (than average) in Slovenia, Italy and Turkey; and
- perception of the programme in terms of its utility from the graduates' point of view (programme quality in terms personal development, basis for performing the graduate's current work tasks, basis for starting work, academic prestige, employers' familiarity with the programme), which is particularly highly assessed by Austrian graduates.

#### *5.5.3.1 Impact of the Bologna Process*

The Bologna Process aims to facilitate students' mobility by providing common tools (such as the European Credit Transfer and Accumulation System (ECTS) and the Diploma Supplement) to ensure that periods of study abroad are recognised. These tools are used to promote transparency in the emerging European Higher Education Area by allowing degree programmes and qualifications awarded in one country to be understood in another. Bologna Process actions include several tools aimed at achieving the goal of creating the European Higher Education Area.

In the domain of Science many actions are being undertaken to reach the Bologna Process goals. All DEHEMS countries have reported advances in implementation of the 3-cycle study system with ECTS. None of the programmes offered within the domain has been exempted from this reform. However, in all countries a new system has been introduced as a parallel system to an earlier degree (with a transition period). European universities are currently in the implementation phase, and an increasing number of graduates has now been awarded these new degrees. As for the DEHEMS countries, the current situation is illustrated in Table 5.42. The share of BA students in the field of Science in the DEHEMS countries varies from 68.1% in Italy to 94.1% in Germany (2009). In most countries (with the exception of Austria), it is higher in Science than in the total student population.

*Table 5.42: Students in the domain of Science by type of degree*(in percent)*

| | Field of education | 2005 | | | 2009 | | |
|---|---|---|---|---|---|---|---|
| | | BA | MA | Total | BA | MA | Total |
| **Austria**[1] | Science | 95.6 | 4.4 | 100 | 77.5 | 22.5 | 100 |
| | Total | 97.2 | 2.8 | 100 | 83.8 | 16.2 | 100 |
| **Germany** | Science | 94.6 | 5.4 | 100 | 94.1 | 5.9 | 100 |
| | Total | 92.4 | 7.6 | 100 | 93.3 | 6.7 | 100 |
| **Italy**[2] | Science | 85.7 | 14.3 | 100 | 68.1 | 31.9 | 100 |
| | Total | 79.8 | 20.2 | 100 | 65.3 | 34.7 | 100 |
| **Poland** | Science | 66.9 | 33.1 | 100 | 70.7 | 29.3 | 100 |
| | Total | 58.7 | 41.3 | 100 | 58.1 | 41.9 | 100 |
| **Slovenia** | Science | 89.5 | 10.5 | 100 | 91.9 | 8.1 | 100 |
| | Total | 87.2 | 12.8 | 100 | 84.1 | 15.9 | 100 |
| **Turkey** | Science | 85.3 | 14.7 | 100 | 89.4 | 10.6 | 100 |
| | Total | 84.5 | 15.5 | 100 | 87.5 | 12.5 | 100 |

Source: Own elaboration based on OECD (2011).
Note: 1 – Last available data for Austria for 2008; 2 – Last available data for Italy for 2007.
* – the distribution of types of degrees applies only for students in the three-cycle study system.

As for student mobility, the domain of Science is characterised by relatively high student mobility in the period after graduation – both related to work and to further studies. Compared to the average of all study fields, it is particularly high in Austria, Poland and Slovenia. Only in Turkey are Science graduates less prone to leave their country for work or study purposes. On the other hand, Science graduates there report lower international mobility during the study process.

*Table 5.43: Students' mobility in the domain of Science*

| | After graduation for work | | | After graduation for study | | | During study for work | | | During study for study | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Science (%) | Total (%) | Ratio | Science (%) | Total (%) | Ratio | Science (%) | Total (%) | Ratio | Science (%) | Total (%) | Ratio |
| **Austria** | 37.5 | 24.7 | 1.5 | 12.5 | 8.1 | 1.6 | 11.9 | 10.7 | 1.1 | 27.4 | 32.2 | 0.9 |
| **Germany** | 16.2 | 12.5 | 1.3 | 5.6 | 5.2 | 1.1 | 2.3 | 4.7 | 0.5 | 24.7 | 28.6 | 0.9 |
| **Italy** | 10.9 | 11.3 | 1.0 | 10.3 | 10.0 | 1.0 | 1.6 | 3.2 | 0.5 | 15.1 | 16.1 | 0.9 |
| **Poland** | 29.6 | 23.6 | 1.3 | 8.0 | 5.4 | 1.5 | 18.2 | 21.0 | 0.9 | 13.6 | 15.5 | 0.9 |
| **Slovenia** | 10.0 | 7.5 | 1.3 | 10.5 | 7.4 | 1.4 | 7.8 | 6.1 | 1.3 | 8.9 | 9.6 | 0.9 |
| **Turkey** | 10.7 | 15.3 | 0.7 | 3.6 | 7.1 | 0.5 | 2.7 | 3.5 | 0.8 | 3.1 | 5.8 | 0.6 |
| **Total** | 17.2 | 14.5 | 1.2 | 8.5 | 6.8 | 1.2 | 7.2 | 8.4 | 0.9 | 14.9 | 16.9 | 0.9 |

Source: Own elaboration based on REFLEX/HEGESCO data.

### 5.5.4 Transition to employment and characteristics of the first job

This subchapter describes the transition to the labour market of graduates of the Science domain and the characteristics of their first job in the six DEHEMS countries. The aim of this chapter is to show the characteristics of the transition to the labour market, the search duration for the first job, as well as the means and modes of the job search. Secondly, the characteristics of the first job will be analysed: sectors and occupations, ownership, firm size etc. A very important part will be devoted to a study of the determinants

of labour market success. Labour market success as such can be understood and defined in many different ways, therefore the adopted procedures, definitions and analytical tools will be described in the relevant subchapter. Lastly, all the analyses presented in this chapter will be based on the REFLEX and HEGESCO projects' statistical data supplemented with Eurostat Labour Force Survey data where needed and involve comparisons between the six DEHEMS countries and, where appropriate, the relationship with other domains will be presented.

#### *5.5.4.1 Search duration for first jobs*

Statistical data from the REFLEX and HEGESCO projects reveal interesting differences among the countries with respect to search duration. In the table below, we present various characteristics of the distribution of the search duration. The bottom part of the table shows the respective value for the domain of Science divided by the value for all domains. For graduates of Science for all six DEHEMS countries, the average search duration is around 4.8 months. The distribution is highly skewed as the median is only 2 months.

*Table 5.44: Search duration of graduates in the field of Science*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (months)** | 4.8 | 1.8 | 1.9 | 4.3 | 1.5 | 4.0 | 10.2 | 3.5 | 3.9 |
| **Standard deviation** | 8.7 | 3.1 | 3.2 | 8.0 | 1.5 | 6.1 | 12.8 | 6.0 | 7.0 |
| **Science/All domains (ratio)** | | | | | | | | | |
| **Mean (ratio)** | 1.203 | 0.798 | 0.878 | 1.358 | 0.792 | 0.837 | 1.266 | 1.307 | 1.287 |
| **Standard deviation** | 1.258 | 0.875 | 0.733 | 1.276 | 0.638 | 0.912 | 1.267 | 1.172 | 1.229 |

Source: Own calculations based on HEGESCO and REFLEX data.
Note: Search duration was calculated on the basis of the question "How many months did you search before you obtained this employment (after graduation)?" from REFLEX/HEGESCO questionnaire. Mean is an average of months, SD is standard deviation.

It also appears that Science graduates devote on average 20.3% more time to finding their first job compared to graduates from all domains. This may be a signal of a more visible structural problem of matching in this domain. Of all DEHEMS countries, there are two, namely Italy and Slovenia whose average times are not too different from the DEHEMS average while, Austria, Germany and especially Poland have significantly shorter search durations and, on the other extreme, we observe Turkey with an average duration of 10 months. Based on these figures, it could be argued that the most profound matching problem is observed in the case of Turkish graduates. If we look at the bottom of the table, we see how Science graduates are doing compared to all domains of study. Only in two of the DEHEMS countries are search durations much higher for graduates of Science, namely for Italy and Turkey. The statistics for the EU-wide comparison show that it takes on average 28.7% longer for Science graduates than all graduates to find their first jobs. Italy is an example where the Science graduate situation is relatively speaking the worst with respect to search duration.

#### *5.5.4.2 Search methods*

The most successful job search methods in the DEHEMS countries for the graduates of Science were (according to the REFLEX and HEGESCO data):

- *Contacted an employer on own initiative*. For all DEHEMS countries, this was the most popular way of finding a job, as reported by 22% of graduates. The are some country specifics. For Germany, Italy, Slovenia and Turkey, the shares were similar (between 19% and 24%), while for Austria this method was selected by 16% of graduates and in Poland it reached almost 46% of graduates. Only in Turkey and Italy was this method not at the top of the ranking.
- *Through family, friends or acquaintances*. For all DEHEMS countries this was the second most popular method with a share of 17%. The highest shares were observed in Turkey with 27,9% and in Italy with 21.4%. The lowest shares of this method were observed for Germany – 7.1% and Slovenia – 11.3%.
- *Through an advertisement in a newspaper*. The average for DEHEMS countries was 10.6%. The highest share was observed for Austria (16%) and the lowest for Italy (5.8%).
- *Approached by an employer*. The average for DEHEMS countries was 10.4%. The biggest share was observed in Austria (17.7%) while in contrast for Poland this method was indicated by just 1.4% of graduates.
- *Through the help of the higher education institution*. The average for DEHEMS countries was 9.7%. Most DEHEMS countries lie in the range of 8 – 12%, with the exception of Poland with only 1.4% of graduates reporting this method. This indicates that in Poland the role of the higher education institution as an intermediary between the education system and employment has not been established or it does not function in a proper way.

*Table 5.45: Way of finding work by graduates in the field of Science*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Through advertisement in newspaper | 10.6 | 16 | 7.7 | 5.8 | 10.8 | 12.8 | 12.9 | 13.1 | 12.3 |
| Through public empl. ag. | 2.8 | 0.6 | 2.4 | 1.7 | 10.8 | 5.8 | 1.7 | 6 | 5 |
| Through private empl. ag. | 0.6 | 1.1 | 0.0 | 1 | 0.0 | 0.0 | 0.8 | 4.4 | 3.2 |
| Through internet | 10.4 | 9.4 | 8.8 | 9.2 | 9.5 | 4.1 | 18.8 | 11 | 10.8 |
| Contacted employer on own initiative | 22 | 16.6 | 22.9 | 19.7 | 46 | 24.4 | 19.2 | 14.4 | 16.8 |
| Approached by employer | 10.4 | 17.7 | 11.2 | 9.5 | 1.4 | 12.8 | 6.7 | 10 | 10.2 |
| Through work placement during higher education | 6.5 | 9.4 | 6.5 | 7.1 | 6.8 | 8.7 | 2.1 | 9.8 | 8.7 |
| Through family, friends or acquaintances | 17.3 | 13.3 | 7.1 | 21.4 | 13.5 | 11.6 | 27.9 | 16.6 | 16.8 |
| Through help of higher education institution | 9.7 | 11.6 | 8.2 | 12.2 | 1.4 | 10.5 | 8.3 | 8.4 | 8.8 |
| Set up my own business | 1.7 | 1.7 | 2.9 | 2.7 | 0.0 | 0.6 | 0.8 | 1 | 1.2 |
| Other | 7.2 | 2.8 | 22.4 | 8.5 | 0.0 | 6.4 | 0.8 | 4.8 | 5.5 |
| Through previous work | 0.7 | 0.0 | 0.0 | 1.4 | 0.0 | 2.3 | 0.0 | 0.6 | 0.6 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Science/All domains (ratio)** | | | | | | | | | |
| Through advertisement in newspaper | 0.889 | 0.949 | 0.570 | 0.814 | 0.964 | 0.988 | 1.065 | 0.919 | 0.907 |
| Through public empl. ag. | 0.689 | 0.462 | 0.827 | 0.871 | 1.238 | 0.789 | 0.408 | 1.324 | 1.135 |
| Through private empl. ag. | 0.425 | 0.803 | 0.000 | 0.366 | 0.000 | 0.000 | 0.488 | 0.928 | 0.851 |
| Through internet | 1.478 | 1.816 | 1.138 | 2.080 | 0.869 | 2.512 | 1.108 | 1.374 | 1.401 |
| Contacted employer on own initiative | 0.986 | 0.644 | 0.998 | 0.965 | 1.254 | 1.010 | 1.542 | 0.713 | 0.807 |
| Approached by employer | 0.971 | 1.339 | 1.007 | 0.879 | 0.321 | 0.997 | 0.777 | 0.960 | 0.965 |
| Through work placement during higher education | 1.105 | 1.215 | 0.753 | 1.416 | 1.793 | 1.237 | 0.684 | 0.968 | 0.989 |
| Through family, friends or acquaintances | 0.868 | 0.978 | 0.759 | 0.917 | 0.696 | 0.689 | 0.839 | 1.070 | 0.999 |
| Through help of higher education institution | 1.910 | 1.877 | 2.276 | 1.393 | 0.544 | 3.878 | 1.776 | 1.541 | 1.652 |
| Set up my own business | 0.575 | 0.481 | 0.894 | 0.543 | 0.000 | 0.387 | 0.395 | 0.651 | 0.624 |
| Other | 0.997 | 0.736 | 1.358 | 0.839 | 0.000 | 0.814 | 0.790 | 0.986 | 0.998 |
| Through previous work | 0.522 | 0.000 | - | 3.022 | 0.000 | 0.536 | - | 1.415 | 0.886 |
| Total | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Source: Own calculations based on HEGESCO and REFLEX data.

Note: Each number in the top part of the table shows share of a given way of finding job in the population of graduates in employment – they sum up to 100. In the bottom part is a ratio of a share for science to the general population showing specifics of channels of finding job for science domain graduates.

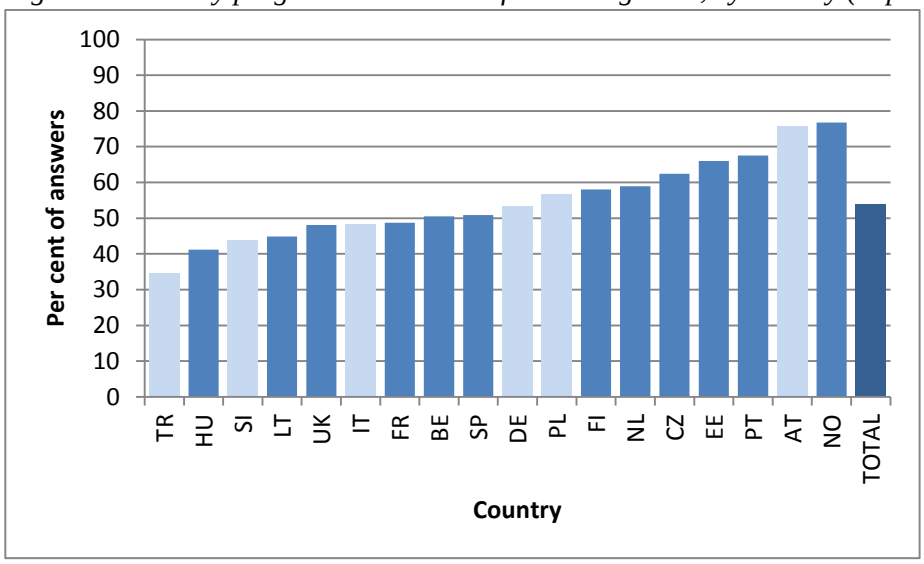
Again, if we look at the bottom of this table we can see the relative importance of a given search method for the graduates of Science compared to all study domains. The main conclusions are the following. The methods which are relatively the least popular for Science are: advertisements in a newspaper (exception:

Turkey), public employment agencies (exception: Poland), private employment agencies, contact with an employer on one's own initiative (exceptions: Poland, Slovenia, Turkey), approach by an employer (exceptions: Austria and Germany), own business. Relatively more popular methods were: the Internet (exception: Poland), work placement during higher education (exceptions: Germany and Turkey), help of the higher education institution (exception: Poland).

#### *5.5.4.3 Education as a basis for starting work*

When we consider the answers to the question: "To what extent has your study programme been a good basis for starting work?" we learn how the graduates perceived their study programme as a basis for starting work. This information can be interpreted in terms of matching the qualifications offered by graduates (and gained during the study process) with those needed by employers.

*Figure 5.43: Study programme as a basis for starting work, by country (in percent)*




Question I1a (Hegesco), I1a (Reflex): To what extent has your study programme been a good basis for starting work. Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".
Source: Own calculations based on HEGESCO and REFLEX data.

The above figure shows the percentages of answers to the above question using the statements "to a high or very high extent". The average share of this kind of answer for all European countries was 54%. Germany and Poland are not too different from the average with 53% and 57%, respectively. The highest share of the DEHEMS countries is observed in Austria with 76%, while the lowest is in Turkey with just 35%. Slovenia also has a fairly low figure of 44%. Besides that, it can also be seen that the share of this answer is a little lower for the Science domain as compared to other domains. Nevertheless, in Slovenia it is 33% higher than the average for all domains, in Austria it is 20.5% higher and in Poland it is 7.4% higher. For Turkey, which has the smallest share of strongly positive answers, this share is also 4.7% lower than the national average for all domains. It can be argued then that probably in Turkey and less so in Slovenia there are some problems in the dimension of coordinating HE programmes in line with employers' expectations and their needs. Without taking into account workplace sector and occupation, it is hard, however, to justify such a statement.

*Table 5.46: Study programme as a basis for starting work: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Science (%)** | 50.2 | 75.7 | 53.3 | 48.1 | 56.8 | 43.8 | 34.5 | 54.2 | 53 |
| **All domains (%)** | 46.1 | 62.8 | 54.4 | 48.5 | 52.9 | 32.9 | 36.2 | 57 | 53.7 |
| **Science/All domains (ratio)** | 1.087 | 1.205 | 0.979 | 0.992 | 1.074 | 1.330 | 0.953 | 0.952 | 0.986 |

Source: Own calculations based on HEGESCO and REFLEX data.

#### *5.5.4.4 Characteristics of the first job*

Using the REFLEX and HEGESCO data, the distribution of occupations in the first job was calculated on the basis of the International Standard Classification of Occupations at the 2-digit level. For all DEHEMS countries, the most commonly existing occupation is the group "Physical, mathematical and engineering science professionals" with a share of 38.7%. This group is the most important for all DEHEMS countries with the exception of Poland and Turkey. The second most common occupation group is "Teaching professionals" with a share of 25.8%. This group has an especially important share in the employment of Science graduates in Poland (43.8%) and Turkey (35.7%). An important exception is Austria, where the share of this occupational group is only 8.5%.

*Table 5.47: Occupations of Science graduates, ISCO 2-digit level (in percent)*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Armed forces | 0.4 | 0.0 | 0.0 | 1.0 | 0.0 | 0.6 | 0.0 | 0.5 | 0.4 |
| Legislators and senior officials | 0.1 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 |
| Corporate managers | 2.1 | 0.6 | 3.5 | 0.3 | 1.4 | 1.7 | 4.8 | 3.3 | 2.9 |
| Managers of small enterprises | 0.8 | 1.7 | 0.6 | 0.0 | 1.4 | 0.0 | 1.7 | 0.5 | 0.6 |
| Professionals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.3 |
| Physical, mathematical and engineering science professionals | 38.7 | 58.2 | 38.6 | 38.1 | 21.9 | 46.5 | 23.9 | 30.7 | 33.2 |
| Life science and health professionals | 7.9 | 10.7 | 1.8 | 13.1 | 0.0 | 3.5 | 9.1 | 10.9 | 9.9 |
| Teaching professionals | 25.8 | 8.5 | 25.7 | 24.2 | 43.8 | 25.6 | 35.7 | 14.6 | 18.2 |
| Other professionals | 5.5 | 11.9 | 3.5 | 3.4 | 12.3 | 6.4 | 1.7 | 4.7 | 4.9 |
| Technicians and associate professionals | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 |
| Physical and engineering science associate professionals | 7.0 | 4.0 | 18.7 | 5.7 | 5.5 | 4.7 | 4.4 | 10.5 | 9.4 |
| Life science and health associate professionals | 2.4 | 1.7 | 0.0 | 2.4 | 1.4 | 2.9 | 4.8 | 3.6 | 3.2 |
| Teaching associate professionals | 0.2 | 0.6 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 1.4 |
| Other associate professionals | 4.1 | 1.1 | 2.3 | 4.7 | 4.1 | 3.5 | 7.4 | 6.5 | 5.7 |
| Other | 5.3 | 0.6 | 4.7 | 7.1 | 8.2 | 4.7 | 6.5 | 11.5 | 9.5 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Own calculations based on HEGESCO and REFLEX data.

Unfortunately, the data from the REFLEX and HEGESCO projects do not allow us to compare the distributions of graduates between economic and ownership sectors for all DEHEMS countries. Those characteristics are only available for Germany, Italy and Austria. For all countries this breakdown is only possible for the current job and not for the first job of a graduate.

A slight majority (52.3%) of Science graduates in all DEHEMS countries has/had a fixed-term contract in their first jobs. This is a 12.9% higher share than for all domains of study, which indicates that in the Science domain fixed-term contracts are relatively more popular. This overrepresentation is mostly visible in Turkey (by 70.6%) but in Austria we actually encounter the reverse situation with fixed-term contracts in Science being relatively less popular than in all other domains. The highest shares of fixed-term contracts in first jobs are observed in Italy and Poland (with the figure reaching over 65%), while in Turkey and Austria they amount only to one-third of the graduates.

*Table 5.48: Type of contract in the first job: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Unlimited (%)** | 43 | 65.1 | 45.1 | 27.7 | 31.5 | 33.5 | 55.1 | 46 | 45.1 |
| **Fixed-term (%)** | 52.3 | 34.3 | 54.9 | 69 | 65.8 | 58 | 34.7 | 48 | 49.4 |
| **Other (%)** | 4.6 | 0.6 | 0.00 | 3.3 | 2.7 | 8.5 | 10.2 | 6 | 5.6 |
| **Science/All domains (ratio)** | | | | | | | | | |
| **Unlimited** | 0.902 | 1.081 | 0.883 | 0.835 | 0.948 | 0.790 | 0.819 | 0.912 | 0.908 |
| **Fixed-term** | 1.129 | 0.885 | 1.130 | 1.143 | 1.042 | 1.160 | 1.706 | 1.078 | 1.095 |
| **Other** | 0.782 | 0.606 | 0.000 | 0.510 | 0.747 | 1.115 | 0.826 | 1.195 | 1.051 |

Source: Own calculations based on HEGESCO and REFLEX data.

The average number of hours worked per week in the first job by graduates of Science programmes for all DEHEMS countries is 36.7. Slovenian and Turkish graduates tend to work a few hours more, while German and Polish significantly less. The relatively small number of hours worked in Poland can be attributed to the fact that the majority of graduates find their jobs as "Teaching professionals". In all the DEHEMS countries, with the exception of Austria and Slovenia, graduates of Science programmes tend to work fewer hours per week than other graduates in their countries.

*Table 5.49: Hours of work per week in the first job: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (hours)** | 36.7 | 36.7 | 32.6 | 35.9 | 32.0 | 40.0 | 40.0 | 36.3 | 36.4 |
| **SD** | 11.1 | 7.4 | 10.8 | 10.9 | 12.9 | 7.6 | 14.0 | 9.5 | 10.0 |
| **Science/All domains** | | | | | | | | | |
| **Mean (ratio)** | 0.988 | 1.040 | 0.949 | 0.993 | 0.883 | 1.050 | 0.956 | 1.004 | 1.000 |
| **SD** | 0.976 | 0.724 | 1.057 | 1.003 | 1.213 | 0.758 | 0.957 | 0.943 | 0.957 |

Source: Own calculations based on HEGESCO and REFLEX data.
Note: SD – standard deviation.

Earnings were calculated as gross hourly earnings in the first job corrected for purchasing power parity. The table below summarises the distribution of earnings for the DEHEMS countries' Science graduates, and the bottom part shows the ratio of a given statistic to the value for all study domains.

*Table 5.50: Distribution of gross hourly earnings in the first job: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (€)** | 12.1 | 15.4 | 19.1 | 10.3 | 8.4 | 11.5 | 8.4 | 14.8 | 13.6 |
| **SD** | 6 | 4.3 | 6 | 4.2 | 3.9 | 4.6 | 4.6 | 8.2 | 7.4 |
| **Science/All domains** | | | | | | | | | |
| **Mean (ratio)** | 0.995 | 1.070 | 1.046 | 1.025 | 1.026 | 0.936 | 0.989 | 1.030 | 1.007 |
| **SD** | 1.024 | 0.932 | 1.058 | 1.019 | 0.953 | 0.921 | 0.961 | 0.987 | 0.988 |

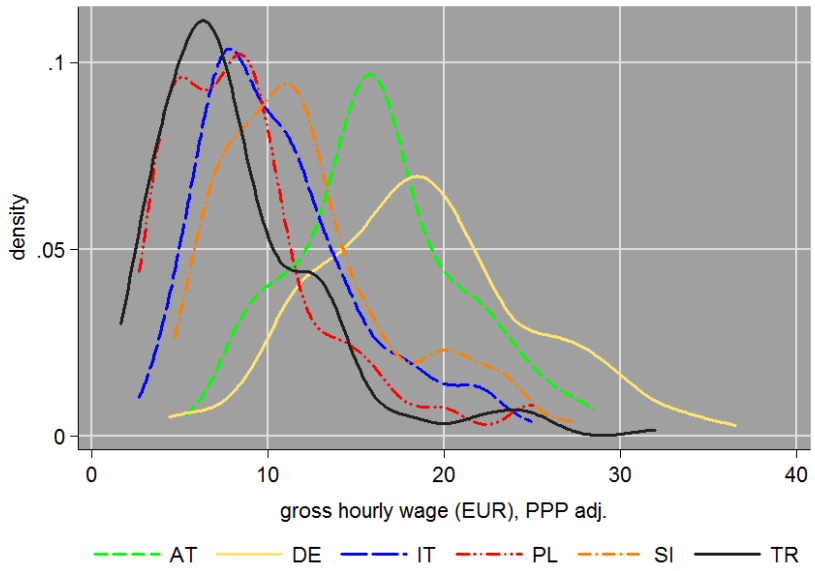
Note: SD – standard deviation
Source: Own calculations based on HEGESCO and REFLEX data.

The average hourly wage for all DEHEMS countries is EUR 12,10 for the Science graduates and is comparable to all domains' graduates. There are, however, some interesting country differences. The highest earnings are observed in Germany, while the lowest are seen in Turkey and Poland. It is also interesting

that in all countries except Slovenia and Turkey graduates of Science programmes earn a little more than all the domain average. The highest, 7%, difference is observed in Austria, then 4.6% in Germany. Poland and Italy have nearly 2.5% higher average hourly wages for graduates of Science, while in Slovenia they are 6.4% lower.

Kernel density estimates of the gross hourly wage distribution broken down by countries are shown in the graph below:

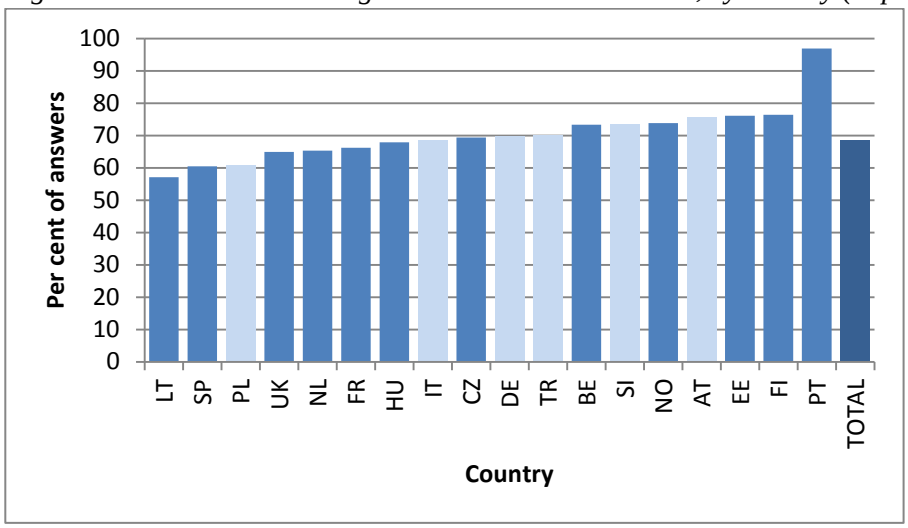
*Figure 5.44: Distribution of gross hourly wages (by countries, adjusted for PPP)*




Source: own elaboration based on the HEGESCO and REFLEX data.

An interesting aspect of the first job is the extent to which it can utilise the skills and knowledge graduates gained in the education process. The figure and table below show the percentages of graduates who assess their first job as utilising their knowledge and skill to a high or a very high extent. The average share of Science graduates indicating this statement for all the DEHEMS countries is 70.2%. There are no big differences in this share for all other domains. There are however some country differences. The highest share of strongly positive answers is observed for Austria (75.5%), while the lowest is for Poland (60.7%). The divergence between Science and all other domains is also the highest in Poland, where strongly positive answers for other domains are observed in 10% or more cases.

*Figure 5.45: Utilized knowledge and skills in current work, by country (in per cent)*




Source: Own elaboration based on HEGESCO and REFLEX data.
Question F11 (Hegesco), F11 (Reflex): To what extent are your knowledge and skills utilized in your current work? Responses "to a high or a very high level".

*Table 5.51: Utilized knowledge and skills in current work: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Science (%)** | 70.2 | 75.5 | 69.8 | 68.2 | 60.7 | 73.4 | 70.2 | 66.9 | 67.9 |
| **All domains (%)** | 70.9 | 75.1 | 72.7 | 69.4 | 66.8 | 71.6 | 69.2 | 70.2 | 70.4 |
| **Science/all domains (ratio)** | 0.991 | 1.005 | 0.961 | 0.982 | 0.909 | 1.025 | 1.013 | 0.954 | 0.965 |

Source: Own calculations based on HEGESCO and REFLEX data.
Question F11 (Hegesco), F11 (Reflex): To what extent are your knowledge and skills utilized in your current work? Responses "to a high or a very high level".

### *5.5.4.5 Current labour market status*

Two data sources are relevant for the purpose of identifying the current employment status: we can use LFS data or the combined REFLEX/HEGESCO dataset. In the latter dataset, when asked about their current status, 91.4% of graduates of Science programmes from all DEHEMS countries answered that they are employed, only 7.2% are unemployed and 1.4% are not in the labour force. Economic inactivity is much more visible in this group of graduates in Turkey (5.1%), where its share is even 97% higher than for all domains of study in Turkey. Turkey is also the country with the highest share of unemployed, reaching almost 12% of Science programmes graduates. The situation is also relatively difficult in Italy, where 8.8% of Science graduates declared they were unemployed. The unemployment of Science graduates is a more serious problem compared to other domains. In Germany, the share of unemployed in the group of Science graduates is almost twice that for all domains. In Poland, Turkey and Italy, unemployment is also a more serious problem in the Science domain, but the range of shares is much smaller (15.9 – 22.7%). In Slovenia and Austria unemployment among Science graduates seems to be less likely compared to all study domains in those countries. It is worth noting that the share of unemployed is the lowest in Poland, with only 2.27%.

*Table 5.52: Labour market status: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Not in labour force** | 1.4 | 0 | 0 | 0 | 2.3 | 1.1 | 5.1 | 0.4 | 0.7 |
| **Employed** | 91.4 | 97 | 90.7 | 91.3 | 95.5 | 95.8 | 82.9 | 93.6 | 92.9 |
| **Unemployed** | 7.2 | 3 | 9.3 | 8.8 | 2.3 | 3.2 | 12 | 6 | 6.4 |
| **Science/All domains (ratios)** | | | | | | | | | |
| **Not in labour force** | 1.158 | - | - | - | 0.870 | 0.479 | 1.973 | 0.772 | 0.974 |
| **Employed** | 0.980 | 1.013 | 0.953 | 0.985 | 0.999 | 1.014 | 0.952 | 0.981 | 0.981 |
| **Unemployed** | 1.298 | 0.714 | 1.910 | 1.186 | 1.227 | 0.938 | 1.159 | 1.463 | 1.406 |

Source: Own calculations based on HEGESCO and REFLEX data.

Using LFS data for 2008, we can also show the labour market status of graduates in the domain of Science, but only for five out of the six DEHEMS countries (there are unfortunately no data for Turkey). Table 5.53 presents interesting comparisons between the countries and we can see that the current employment status is mostly attained by graduates in this study domain in Austria and Germany, reaching 92-95%, well above the European average. The share of the employed among Science graduates is the lowest in Italy with only 74% which is 10% below the European average. The new member states – Poland and Slovenia – are characterised by shares comparable with the European average. The share of the unemployed varies also significantly among the countries under study. Again, the worst situation appears to be found in Italy, with an unemployment share reaching 11%. Slovenia comes second, with an unemployment share of almost 10%. In Poland, the situation is comparable to the European average, while in Germany and Austria the unemployment shares are significantly lower than the European average (especially in Austria with only 3.9%). Economic inactivity among Science graduates is observed more frequently in Italy (14.6%), while in other countries it constitutes shares of less than 5%.

*Table 5.53: Labour market status of science graduates(in percent)*

| | Austria | Germany | Italy | Poland | Slovenia | WW | Total |
|---|---|---|---|---|---|---|---|
| **Employed** | 92.2 | 94.7 | 74.0 | 88.2 | 86.8 | 86.2 | 85.4 |
| **Unemployed** | 3.9 | 5.3 | 11.4 | 7.7 | 9.9 | 7.9 | 8.1 |
| **Inactive** | 3.9 | 0.0 | 14.6 | 4.1 | 3.3 | 5.9 | 6.4 |

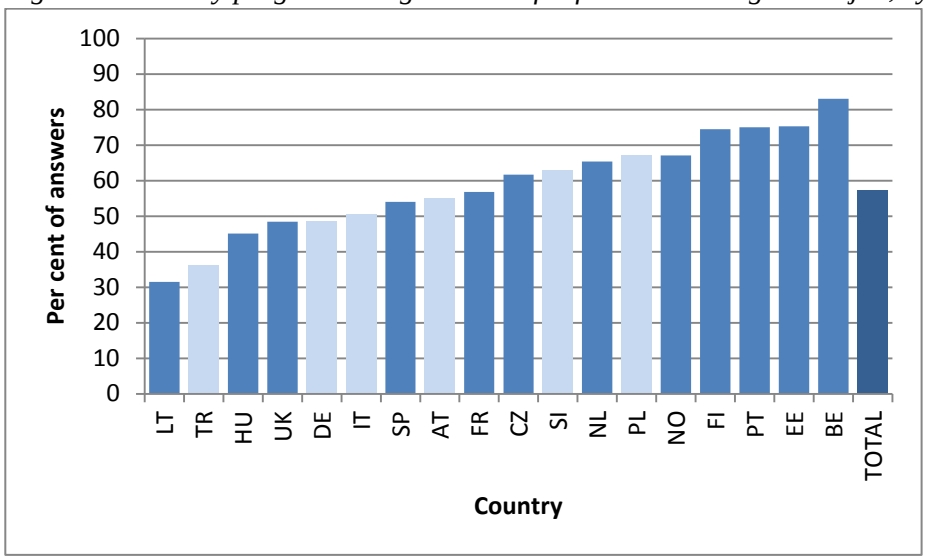
Source: Own elaboration based on LFS 2008 data.

### 5.5.5 Lifelong learning

Lifelong learning is a process of continuous investment in human capital. A rapidly changing economic environment requires more flexible resources in the process of adjusting to various shocks. In many aspects, the lifelong learning process may be viewed as an extension of the formal education process. Skills and knowledge gained during studies should be a good basis for lifelong learning.

The figure below shows the percentages of those graduates who responded that their study programme in the domain of Science was a good basis for further learning on the job. 67% of Polish graduates gave strongly positive answers. The percentage in Slovenia was quite high, too (63%). The figures for Austria, Germany and Italy were similar, in the range of 49-55%. Turkey, with only 36%, was at the bottom of the scale.

*Figure 5.46: Study programme a good basis for further learning on the job, by country (in per cent)*




Source: Own elaboration based on HEGESCO and REFLEX data.
Question I1b (Hegesco), I1b (Reflex): To what extent has your study programme been a good basis for further learning on the job? Responses 4 and 5 on a scale of answers from 1 = "Not at all" to 5 = "To a very high extent".

Comparisons of these answers to other study domains are shown in the table below. The data show that, in general, Science graduates find their programmes as a good basis for further learning a little less often than all study domains' graduates. But this is not true for Slovenia and Poland where affirmative answers appear significantly more often than in other domains.

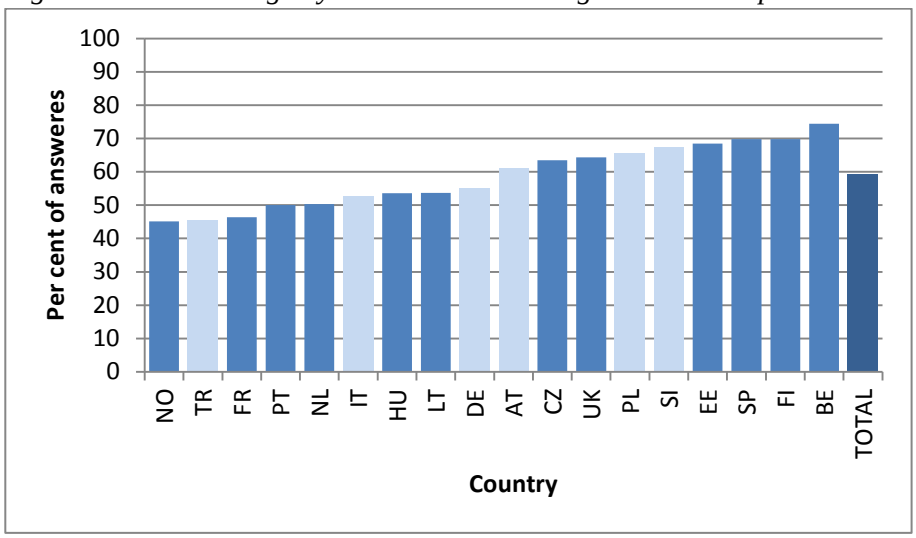
*Table 5.54: Study programme as a good basis for further learning on the job: Science vs. all domains*

| | **DEHEMS** | **AT** | **DE** | **IT** | **PL** | **SI** | **TR** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Science (%)** | 51.3 | 55.1 | 48.6 | 50.3 | 67.0 | 62.8 | 36.3 | 59.3 | 56.8 |
| **All domains (%)** | 50.5 | 55.6 | 49.3 | 52.1 | 64.3 | 49.2 | 37.5 | 59.2 | 56.6 |
| **Science/all (ratio)** | 1.015 | 0.991 | 0.986 | 0.965 | 1.043 | 1.278 | 0.967 | 1.001 | 1.003 |

Source: Own calculations based on HEGESCO and REFLEX data.

It is interesting to look at the shares of graduates who declared they had any work-related training or course during the past 12 months in their first job. The figure and table below show the percentages broken down by countries. Slovenia and Poland are at the top of the list with figures reaching 66-67%, compared to the DEHEMS average of 56.5%. Austria is next with 61%, Germany and Italy are not too far off the average. The ranking again sees Turkey at the end of the scale with only 45.5%.

*Figure 5.47: Following any work-related training/course in the past 12 months, by country (in per cent)*




Source: Own elaboration based on HEGESCO and REFLEX data.
Question F14 (Hegesco), F14 (Reflex): Did you follow any work-related training/course in the past 12 months? Responses "yes" on a scale of answers "yes" and "no".

If we consider the table below, it becomes evident that the training and course frequency declared by Science graduates is less than was observed than for all the domains. The only exception to this rule is Italy where the training happens 9.3% more often for Science graduates than for graduates from all study domains.

*Table 5.55: Work-related training/course in past 12 months in the first job: science vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Science (%)** | 56.5 | 61.0 | 55.0 | 52.9 | 65.5 | 67.4 | 45.5 | 60.2 | 59.0 |
| **All domains (%)** | 60.3 | 68.9 | 65.8 | 48.4 | 67.7 | 68.4 | 48.3 | 65.1 | 63.6 |
| **Science/all (ratio)** | 0.938 | 0.886 | 0.836 | 1.093 | 0.967 | 0.986 | 0.944 | 0.925 | 0.928 |

Source: Own calculations based on HEGESCO and REFLEX data.

### 5.5.6 Higher education management perspectives on graduates professional careers – synthesis of the DEHEMS interviews

#### *5.5.6.1 Understanding of professional success*

***Professional success – varieties of understandings***

Basing on the interviews with HEI representatives, it can be generally said that the **professional success** of graduates in Science remains **an unsettled issue** and there is **no common understanding** of it across all subdomains. Country differences appeared not to be important as the main source of variability in the answers provided to the question on the understanding of a successful graduate came from the subdomain structure.

The idea of success **cannot be summarised** by one, precisely defined component. As one interviewee from Poland stated: *"Success is when graduates feel they have achieved success, no matter in what form it comes".* The distinction between Computing Sciences and other subdomains within the field is evident not only in the scope of vocational/academic orientation, but also in the aspect of understanding the profes-

sional success of a graduate. Interviewees representing the **Computing** subdomain (and to some extent Life Sciences – biotechnology, chemistry) perceive the success of a graduate more in terms of finding **attractive employment**, which enables the **high utilisation of skills acquired during the education process**. As opposed to that, interviewees from **other subdomains** stressed the role of finding one's **own professional path**. This is a reflection of the fact that generally the **future professions** of Science graduates are **much more broadly defined**, and encompass occupations ranging from school teachers, professional experts in various fields to advanced researchers in the private sector and in academia. A significant difference between Computing Science and other subdomains is also revealed in the fact that only interviewees from **Computing Science** indicated **salary as an important** factor of labour market success. As one Austrian interviewee put it: *"If definitions of success were only limited to measuring the income of alumni, then the university has missed the point".* In other subdomains, this aspect was not mentioned and self-realisation topped the list.

Some interviewees noted that the understanding of the professional success of graduates depends on the **career stage** and short-term success in the transition from HE to the labour market should be distinguished from a long-term career path. Most interviewees stressed the fact that **universities** (especially in Germany, Poland and Italy) should **not act as vocational schools** focusing on ready-made competencies, but should **instead** be giving **broad and solid theoretical background** in a given field. According to one Italian interviewee, *"tertiary education should not primarily train workers; it should train people with the capabilities to autonomously improve throughout their life because companies do not invest in training anymore"*. Similarly, a Polish academic representing one of the most prestigious Polish technical universities said that *"their University is not a vocational school. It should not look around in the market and produce graduates that are needed today, but instead should look to the world trends, anticipate change or even create change"*. Economic environment changes are always faster than changes of curricula so education will generally always lag behind. As a Slovenian interviewee said: *"The university reacts too slowly to the needs of the labour market, new technologies, and new approaches in some areas"*. Therefore, some interviewees emphasised the role of providing graduates with the ability to adapt, vocational **flexibility** and **lifelong learning** opportunities.

The **most commonly** mentioned aspect of graduate success was **undertaking research** and/or an **academic career**, especially in the fields of mathematics and physics (*"The aim is to be active in modern research and to be on top of trends so that graduates are educated as best as possible"* (Germany)). This is probably a reflection of discipline specifics and the large percentage of students continuing their education into a second degree and then to the PhD level. A **few** respondents also mentioned **self-employment** as a potential future employment opportunity, but it was not common. Interviewees in Germany pointed out that one of the most important aspects of success is satisfaction arising from professional work: *"It has been proven by a graduate survey and by a recent evaluation that graduates of physics in Germany are extremely satisfied. 85 - 90% of graduates of physics say that they would study the same study programme again.*"

### *Following graduates' career paths is rarely formalised*

**Contacts** between HEIs and their former students are **generally** reported to be **rare** and **not formalised** in most countries. At **some faculties** there are **associations of graduates**, which mainly focus on maintaining contacts with each other and sharing experience with the transition to the labour market with current students. This mode is adopted at some German HEIs where special practically-oriented colloquia regularly take place. Graduates of different domains present their experience in the process of the transition to work and in their current employment situation. One German interviewee emphasised that many students attend these colloquia and they are extremely interested in the experiences of graduates.

Most interviewees stated that there is a *scarcity of hard data* regarding the professional paths of graduates. Generally, this is surprising since many countries are known to conduct regular tracer studies that should provide HE management with such data.

With this lack of hard data, personal contacts between professors as thesis supervisors and their graduates constitute a key feedback channel between graduates and HEIs. Despite its apparent efficiency, such feedback information cannot easily be generalised to a larger population of graduates and it is therefore not very useful in the process of creating long-term strategies with regard to the educational offer of HEIs. Only a few HEIs have conducted formal surveys of graduates (mainly in Germany and Italy, while the new Act on Higher Education adopted last year introduces obligatory surveys of graduates in Poland), but generally changes to curricula are not evidence-driven. Another source of feedback is the contact of HEIs with employers and close cooperation between some HEIs and research units.

***There is no general occupational destination of science graduates***

**The professional paths** of Science graduates reported by the interviewees **range from** occupations as **school teachers** in the public sector of secondary education (*"Secondary education is the main source of employment"* (Italy), through professional experts in various fields not necessarily related to Science (banking, financial and insurance sectors are very popular employment areas among physics and mathematics graduates) **to advanced researcher positions** in research institutes and universities. There is a huge diversity of employment opportunities. Many interviewees emphasised that the majority of graduates does not experience significant problems in the transition from education to the labour market. The lion's share of students of Computing programmes already has employment during their education. In some cases, this has even been reported as a problem: some interviewees from the IT and physics subdomain argued that combining employment with second-cycle studies (highly theoretical and demanding) results in students not finishing their theses on time and delays in obtaining diplomas (*"Students who start working during master degree studies often do not finish their studies because they do not find the time to write their thesis"* (Poland)).

### *5.5.6.2 The role of HEIs for the future professional activities of graduates*

The interviewees reported a number of activities being undertaken by HEIs in order to enhance their graduates' employability. They included areas such as programme and curricula formation, flexibility of the study process, international orientation, teaching modes, practical orientation of the studies, research activities, cooperation with employers and external bodies, recruitment services and career counselling.

***Study programmes are not very oriented to labour market requirements***

In the domain of Science, the curriculum is not regarded as an area of key activity aimed at improving graduates' position in the labour market. This may be related to the fact that most of the disciplines within the domain are hard sciences where the core curriculum is well defined by the nature of the discipline and does not allow too much freedom in composing the study programme. In the most extreme case, an interviewee from Italy assessed programmes literally as static and not subject to any substantial changes in recent years (*"Courses are mainly theoretically oriented. The programme did not experience any big changes to the contents during the last 20 years. A few more pragmatic courses have been added (laboratories), but students' training in pragmatic activities is still missed"* (Italy)). In the interviews with respondents from Poland, it was emphasised that universities should not concentrate on educating for the demands of the labour market, but for the needs of research and science (*"In Poland there is no publicly*

*accessible information on changes in labour market demand, so our task as far as adjusting programmes to labour market requirements is extremely difficult"* (Poland)). In most countries, the Computing Science subdomain was the only one where employers were reported to have a relatively strong impact on curricula.

Study programmes in the domain of Science are generally reported by the interviewees not to offer much flexibility to the students. This is probably a result of the nature of the disciplines themselves. Most programmes offer broad and solid theoretical background and therefore all specialisations have significant common core content. In Poland, the flexibility of the programmes is mainly realised by the ability to choose specialisations and elective subjects. However, the core subjects are not a matter of choice. Generally, all courses and modules can be divided into three categories: first – assigned to a specific place in the programme with no shifts allowed; second – obligatory with flexible timing and, finally, third – elective ones. The issue of flexibility was not mentioned by interviewees from Austria, Germany and Slovenia at all.

### *International orientation is an important trait of this domain*

As for elements of the international orientation of the study process, they were often mentioned by the interviewees, although they were frequently reported as not being very important for graduates' labour market perspectives. It was emphasised more in the context of cross-cultural experience: *"Experience in the international arena teaches them skills beyond the programme capabilities such as competing internationally and cross-cultural communication skills"* (Turkey). Most respondents mentioned the Erasmus programme as a main vehicle for students' international mobility. Some interviewees (mainly from more research-oriented subdomains and HEIs) mentioned another way to stimulate international exchange, namely bilateral agreements. International cooperation in research projects at the second-cycle and PhD level also results in the exchange of staff and students among HEIs across Europe. International mobility was indicated as somewhat less important by the interviewees from Austria and Germany. Many interviewees noted that adoption of the Bologna Process has paradoxically hampered international mobility, leaving not too much room to take at least one semester of studies at an external institution. International aspects were also raised in the form of recommendations for more courses offered in the English language. This may be beneficial for both attracting foreign students and providing home students with the occasion to learn specialist vocabulary etc. However, some interviewees noted that *"the study programmes are already very demanding for students, and I don't see why I should make it even harder for them to learn difficult things in a foreign language*" (Poland). Interviewees from less developed countries emphasised problems of attracting foreign students to participate in the mobility programmes and undertake studies at those institutions.

### *Teaching modes combine practical and theoretical approaches*

The choice of teaching modes is largely determined by the fact that the Science study domain is generally characterised by combining practical and theoretical approaches, with a different mix of the two approaches in different subdomains. Such disciplines as Physics and Mathematics exhibit a stronger focus on theoretically-based learning, while Computing Science is more practically-oriented. Life Sciences may be assessed as being more balanced in its approach, however *"it is not possible to educate a student of biotechnology without giving him real contact with the matter, chemical substance, reagents and so on"* (Poland). Despite these differences, most interviewees mentioned the extensive use of laboratory classes as a key feature of teaching modes. However, HEIs in Poland, Turkey and Slovenia pointed out financial problems with equipping laboratories in experimental sciences. Generally, programmes of this study domain comprise a large proportion of group assignments, oral presentations, workshops and project-based learning elements. Many interviewees reported the growing need for soft skills among graduates. It was em-

phasised in many interviews: *"Soft skills is an area definitely lacking in our study programme"* (Poland). HEIs respond to this need by either offering special courses in soft skills or introducing modes of teaching that provide students with such skills within other courses. Teaching modes are generally a reflection of education outcomes, where theory is taught mainly via lectures, while practical skills are developed during practical courses. Some interviewees mentioned the growing importance of a closer professor-student relationship as a tool of strengthening the individual aspects of education. But again the development of such a teaching mode is subject to financial constraints. This holds some implications for quality assurance.

### *Practical orientation and apprenticeships are only relevant in some domains*

The practical orientation of the programmes is most frequently mentioned in Computing Science, while the remaining subdomains are reported to be much less practically-oriented. Apprenticeships are often not obligatory for students in theoretically-oriented programmes (such as physics and mathematics, as mentioned in Germany). An important element of student apprenticeships is pedagogical courses related to the profession of a school teacher of a given subject. Many interviewees suggested that apprenticeships should be postponed to the second-cycle programmes, which is contrary to the Bologna reform recommendations. The rationale behind this idea was that first-cycle students still have insufficient knowledge of the discipline and need to gain it before they move on to the practical use of it.

Cooperation with external bodies is mainly concentrated on building strong and permanent relations with employers. Many firms seek highly educated candidates for their analytical and innovation centres where graduates of Science fit in perfectly. In some interviews, cooperation with the public sector as the largest employer for teachers in secondary education was also mentioned. Contacts with employers are often not institutionalised, but rely mainly on personal contacts between business and the staff of a given HEI. Interviewees in Germany and Slovenia also pointed out the important role of organised study-visits to selected employers.

### *Research projects play an important role in fostering student research potential*

A key tool used by HEIs in the domain of Science in order to enhance their graduates' employability is **research projects**. Only the subdomains of Mathematics and Computing Science are exceptions. In the former case, students do not have enough expertise to participate in a research project, while in the latter case not much research activity is undertaken. In other disciplines, students are involved in research projects. However, in some countries (Italy) they only undertake research activity at the second-cycle or PhD level. Interviewees often emphasised the cooperation of HEIs with employers and to some extent with research institutes, which is very fruitful and mutually beneficial. According to one Austrian interviewee: *"A lot of our researchers have an open ear to the practical application of their research. Cooperation with companies might thereby arise"*. In many cases, the apprenticeships result in research projects that are elaborated in a final thesis and later lead to employment opportunities. The benefits for students also include the possibility to become familiar with brand new technologies and to solve real-life problems. The interviewees noted that HEIs are usually aware of the importance of research projects, but the creation of too practically-oriented programmes would not match the basic research profile of the universities.

### *Higher education support activities*

Many HEIs undertake activities related to career counselling. Interviewees indicated Career Centres as key elements of the HEIs' policy in this area, although their activity is usually carried out at the level of the university, not the faculty, and is not domain-specific. Some HEIs in Germany have adopted special practically-oriented colloquia where students have an opportunity to meet earlier graduates who share their

experience of their transition to the labour market. Interviewees indicated that their Career Centres organise job exchange fairs or career days where employers can advertise themselves and students can search for employment opportunities. Polish and Italian interviewees mentioned that in many cases it is the professor who recommends his or her student to a potential employer. As one Italian academic said: *"Initiatives to deal with the business environment and enhance graduates' employability are settled at professors' individual discretion"*. In some cases, mainly in the subdomain of Computing Science, the existence of Career Centres is thought to be not needed since graduates already have jobs during their studies. An extreme case of such an approach was documented in one interview in Poland, where the interviewee said: *"I don't know if something like a Careers Centre exists at the department. I think there is a main one for the HEI. However, I think that the students rarely use it"*.

#### *5.5.6.3 Higher Education Developmental needs for improving graduates' employability*

Having identified the HEIs' key actions undertaken in order to improve their graduates' employability, in the last part of the interviews the respondents discussed the developmental needs of HEIs in the Science domain. Some pointed out factors from the catalogue discussed earlier, while others raised other issues not mentioned before. Generally, most of the interviewees were aware of the increasing importance of the employability of their graduates and had a clear view about what can be improved to help graduates in their transition to the labour market and their long-term career success.

***Closer and more intensive cooperation with employers and high quality apprenticeships***

Of the previously discussed issues, several were mentioned in the context of developmental needs. The interviewees most frequently emphasised the need for closer and more intensive cooperation with employers. This could cover three key areas: high quality apprenticeship opportunities, common research projects and – in some cases – cooperation in curricula formulation. As for apprenticeships, this would be a key tool for smoothing the transition from HE to the labour market. They could provide students with the possibility to become familiar with the latest technology and find a way to use the solid theoretical and analytical preparation they obtained during their studies for a practical purpose. Many interviewees noted that cooperation is especially desired in the area of research projects where it can result in both the practical application of theory and the emergence of new original ideas.

***A closer and more individualised relationship between professors and students strengthens soft skills***

Some interviewees emphasised the growing need to provide students with soft skills. The HEIs are aware of the fact that well-educated Science graduates should not only have an excellent level of knowledge, analytical thinking and problem-solving abilities. The element that is often overlooked is soft skills that allow a graduate to communicatively and comprehensively present the results of a project, cooperate with others in the team, resolve conflicts and manage time and effort effectively. These are elements indicated by employers as very important and very much sought after in the labour market. A closer and more individualised relationship between professors and students was also indicated as a potential direction of the change in the HEIs' attitude to curricula formulation. For some study programmes (e.g. experimental sciences), this goal will however be difficult to achieve due to strong financial constraints.

***Quality of education and internationalisation with fewer financial resources?***

Many interviewees (particularly in Turkey, Poland and Slovenia) mentioned that an improvement of the quality of education leading to the higher employability of graduates would require better technical facilities and access to the latest technologies, laboratories and equipment. A shortage of financial resources is

often a serious developmental obstacle, particularly in fields where the educational activity is expensive (physics, chemistry) due to material costs, the need to teach in small groups, project-based learning and more individualised contacts between students and their tutors. There is thus a growing need to secure the necessary financial resources, including from external sources like donations and assistance offered by the world of business.

A stronger emphasis on internationalisation and the promotion of courses taught in English was also on the list of potential activities. The problem of attracting foreign students could however pose an important barrier. Some HEIs also indicated the need to strengthen the role of Career Centres.

Besides the elements discussed earlier, some others were mentioned. Quite a few of the interviewees pointed to the need to monitor the graduates' professional paths and maintain contacts with them. This should cover two aspects –the transition directly after graduation but also reliable feedback on long-term professional careers, as well as the extent of utilising the skills and knowledge gained during the education.

### *Problem of secondary school leavers' competencies*

The last aspect mentioned by some interviewees was a continuing drop in the level of preparation of secondary school leavers. This is regarded as a growing problem for the successful undertaking of studies in the Science domain in recent years. The massive expansion of tertiary education (to some extent in most European countries, but mainly in Central and Eastern Europe) has resulted in a decrease of the average level of abilities of candidates entering the HE system. In the Science domain, the requirements did not decrease that much so the mismatch between the quality of candidates and HEIs' expectations is growing. Generally, in some interviewees' opinions nowadays graduates of first-cycle studies only have knowledge and skills at the level of former secondary school graduates of 20 years ago.

### *Diversification of HE models in the domain of Science*

Despite many similarities found in the interviewees' responses, a clear distinction between the different study domains is also apparent. It seems that the domain of Science may be divided into three groups of subdomains. These are:

- Computing Science (particularly Applied Computing Science);
- theoretically-oriented Mathematics and Physics (their theoretical branches), with theoretical Computing Science sharing some similarities; and
- empirically-oriented Life Sciences such as Chemistry, Biology, Biotechnology etc.

The key characteristics of the three groups in terms of the measures adopted by HEIs in order to improve their graduates' employability are presented in the table below.

*Table 5.56: Science subdomains by characteristics of HEIs' approach to enhancing graduates' employability*

| Adopted measure | Computing science | Mathematics and Physics | Life sciences |
|---|---|---|---|
| **Curriculum formulation** | Most HEIs report relatively frequent changes in the study programmes aimed at adaptation of the curriculum to employers' needs and expectations. It is a result of a strong vocational orientation of studies and HEIs' concern for increasing of the labour market attractiveness of their graduates. | Most HEIs report rather stable curricula with minor changes, not too often adopted. Generally, these are not vocationally-oriented study domains, as a result employers do not have significant impact on the study programmes. In physics impact of scientific progress is partly reflected (in advanced studies). | HEIs report relatively frequent changes in curricula adapting study programme to scientific advances in the given subdomain. Role of potential employers is relatively small. Generally study programmes reflect strongly theoretical nature of life sciences with curriculum expected to provide student with wide and deep base for further specialised studies and practical application of knowledge. |
| **Flexibility** | Generally, study flexibility in IT is regarded as relatively high. Students may both choose specialisations and particular courses within study programme. It is perceived by HEIs as an important tool to increase graduates' attractiveness at the labour market. | Flexibility has been generally reported as rather low in maths and physics. Usually there is a large common part of the domain study programmes with only minor areas for elective courses. According to the interviewees, flexibility is not a crucial element of a good study programme in maths and physics. | Flexibility has been generally reported as rather low. There is a large common part of the domain study programmes only with minor areas for elective courses. In case of more vocationally-oriented programmes, choice of specialisation gives grounds for some extent of flexibility. |
| **International orientation** | Most of HEIs report relatively low internationalization of studies in this area. Good labour market prospects for IT experts in most countries result in relatively low interest in acquiring additional experience through studies abroad. Most interviewees reported Erasmus programme as a key exchange programme for IT students. | Most HEIs' representatives in this area assessed mobility of students as low and did not see it as a necessary tool for increasing their attractiveness in the labour market. | Life Science is characterised with relatively intensive activity in the area of students' exchange. Often it is related to participation in international research projects. As a result, apart from Erasmus, bilateral and multilateral agreements also play an important role in increasing Life Since graduates' employability. |
| **Teaching modes** | Teaching modes are usually characterised with high share of laboratory classes, with some focus on group work. It is regarded by HEIs' representatives as one of the key elements building graduates' attractiveness in employers' eyes. Some classes are supposed to build soft skills | Teaching modes are usually characterised with high share of traditional forms of classes, as lectures and tutorials. Changing teaching modes into modern forms is not regarded by HEIs' representatives as one of the key elements building graduates' labour market attractiveness. | Teaching modes are usually characterised with high share of laboratory classes, with focus on group work. Problem-based learning and project-based learning also play an important role. Some classes are supposed to build soft skills often indicated as missing by |

| | | | |
|---|---|---|---|
| | often indicated as missing by employers. | | employers. |
| **Practical orientation** | Most of study programmes in IT are strongly practically oriented. It is reflected in study programmes, teaching modes, focus on practical experience. | Studies in these two areas are generally strongly theoretical and academic only with some practically-oriented elements related to its applications. One element of practical orientation is teacher training offered at some faculties. | Studies in life science, although generally academic, usually include some degree of practical orientation - needed both for further research career or private sector. It is related to the nature of the domain where much of the research is of empirical type. |
| **Research activity** | Contrary to other subdomains of Science, IT is characterised by relatively low use of research activity as a teaching mode. It does not apply to theoretical Computing science, where some research activity is undertaken. | Students are engaged in research activity, which is however limited mainly to Ph.D. students (and MA students to some extent). It is related to great complexity of the disciplines, where reaching the level of research expertise requires many years of studies and experience. | Students are very often engaged in research activity. It is not limited to Ph.D. or MA students, with BA students working as research assistants. Research experience often helps with thesis preparation and future professional career. |
| **Cooperation with stakeholders** | There is some extent of cooperation with employers mainly in terms of curricula formulation. | Cooperation with stakeholders (employers) is usually not regarded as an important tool of enhancing graduates' employability. Academic environment remains rather hermetic. | Life Science is characterised with very intensive cooperation with external stakeholders (other research centres and employers in particular). It is not related to adjustments of curricula to their needs, but rather to research activity, students' apprenticeships etc. |
| **Career counselling** | Since HEIs authorities regard IT graduates as highly employable, there is usually not much effort put in career counselling, job intermediation etc. Usually career days, job fairs etc. are organised with employers having a chance to contact students and prospective graduates. | Usually it is not a concern of HEIs in this subdomain. It is partly motivated with a fact that graduates are regarded as not having any problems with finding a job, partly because studies in this area are not regarded as vocationally-oriented. Much activity in the area of career counselling is carried out at the level of individual contacts between academic staff and potential employers. | There is some activity in the area in terms of career centres, career days, job fairs etc. However much activity in the area of career counselling is carried out at the level of individual contacts between academic staff and potential employers. |

### 5.5.7 Conclusion

The analysis of the national reports of Science domain, the data from the REFLEX/HEGESCO projects on the transition process to the labour market and on aspects of lifelong learning as well as the OECD data on education leads to the following conclusions:

In the DEHEMS countries the share of the Science domain in the student population is relatively stable over time and low (generally not exceeding 10%). Some interviewers point out the problem of the deteriorating quality of candidates.

The subdomain structure of the domain of Science exhibits a clear division between Computing Sciences (ISC 48) and other subdomains, which tend to have more in common. The differences are shown by the dynamically increasing number of students in the Computing subdomain with relatively stable numbers of students in other subdomains. Computing programmes are also offered by newly established, private HEIs, while other programmes are mainly offered by traditional, large universities. They are also reflected in HE managers' attitudes, where in the subdomain of Computing programme changes are more market-driven, while in remaining subdomains the HEIs are more isolated from the external world.

A specific feature of the domain of Science is that it is slightly male-dominated. This is especially visible in the subdomain of Computing.

The Science domain is characterised by the relatively low international mobility of students. HE managers also pointed out that increasing such mobility would not be a suitable tool for increasing graduates' employability. The only exception is research projects undertaken as part of international cooperation, but this applies mainly to Life Sciences.

With the exception of Computing, the Science domain is generally characterised by a higher than average incidence of continuing education for the MA and PhD studies. It was also indicated by interviewees who listed academic careers as the main career path for successful graduates.

The Science domain is subject to the Bologna Process and none of the subdomains is exempt from its regulations. The three-cycle study system is currently being implemented in all countries. However, regardless of subdomains and countries, the adoption of three-cycle studies is assessed very negatively. According to the interviewees, three years of first-cycle studies is too short to acquire enough knowledge and skills in order to become ready for professional activity. This is a result of the complexity of the study disciplines. Employers are not familiar with the bachelor degree and do not know what to expect from BA graduates.

Generally, the aggregate employment rates are high with more than 90% of graduates in employment. However, compared to other domains, Science graduates are relatively often unemployed or not in the labour force. On the other hand, HE managers regard Science graduates as not having problems with finding employment.

Science domain graduates tend to search for their first jobs on average longer than in other domains. According to graduate surveys, the key factor in successfully finding the first employment is the support provided by the HEIs. This contradicts the opinions of HE managers who believe that the employability of their graduates is so high that transition to the labour market actually does not require any assistance. As

one interviewee from Poland put it: *"Mathematics graduates work partially in their field and partially as simply intelligent people".*

Almost two-thirds of the graduates take employment within two groups of occupations: "Physical, mathematical and engineering science professionals" and "Teaching professionals". According to the HE managers, the career path is not clearly defined and graduates can take up a large variety of occupations. Some graduates are employed in sectors requiring analytical thinking and creative problem-solving abilities, not directly related to science (such as finance, insurance etc.). The most common career path is research activity (often in HEIs), but many Science graduates work in the private sector or become teachers.

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## 5.6 SOCIOLOGY AND POLITICAL STUDIES

### 5.6.1 Introduction

Sociology is one of the broadest disciplines and overlaps with a wide range of disciplines that study society: anthropology, political science, economics, and social philosophy. Further, many comparatively new fields such as communication studies, cultural studies etc. use methods that originated in sociology. Sociology is divided into several different areas: social organisation, social psychology, social change and disorganisation, human ecology, population or demography sociological theory and method, and applied sociology.

Political science is a social science discipline concerned with the study of the state, government and politics. Political science also includes more areas such as comparative politics, international relations, political philosophy, European studies etc. Psychology is a discipline that involves the scientific study of mental functions and behaviours with many subfields: cognitive, educational, industrial-organisational, social etc.

After reviewing the existing literature and material on sociology and political sciences study programmes, it can be said that these professional fields are not the subject of research to such a great extent as the other professions encompassed by the DEHEMS project, like teaching and education studies, engineering and medicine.

The professional domain of sociology and political sciences actually contains three broad fields of study in the countries involved in the DEHEMS project: sociology, political science and psychology. The fields of study follow the ISCED classification: Psychology (311), Sociology and cultural studies (312) and Political science and civics (313).

This domain synthesis includes a quantitative analysis of national reports of study domains as well as a quantitative analysis of statistical material used in the project (for a further description of the methodology, please see Chapter 3).

In order to prepare the interview analysis presented in the last section of this chapter, we interviewed 36 representatives of higher education institutions in the fields of sociology or psychology in all six DEHEMS countries for the purpose of collecting information about the transition of their graduates into the world of work, the characteristics of the programmes and development needs in the area. We conducted interviews with staff with academic experience and people with HE management roles.

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### 5.6.2 Statistical overview

#### *5.6.2.1 Number of graduates*

According to the OECD data[73] (see Table 5.57) during the period (2005–2009) the numbers of graduates in the field of social and behavioural science were growing in all DEHEMS countries except Italy, where the number of graduates was falling. However, when looking at the percentages of social and behavioural science graduates, constant growth can only be noted in Turkey and Germany. The highest share of this field's graduates compared to the graduates of other professional domains is noticed in Slovenia and Turkey with approximately 14.5%, followed by Poland with around 12.5%. The lowest share can be noted in Germany with just 7% and Austria with 8% of the entire population of graduates.

*Table 5.57: Number of graduates in Social and behavioural science field*

| | **2005** | **2006** | **2007** | **2008** | **2009** |
|---|---|---|---|---|---|
| **Austria** | 2188 | 2442 | 2452 | 2907 | .. |
| **Germany** | 12610 | 21776 | 23856 | 26939 | 28918 |
| **Italy** | 41015 | 41524 | 42308 | 26924 | 26072 |
| **Poland** | 63860 | 61832 | 66552 | 68054 | 68400 |
| **Slovenia** | 1076 | 1262 | 1266 | 1167 | 1365 |
| **Turkey** | 20674 | 35120 | 39313 | 44677 | 47991 |
| **% of tertiary graduates** | | | | | |
| **Austria** | 8,83 | 9,12 | 8,70 | 8,33 | .. |
| **Germany** | 5,25 | 7,00 | 7,03 | 7,28 | 7,10 |
| **Italy** | 10,98 | 10,93 | 10,72 | 11,65 | 11,71 |
| **Poland** | 12,89 | 12,42 | 12,64 | 12,34 | 12,03 |
| **Slovenia** | 14,39 | 15,62 | 16,17 | 14,12 | 14,14 |
| **Turkey** | 11,43 | 14,89 | 15,06 | 15,91 | 15,83 |

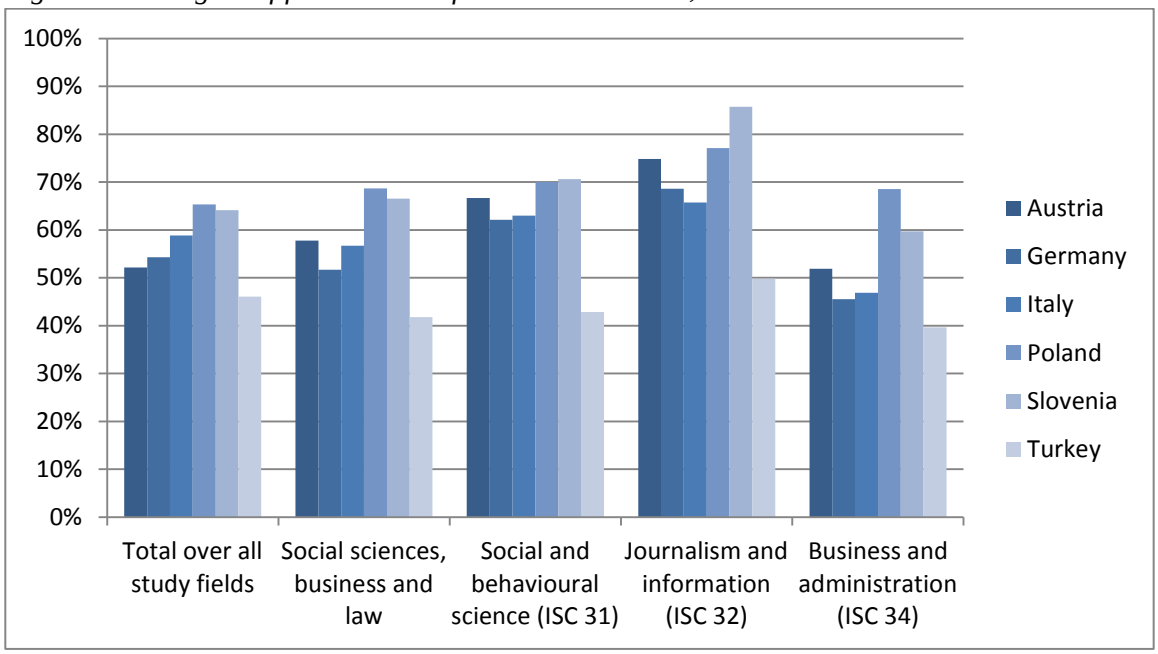
Source: Own elaboration based on OECD (2011).

#### *5.6.2.2 Gender*

If we take a look at the OECD data (Figure 1) we can see that the feminisation level of programmes in the domains of social sciences, business and law is very similar to the feminisation level across all study fields in DEHEMS countries (around 55%). The lowest participation of women in this domain is detected in Turkey (41%), similar to the situation across all study fields. Feminisation is the lowest of all three subdomains in the business and administration subdomain (slightly below 50%), with the highest shares seen in Poland and Slovenia (60% and above). The highest level of feminisation is seen in journalism and information (slightly below 70%), with peaks in Slovenia (85%), Poland (77%) and Austria (75%).

[73]Data could not be identified by the ISCED classification as used in the DEHEMS project (and previously in the HEGESCO/REFLEX projects).

*Figure 5.48: Degree of feminization of the Social sciences, business and law domain*




Source: Own elaboration based on OECD (2011).
Note: Last available data for Austria for 2008.

### 5.6.3 Study conditions and provisions

Most study programmes from this professional field are offered by both public and private higher education institutions which can be specialised only in particular study programmes whether or not they offer joint programmes.

For example, in Turkey, programmes in psychology and sociology are offered by the Faculty of Science and Letters, while programmes in Political Science, Public Administration, International Relations, Political Science and Public Administration and Political Science and International Relations programmes are offered by the Faculty of Economics and Administrative Sciences.

In Slovenia, a faculty of social sciences offers programmes of sociology and political science, but psychology is only available at the faculties of arts. Some private institutions offer study programmes of political science and sociology.

In Italy programmes are mainly taught by faculties of psychology, political sciences and sociology, although some programmes are also jointly conducted by more than one faculty.

In Germany universities of applied science also offer these study programmes, albeit only to a small degree.

In Poland, a wide range of HE institutions offers social sciences study programmes (universities, vocational universities, technical universities, academies of economics and academies of human sciences). Due to the relatively low costs of education, studies in this domain are offered largely by non-public HEIs.

In Austria, public institutions such as the diplomatic academy and private universities focus on postgraduate courses and certificate programmes, while universities of applied sciences[74] are currently not offering any programmes from these domains. Often, individual aspects of these domains are covered in other study programmes but are not study programmes in their own right and are thus not included in this overview.

#### *5.6.3.1 National characteristics of study programmes*

*Turkey:* The departments of sociology currently offer undergraduate and graduate programmes. The undergraduate programme lasts four years. The undergraduate programme is designed to provide a general education in sociology rather than specialised training in the sub-fields of the discipline. The programme offers a wide selection of required and elective courses leading to an undergraduate degree in Sociology. Students can also take relevant courses from neighbouring fields, as offered by other departments of the universities. The study programmes are offered on all three levels – from bachelor to PhD.

The length of political science study programmes is also four years, with a chance to continue on at Master's and PhD levels. The discipline of political science, which systematically studies (that is, shows and accounts for) the recurring patterns of events in politics, is divided into five sub-disciplines: political theory, comparative politics, international relations, national politics and public administration. The political science programme offers an education in and opportunities for a broad and balanced undergraduate study. Students pursue programmes which, in addition to providing a firm grounding in the core subjects of the discipline, allow students to take courses in economics, management, and international relations as well as in computer sciences and the humanities.

The undergraduate programme of psychology lasts four years and is designed to acquaint students with broad knowledge and basic skills in the main fields of psychology.

*Italy:* Study programmes from these professional domains are mainly run by the faculties of psychology, sociology and political science although some programmes are taught by different faculties and others are jointly conducted by more than one faculties. First-year courses are strictly planned with the aim to theoretically train students with regard to core and basic knowledge. From the second to the third year, emphasised courses are taught, depending on the chosen programme, and some are chosen by students from among established lists of topics. Internships are also required to successful complete programmes; psychology and sociology internships are completed within health and social services organisations, whilst political science students can choose from among a wider range of productive sector internships.

*Germany:* Sociology is mainly taught at universities, often with a particular specialisation. Different institutions tend to have different emphases when it comes to the content of sociology courses so it is difficult to generalise about the courses on offer. However, there are basic courses that all the institutions offer. Those students who are studying sociology as a main subject usually have to do a practical research project lasting between one and three semesters as part of their main study stage. This involves the students drawing up a questionnaire to deal with a given problem, conducting the survey, analysing the data and

[74] The term "University of Applied Sciences" is a translation for „Fachhochschule". It denotes a particular type of higher education institution in Austria and Germany clearly distinct from universities (for more details see country report Austria). Thus, the term, is new to the English language and should probably only be used in inverted commas and with capital letters. For the purposes of this section, however, the term "university of applied sciences" will be used to describe a category of institution and capital letters will only be used when specifically referring to one particular institution.

presenting it in a paper.[75] The classical degree of sociology was a Magister qualification (main or subsidiary subject) or Diploma, often in combination with politics, economics and law. Meanwhile, the Bachelor and Master's degrees are gaining in significance.

At German universities, the content of the political science study programme is divided into three areas: political theory, political systems and international politics, including European politics. The lectures and seminars offered by the teaching staff are categorised according to three sub-sections. Students must earn a certain number of credits in each area (by attending a seminar and e.g. writing a 20-page paper or a report). Social science is a basic tool of the political scientist. While the basics of political science are taught in a similar way everywhere, the subjects on offer later in the course often depend on the specialisations of the teaching staff. Nevertheless, students acquire a relatively broad spectrum of knowledge before they graduate with a BA.[76]

In recent years, a number of higher education institutions have opted for a cross-subject approach. Under the title "Social Sciences", they offer a combination of political science and sociology. Increasingly, courses are appearing that are dedicated specifically to the topic of European integration and shed light on Europe from both a political and scientific perspective and from a cultural angle. In the field of psychology, universities of applied sciences offer psychology courses with a more practical approach that are limited to certain subject areas (e.g. business, rehabilitation and communication psychology).[77]

*Austria:* The Bachelor Programme in Sociology as well as Political Science at the University of Vienna is six semesters long and consists of courses and exams worth 180 ECTS credits. The average length of studies is 7 semesters which may be due to the fact that Sociology is often combined with other studies such as Political Studies or Communication Studies.

In Austria, Sociology is offered by public universities only. Although the number of students interested in pursuing studies of sociology exceeds the number of university places funded by the state, there are no admission criteria and access is free. The Master Programme in Political Sciences at the University of Vienna is four semesters long and consists of courses and exams worth 120 ECTS credits.

The curriculum is divided into two parts: The introductory phase and the main phase. The introductory phase lasts one semester and comprises 30 ECTS credits. It should serve as a phase of orientation, with basic courses giving an overview of politics. These courses have to be passed in order to be allowed to further pursue one's studies. The main focus of the core subjects is on historical and recent developments in national and international politics and their impacts on society. In addition, students may choose lectures from other disciplines such as law, business administration and sociology in order to broaden their knowledge and gain insights into other subjects. To complete the programme, students have to hand in a bachelor's paper and gain practical experience accounting for 18 ECTS credits.

The Bachelor Programme in Psychology at the University of Vienna is six semesters long and consists of courses and exams worth 180 ECTS credits. The aim of the programme is not to provide comprehensive vocational training but to prepare for later studies (i.e. Master's programmes). Since the number of stu-

75 See Schmidt, Marion: "Sociology/Social Sciences", available at: CHE-Ranking: http://ranking.zeit.de/che2010/en/fachinfo?esb=29 (10.12.2010).
76 See Walser, Jörg: "Political Science", available at: CHE-Ranking: http://ranking.zeit.de/che2010/en/fachinfo?esb=28 (10.12.2010).
77 See Mittelstaedt, Juliane von: "Psychology", available at: CHE-Ranking: http://ranking.zeit.de/che2010/en/fachinfo?esb=32 (14.12.2010).

dents intending to study Psychology exceeds the capacity of Austria's public universities, an admission test was introduced in 2010. Prospective students are required to pass the test in order to be allowed to start their studies. In 2010, the best 600 students were admitted to the University of Vienna.

*Poland:* According to the regulations of the Ministry of Science and Higher Education, the first-cycle studies are expected to last for at least 6 semesters and include at least 2,200 contact hours, with the total number of ECTS credits equalling at least 180. As for second-cycle studies, they last for at least 4 semesters and include at least 900 contact hours, with the total number of ECTS credits equalling at least 120. Moreover, it is required that students undergo a practical training that should last for at least 3 weeks. The rules and form of this training are left for the HEI to determine. The minimum programme also provides compulsory classes in foreign languages (120 hours, 5 ECTS credits), IT skills (30 hours, 2 ECTS credits) and physical activities (60 hours, with possibly 2 ECTS credits).

Programmes offered in the field of political and social sciences currently include programmes leading to two degrees: licencjat (the equivalent of a BA) after a first-cycle programme, and magister (the equivalent of an MA) after a second-cycle programme.

The studies in psychology are one-cycle studies expected to last for at least 10 semesters and include at least 2,700 contact hours, with the total number of ECTS credits equalling at least 300. The minimum curriculum contents require HEIs to offer at least 270 hours (36 ECTS credits) of courses covering so-called basic content (treścipodstawowe) and 600 hours (76 ECTS credits) of courses on field-specific content (treścikierunkowe). Moreover, students are required to undergo a practical training that should last for at least 4 weeks with at least 25 hours a week. The rules and form of this training are left for the HEI to determine. Programmes offered in the field of psychology currently include programmes leading to one degree: magister (the equivalent of an MA).

*Slovenia:* Study programmes of sociology and political sciences are available at the Faculty of Social Sciences in Ljubljana. There are several different directions a student can take before enrolment: Analytical political science, International relations, European studies – social aspect, Political science-policy analysis and public administration, Political science – defence studies, Informatics in social sciences, Cultural studies, Sociology – Human Resources Management, and Analytical social sciences. All of these study programmes are academically oriented with the exception of Informatics in social sciences, which is also offered on the higher professional level. The duration of the academic study programme is four years with 240 ECTS credits, while the duration of the higher professional programme is three years with 180 ECTS credits.

Study programmes of psychology are available at the faculties of arts in Ljubljana and in Maribor. The duration of the 1st level study programme is three years with 180 ECTS credits. Students obtain knowledge of different fields of psychology. The content of study programme includes basic knowledge of all psychology disciplines, the main theories and methods in psychology, basic psychology skills and basics of research in psychology. The first level of education does not provide an occupational qualification for performing work as a psychologist since it does not provide the acquisition of competence for independent psychological practice. A graduate can work under the supervision of MSc of psychology or they can cooperate with other experts in different fields of social activities.

### *5.6.3.2 Teaching and learning modes*

As for the teaching and learning modes in the domain of sociology, the table below shows the average score in the assessment of teaching and learning modes.

Table 5.58: Average score of the assessments of teaching and learning modes in sociology domain

| | Non-DEHEMS | AT | DE | IT | PL | SI | TR | Total |
|---|---|---|---|---|---|---|---|---|
| **Extent in which the following characteristic was emphasized in the study programme:** | | | | | | | | |
| Multiple choice exams | 2,5 | 2,3 | 1,5 | 2,2 | 3,5 | 2,6 | 2,3 | 2,5 |
| Oral presentations | 2,9 | 3,3 | 3,9 | 3,5 | 3,3 | 3,4 | 2,9 | 3,1 |
| Written assignments | 3,7 | 4,1 | 3,7 | 3 | 3,4 | 3,8 | 3,2 | 3,6 |
| Problem based learning | 2,4 | 2,4 | 2,7 | 2,3 | 2,7 | 2,5 | 2,3 | 2,4 |
| Teacher as the main source of information | 3,4 | 3,7 | 3,4 | 3,8 | 3,3 | 3,3 | 3,3 | 3,5 |
| Theories and paradigms | 4,2 | 4,2 | 4,1 | 3,2 | 3,9 | 4,3 | 3,5 | 4,1 |
| Research Project | 2,4 | 2,1 | 2,7 | 2,1 | 2,1 | 1,9 | 2,4 | 2,3 |
| Group assignments | 3,1 | 3,1 | 3,1 | 2,4 | 3,3 | 2,8 | 2,7 | 3 |
| Lectures | 4 | 4,2 | 3,7 | 3,6 | 4,2 | 4,3 | 4,1 | 4 |
| Academically prestigious pro-gramme | 3 | 2,4 | 3,4 | 3,2 | 3,2 | 2,9 | 3,5 | 3 |
| Employers familiar with the content of the programme | 2,5 | 2,3 | 2,2 | 2,3 | 2,7 | 2,2 | 2,5 | 2,5 |
| **To what extent has your study programme been a good basis for:** | | | | | | | | |
| Personal development | 3,2 | 3,3 | 3,4 | 3 | 3,2 | 2,9 | 2,7 | 3,2 |
| Performing your current work tasks | 3,2 | 3,3 | 3,4 | 3 | 3,2 | 2,9 | 2,7 | 3,2 |
| Starting work | 3,2 | 3,2 | 3,4 | 3 | 3,2 | 2,5 | 2,8 | 3,1 |

Source: Own elaboration based on REFLEX/HEGESCO data.
Note: In each question a respondent assessed given programme characteristics by choosing a number from 1 ("Not at all") to 5 ("Very high extent").

According to the graduates' answers, sociology programmes are most often characterised by lectures (4.01), theories and paradigms (4.05), written assignments (3.64) and teachers as the main source of information (3.46). There are almost no differences between sociology and other domains, there are also very few differences in the programmes' characteristics between countries in the domain: There is an above-average (3.64) use of written assignments in Austria (4.13), while in Italy (3.03) and Turkey (3.17) it is below-average. Theories and paradigms are most often used in Austria and Slovenia (4.2 and above), although this method is not used so often in Italy (3.18).

Across all the countries students see the programme as a good basis for personal development, for starting to work and for performing current work tasks to a similar extent. There are also no differences in student perceptions of the programme across domains.

#### *5.6.3.3 Impact of the Bologna Process*

Regarding the Bologna Process in the domain of sociology, different aspects were covered by the DEHEMS national reports. One of the most obvious characteristics is the implementation of 3-cycle study programmes where the duration of first-cycle study programmes changed to three years, the second cycle to two years and the third cycle again to three years. In Austria, for example, what has been criticised by both the students and faculty staff is the relatively low financial support the university has been provided with. Also, many departments were not prepared to set up a whole new curriculum and simply downsized the diploma studies in order to make them last 3 instead of 4 years. These cuts mainly concerned electives, which made the bachelor's programmes quite restricted compared to the diploma programmes (University of Vienna, Bolognainfo).

Further, the reorganisation of the domain of psychology proved to be complicated since the permission to enter the labour market was legally linked to graduating with a "*Magister*" diploma. This problem could be solved and since the winter semester of 2009/10 psychology has been offered as a bachelor's programme. It is, however, not possible for graduates of a bachelor programme to start a career as self-employed psychologists. At the University of Vienna, the master's level, which allows graduates to take any profession in the field, was intended to be implemented in 2012.

In Italy, despite the reorganisation of the programmes, it should be underlined that the contents of the psychology and sociology programmes have not been widely modified. On the contrary, science programmes' contents were the subject of an in-depth revision.

### 5.6.4 Transition to employment and characteristics of the first job

This subchapter provides a description and statistical analysis of the transition process of graduates from higher education to the labour market, including the search duration, way of finding work, types of contracts etc.

As is evident from the national reports of the DEHEMS countries, graduates of this professional domain have the opportunity to find jobs in a wide area covering the public and private sector and take on tasks at industrial and commercial companies, miscellaneous organisations, press and media institutions, research companies, schools and higher education institutions etc. The entrance to the labour market does not usually require any additional elements/exams/working periods. However, there are some exceptions; for example entry to the teaching profession where graduates need to follow the national legislation. Also the graduates of psychology study programmes are sometimes required to pass additional exams and working periods before they can become full members of the profession.

The table below shows the distribution of sociology and political science graduates among different occupations as elaborated by the ISCO classification.

*Table 5.59: Occupations of sociology graduates, ISCO 2-digit level (in percent)*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Other professionals | 46,9 | 72,4 | 51,4 | 32,1 | 50,5 | 44,3 | 31,2 | 35,9 | 39,9 |
| Teaching professionals | 15,0 | 12,1 | 12,9 | 12,9 | 15,3 | 19,8 | 23,4 | 10,1 | 11,9 |
| Other associate professionals | 14,9 | 3,5 | 2,9 | 24,5 | 25,2 | 8,5 | 14,3 | 14,6 | 14,7 |
| Office clerks | 6,9 | 0,6 | 4,3 | 15,7 | 1,8 | 5,7 | 3,9 | 8,9 | 8,1 |
| Corporate managers | 3,3 | 1,7 | 1,4 | 1,2 | 1,8 | 13,2 | 3,9 | 5,0 | 4,4 |
| Physical, mathematical and engineering science professionals | 3,2 | 2,9 | 18,6 | 2,0 | 0,9 | 0,9 | 0,0 | 3,8 | 3,6 |
| Customer services clerks | 2,9 | 0,0 | 1,4 | 4,8 | 0,0 | 0,9 | 11,7 | 3,8 | 3,5 |
| Managers of small enterprises | 1,7 | 1,7 | 1,4 | 1,2 | 0,9 | 0,0 | 6,5 | 0,4 | 0,9 |
| Personal and protective services professionals | 1,4 | 2,3 | 0,0 | 2,4 | 0,9 | 0,0 | 0,0 | 2,4 | 2,1 |
| Armed forces | 0,8 | 0,0 | 0,0 | 0,4 | 0,0 | 4,7 | 0,0 | 0,2 | 0,4 |
| Life science and health professionals | 0,8 | 2,3 | 0,0 | 0,4 | 0,9 | 0,0 | 0,0 | 1,2 | 1,0 |
| Physical and engineering science associate professionals | 0,6 | 0,0 | 0,0 | 1,6 | 0,0 | 0,0 | 1,3 | 0,8 | 0,7 |
| Life science and health associate professionals | 0,4 | 0,6 | 2,9 | 0,0 | 0,0 | 0,0 | 0,0 | 1,5 | 1,1 |
| Models, salespersons | 0,4 | 0,0 | 0,0 | 0,8 | 0,0 | 0,9 | 0,0 | 2,9 | 2,0 |
| Other | 1,0 | 0,0 | 2,9 | 0,0 | 1,8 | 0,9 | 3,9 | 8,4 | 5,8 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Own elaboration based on REFLEX/HEGESCO data.

Graduates in this domain most often take up an occupation as "other professionals" (46.9%), however the data do not provide the exact occupations. We can note especially high shares of other professionals in Austria (72%), while in Turkey and Italy they are below-average at around 31%. Another very common occupation in this field is a teaching professional with 15%. Another 15% of graduates work as other associated professionals with peaks in Italy and Poland (24%) and lows in Austria and Germany (3.5% and below). There are also some differences in occupations between countries, where for instance 16% of Italian graduates work as office clerks, while 13% of Slovenian graduates hold corporate managers' positions. In Germany, 18.6% of graduates work as physical, mathematical and engineering science professionals.

#### *5.6.4.1 Search duration*

In the field of sociology, political science and psychology graduates have to look for a job 18% longer than in other domains. The average search duration in this domain among the countries is 4.7 months compared to all domains with an average of 4.3 months.

*Table 5.60: Search duration of graduates in the field of sociology*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Mean (months)** | 4,7 | 3,4 | 4,7 | 3,1 | 2,4 | 5,8 | 14,7 | 3,7 | 4,1 |
| **SD** | 8,2 | 5,0 | 8,5 | 6,7 | 3,3 | 6,8 | 14,2 | 5,7 | 6,7 |
| **Science/All domains** | | | | | | | | | |
| **Mean (ratio)** | 1,183 | 1,484 | 2,135 | 0,982 | 1,246 | 1,214 | 1,822 | 1,393 | 1,332 |
| **SD** | 1,194 | 1,412 | 1,943 | 1,079 | 1,380 | 1,015 | 1,407 | 1,116 | 1,172 |

Source: Own calculation based on HEGESCO and REFLEX data.
Note: Search duration was calculated on the basis of the question "How many months did you search before you obtained this employment (after graduation)?" from REFLEX/HEGESCO questionnaire. Mean is an average of months, SD is standard deviation.

Polish graduates in this field spend the shortest amount of time (2.4 months) searching for work compared to other countries, while in Turkey graduates have to search for the longest period of 14.7 months. German sociology graduates have to search for a job three times longer than the graduates of other fields.

#### *5.6.4.2 Search methods*

Across all DEHEMS countries, the ways of finding employment most often used by sociology, psychology and political science graduates are through the family, friends or acquaintances (21%); by contacting employers on one's own initiative (19%); and through an advertisement in a newspaper (14%). Turkish graduates also quite often use public employment services (12%) and the Internet (19%). Further, 14% of German graduates use a public employment service to find a job, while 11% of them use other ways. Italian graduates also use other ways of finding employment in 12% of cases.

*Table 5.61: Way of finding work by graduates in the field of sociology*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| Through advertisement in newspaper | 14,2 | 22,8 | 16,9 | 8 | 17,4 | 15,6 | 6,3 | 15,3 | 14,9 |
| Through public empl. ag. | 6,7 | 1,2 | 14,1 | 2,4 | 13,8 | 9,2 | 12,5 | 6,4 | 6,5 |
| Through private empl. ag. | 3,2 | 0,6 | 0 | 7,6 | 0,9 | 0,9 | 3,8 | 7,1 | 5,7 |
| Through internet | 6,3 | 5,3 | 7 | 4,4 | 6,4 | 2,8 | 18,8 | 7,9 | 7,3 |
| Contacted employer on own initiative | 19,1 | 24 | 11,3 | 14,5 | 31,2 | 21,1 | 11,3 | 16,8 | 17,7 |
| Approached by employer | 9,8 | 13,5 | 15,5 | 7,6 | 6,4 | 8,3 | 10 | 7,5 | 8,3 |
| Through work placement during higher education | 6 | 8,8 | 8,5 | 6,8 | 2,8 | 3,7 | 2,5 | 8,2 | 7,4 |
| Through family, friends or acquaintances | 21,3 | 15,8 | 12,7 | 26,5 | 17,4 | 24,8 | 25 | 17,9 | 19,1 |
| Through help of higher education institution | 3,3 | 1,2 | 2,8 | 5,2 | 1,8 | 2,8 | 5 | 5,8 | 4,9 |
| Set up my own business | 2,7 | 4,1 | 0 | 3,6 | 0,9 | 0,9 | 3,8 | 1,1 | 1,7 |
| Other | 6,6 | 1,2 | 11,3 | 12,1 | 0,9 | 9,2 | 1,3 | 5,4 | 5,8 |
| Through previous work | 0,9 | 1,8 | 0 | 1,2 | 0 | 0,9 | 0 | 0,8 | 0,8 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Sociology/All domains** | | | | | | | | | |
| Through advertisement in newspaper | 1,190 | 1,351 | 1,258 | 1,134 | 1,555 | 1,206 | 0,515 | 1,072 | 1,097 |
| Through public empl. ag. | 1,635 | 0,983 | 4,958 | 1,242 | 1,576 | 1,246 | 3,056 | 1,411 | 1,479 |
| Through private empl. ag. | 2,171 | 0,423 | 0,000 | 2,735 | 1,415 | 1,260 | 2,206 | 1,494 | 1,503 |
| Through internet | 0,899 | 1,017 | 0,908 | 1,005 | 0,590 | 1,698 | 1,108 | 0,983 | 0,947 |
| Contacted employer on own initiative | 0,858 | 0,932 | 0,490 | 0,710 | 0,851 | 0,872 | 0,905 | 0,829 | 0,846 |
| Approached by employer | 0,910 | 1,019 | 1,395 | 0,706 | 1,529 | 0,644 | 1,166 | 0,720 | 0,792 |
| Through work placement during higher education | 1,007 | 1,135 | 0,984 | 1,358 | 0,729 | 0,521 | 0,822 | 0,812 | 0,834 |
| Through family, friends or acquaintances | 1,068 | 1,164 | 1,363 | 1,138 | 0,898 | 1,468 | 0,751 | 1,154 | 1,137 |
| Through help of higher education institution | 0,648 | 0,189 | 0,779 | 0,596 | 0,738 | 1,019 | 1,066 | 1,055 | 0,908 |
| Set up my own business | 0,911 | 1,186 | 0,000 | 0,723 | 0,852 | 0,613 | 1,786 | 0,717 | 0,861 |
| Other | 0,918 | 0,312 | 0,685 | 1,193 | 1,070 | 1,167 | 1,190 | 1,116 | 1,054 |
| Through previous work | 0,654 | 0,983 | - | 2,667 | 0,000 | 0,211 | - | 1,951 | 1,186 |
| Total | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |

Source: Own calculation based on HEGESCO and REFLEX data.

Note: Each number in the top part of the table shows share of a given way of finding job in the population of graduates in employment – they sum up to 100. In the bottom part is a ratio of a share for business to the general population showing specifics of channels of finding job for business domain graduates.

If we compare the ways of finding employment in this field with other domains, we can note that public and private employment agencies (except in Austria) are more frequently used in this field than across all domains. On the other side, graduates of sociology less often find a job because they have been contacted

by an employer; through previous work (except in Italy), or through the help of their higher education institution than graduates across all of the domains.

#### *5.6.4.3 Education as a basis for starting work*

The table below shows that around 40% of the graduates from this professional field responded that their study programme was a good basis for starting work what is less then the average of all domains which is over 50%.

*Table 5.62: Study programme as a basis for starting work: sociology vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Sociology (%)** | 38,6 | 47 | 47,4 | 37,2 | 45,5 | 22 | 31 | 45,5 | 43 |
| **All (%)** | 46,1 | 62,8 | 54,4 | 48,5 | 52,9 | 32,9 | 36,2 | 57 | 53,7 |
| **Sociology/All (ratio)** | 0,837 | 0,748 | 0,870 | 0,768 | 0,859 | 0,670 | 0,856 | 0,799 | 0,800 |

Source: Own calculation based on HEGESCO and REFLEX data.

The highest percentage of answers was noted in Germany, Austria and Poland and the lowest in Slovenia where less than a third of graduates do not see their programme as being helpful in the process of starting work.

#### *5.6.4.4 Characteristics of the first job*

*Table 5.63: Type of contract in the first job: sociology vs. all domains*

| | | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sociology (%)** | **Unlimited** | 30,5 | 59,9 | 35,9 | 35 | 37,3 | 25,2 | 62,7 | 38,7 | 39,9 |
| | **Fixed-term** | 65,4 | 37,5 | 62,5 | 60,5 | 57,3 | 58,9 | 28 | 53,4 | 52,9 |
| | **Other** | 4,1 | 2,6 | 1,6 | 4,5 | 5,5 | 15,9 | 9,3 | 7,8 | 7,2 |
| **Sociology/All (ratio)** | **Unlimited** | 0,639 | 0,995 | 0,703 | 1,053 | 1,122 | 0,595 | 0,931 | 0,768 | 0,805 |
| | **Fixed-term** | 1,411 | 0,966 | 1,287 | 1,003 | 0,907 | 1,179 | 1,378 | 1,199 | 1,172 |
| | **Other** | 0,688 | 2,657 | 4,588 | 0,697 | 1,485 | 2,080 | 0,754 | 1,559 | 1,364 |

Source: Own calculation based on HEGESCO and REFLEX data.

Concerning the working conditions of graduates from the sociology and political science study programmes, Table 5.65 shows that the majority of them are under fixed-term contracts (graduates five years after graduation). Only in Austria and Turkey are there more graduates who have unlimited contracts.

If we take a look at how much graduates utilise the knowledge and skills they gained from the programme in their current work, we see that there is almost no difference between graduates of this and other domains. Graduates of sociology utilise their knowledge and skills almost 3% less than graduates across all domains. However, the utilisation is still relatively high with 67%; the highest in Austria (77%) and lowest in Turkey and Poland (63%).

*Table 5.64: Utilized knowledge and skills in current work: sociology vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Sociology (%)** | 67,1 | 76,8 | 71,6 | 64,2 | 63,3 | 64,7 | 62,7 | 68,4 | 67,9 |
| **All (%)** | 70,9 | 75,1 | 72,7 | 69,4 | 66,8 | 71,6 | 69,2 | 70,2 | 70,4 |
| **Sociology/All (ratio)** | 0,947 | 1,023 | 0,986 | 0,924 | 0,947 | 0,904 | 0,906 | 0,974 | 0,965 |

Source: Own calculation based on HEGESCO and REFLEX data.

### 5.6.5 Lifelong learning

In most cases there are no specific regulations governing lifelong learning in this professional field. Yet many graduates undertake postgraduate studies to complement their knowledge with specific skills that are required in certain occupations. In some cases, there are regulations concerning professional promotion paths, where lifelong learning issues are present. In Italy, for example, the lifelong learning system within the sociology and political science professional domains is strictly regulated by law for those practitioners registered with the psychology and sociology national councils. For those practicing mentioned legally recognised professions, lifelong learning is required like as for medical doctors, involving a number of hours per year. The remaining practitioners are not compelled to attend further courses in a lifelong way, but it is common for them to attend programmes of different lengths and on several topics. Such courses, although not compulsory, have the aim to constantly upgrade practitioners' knowledge and are often organised or paid for by employers.

The tables below show data from HEGESCO and REFLEX on how the graduates assess their study programme as a good basis for further learning on the job and to what extent they participated in a work-related training/course in the last year.

*Table 5.65: Study programme as a good basis for further learning on the job: sociology vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Sociology (%)** | 49,2 | 56,8 | 45,3 | 43,3 | 67,1 | 46,5 | 26,8 | 56,2 | 53,6 |
| **All (%)** | 50,5 | 55,6 | 49,3 | 52,1 | 64,3 | 49,2 | 37,5 | 59,2 | 56,6 |
| **Sociology /All (ratio)** | 0,974 | 1,022 | 0,920 | 0,831 | 1,044 | 0,945 | 0,714 | 0,949 | 0,946 |

Source: Own calculation based on HEGESCO and REFLEX data.

Only half (49.24%) of the interviewed graduates of this domain see the programme as a good basis for further learning on the job, which is comparable across domains, where the average stands at 50%. We can note the highest percentage of sociology graduates believing the programme is a good basis for further learning on the job in Poland (67%). While in Turkey (27%) graduates do not so often believe that their programme prepared them well for further learning on the job. When compared among domains, Turkish and Polish graduates of sociology are less likely to perceive the study programme as a good basis for further learning on the job than in other domains.

*Table 5.66: Work-related training/course in past 12 months in the first job: sociology vs. all domains*

| | DEHEMS | AT | DE | IT | PL | SI | TR | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Sociology (%)** | 62,1 | 72,2 | 56,7 | 47,5 | 74,1 | 71,4 | 55 | 66 | 64,6 |
| **All (%)** | 60,3 | 68,9 | 658 | 48,4 | 67,7 | 68,4 | 48,3 | 65,1 | 63,6 |
| **Sociology /All (ratio)** | 1,030 | 1,048 | 0,862 | 0,982 | 1,094 | 1,045 | 1,140 | 1,015 | 1,015 |

Source: Own calculation based on HEGESCO and REFLEX data.

62% of graduates in this field had some work-related training in the past 12 months in their first job. We see the highest results in Poland, Austria and Slovenia (above 70%) and the lowest in Italy with just 47% of graduates having had work-related training in the past 12 months. When we compare the results of this field with the results across all domains, we find no bigger differences.

### 5.6.6 Higher education management perspectives on graduates' professional careers – a synthesis of the DEHEMS interviews

#### *5.6.6.1 Understanding career success*

The introductory question posed to the representatives of higher education institutions from the fields of sociology, political science and psychology aimed to clarify their understanding of the career success of their graduates or what their opinion is when a graduate is successful in their professional career.

The interviewees provided a range of various understandings of career success. An interviewee from Slovenia, for example, stated that "*career success is difficult to be defined because of the broad chances of employment. But career success is not only a job itself but more satisfaction".* A representative of a Polish higher education institution sees career success when a "*graduate works in the field that he studied for and is of the opinion that those five years of his education were valuable to him"*, while for a Turkish HE manager career success means "*if graduates can get the job they want and are promoted in the continuity of the career*". Despite the varieties of definitions and opinions on career success it was still possible to identify them in several key dimensions which are elaborated later.

***Flexibility***

Due to the diversity of job positions (for a further elaboration of this issue, please see point 2) from this professional field, some interviewees from different countries pointed out the importance of the flexibility of graduates. A Polish interviewee saw flexibility as a *"key to success in the contemporary labour market. We want our graduates to be open to new skills and knowledge, not to be a 'complete product'"*.

However, flexibility can be understood from different perspectives. First, as will be seen later, the study programmes from this professional field are oriented in a way that enables students to gain general competencies and broad knowledge from different disciplines. And it is this broadness that provides students with the flexibility they need for success in the job market: "*The broadness of knowledge is a comparative advantage (especially in comparison to graduates of economics and law) of graduates which enables them to be flexible regarding the needs of a specific job position. (SI)".* Similarly like the Slovenian HE representative the German one also pointed out the importance of the broadness of study programmes for the flexibility of graduates: "*The study programmes do not prepare graduates for a clear occupational profile but students associate with the study programmes the chance to get the qualifications they need in different professional fields and which prepare them for different job profiles (DE)".*

On the other hand, flexibility can also be understood as an ability to rapidly acquire new knowledge in the diversified job positions that are filled by graduates of the study programmes from these professional domains addressed in this chapter. One interviewee from Turkey defined this view of success with the following statement: "*The success of a graduate is to have a wide perspective of the main dynamics of the country and work accordingly. This means a graduate must acquire the necessary knowledge and skills to be able to act quickly and effectively"*.

### *Job satisfaction*

The definitions of career success also included a more subjective perspective – job satisfaction. However, the interviewees did not elaborate this dimension in the details but, for example, like with the German interviewee, they simply mentioned that in career success *"it is extremely important to like the work and to be satisfied with one's own situation*".

### *Matching the study programme and the professional destination*

Some interviewees understand career as when the study programme matches a professional occupation: "Professional success means at first when a graduate gets a job in his/her respective field of interest" (DE), and "a successful graduate in a relatively short time finds a job that matches his general profile of education and provides him/her with support (PL)". One interviewee from Turkey says this issue could also be related to the current labour market situation: "In the dynamics of our country the success of a graduate is to be employed in his own field". However, as stated before, due to the large variety of job positions occupied by graduates of sociology and political sciences, it is difficult to tell what are the appropriate professional destinations that would match the study programme.

### *Others*

Besides flexibility, job satisfaction and matching the study programme with a professional destination, interviewees from the DEHEMS countries also mentioned other dimensions of career success, although they do not appear as frequently as what was described above.

Some interviewees define career success in terms of the time needed to enter the labour market. An interviewee from Germany also connected this dimension with other factors influencing career success: *"Professional level on an operative level means that the decisive variable is how long it takes to get a first job, independently of the kind of job. In addition, there are questions or factors such as salary, long-term contract, possibilities of further qualifications, chances to climb the ladder etc." (DE).* Promotion and further qualifications in a job position were also emphasised by a Slovenian HE manager for whom career success also involves leadership: *"Career success is when one is developing in his/her job position, that one succeeds to reach leadership positions and that one can use the knowledge and skills they gained through the study programme"*.

As seen from the above examples, there is no common understanding of what career success means for the graduates of sociology and political science. Some interviewees see it through very subjective dimensions by whether one is satisfied in the workplace or not, others define it through more objective dimensions such as the type of contract, salary, promotion etc. However, we can say that these dimensions are also correlated and depend on each other.

***Professional orientation of the graduates***

The interviewees reported that graduates are mostly employed in the public administration on national and local levels. The other fields of occupations include business, finance and banking, media, diplomacy and non-governmental organisations. Graduates of psychology are also often employed in the health sector.

Differences in the job positions of graduates from this professional field were not noticed among countries, although there are differences in the employment of graduates of sociology and political science compared to the graduates of psychology, for example in Germany: "*the situation in the labour market for psychology graduates seems to be extremely good at the moment. It is much more difficult for graduates of sociology and political studies to find employment in their field of interest"*.

### *5.6.6.2 The role of HEIs for graduates' future professional activities*

***Broadness of the study programmes of sociology and political science***

The majority of interviewees across the DEHEMS countries agrees that the study programmes from the fields of sociology, political science and psychology provide students more with basic and broad knowledge of these professional disciplines than specific knowledge. This is also due to the wide diversity of job positions occupied by graduates from these study programmes. The broadness of their knowledge enables students to rapidly acquire any new knowledge needed in their job positions. An interviewee from Slovenia says: *"Students of sociology find employment in very different areas. This is a consequence of the broadness of the study programme which gives students a broad spectrum of knowledge, a combination of knowledge from different fields and flexibility they can use in their employment. Graduates can afterwards update their knowledge very quickly while in the job position"*. Moreover, a German interviewee believes that study programmes from this professional field should move in the direction of broadness and generality: *"The aim of the bachelor programme in political science and sociology is to provide a general professional qualification. There are courses which aim to teach general qualifications and key competencies".*

***Implementation of new teaching modes including practical training***

The majority of the higher education representatives reported on the inclusion of new teaching modes into curricula which are becoming more individually oriented and interactive. A Slovenian HE manager is of the opinion that *"interactive learning enables students to become more self-confident, flexible, independent and able to connect together knowledge from different fields"*. Despite this support for interactive learning, two interviewees from Slovenia stressed there is still too much emphasis on lectures and there is still thinking that the teacher is the only source of information and, since learning is an active process, the role of teachers should be less important.

There was also a big stress on the importance of practical training. However, the interviewees did not share the same opinion about its implementation in study programmes. Even though the majority of the HE institution representatives are in a favour of implementing a certain amount of practical training, some stressed that they *"cannot go into too-practice-oriented education because we would break the principles of academic education. We leave practical training to vocational schools (PL)"* and *"the faculty defends the autonomy of study programmes in relation to the state and to the labour market and capital"* (SI).

### *Employers' role in the implementation of study programmes*

There were big differences in the answers provided about the cooperation with employers with regard to their inclusion in the study programme, mainly as possible co-designers of study programmes and partners in the implementation of practical training and internships.
On one side, there are HE managers and HE institutions themselves who are in favour of such cooperation.

SI: "*We don't see graduates only as a workforce who would only satisfy the demands of employers and particular job positions. /.../ Learning in the workplace is the responsibility of employers and they have to enable their employees to get the knowledge which is demanded for a certain job position".* And, as another interviewee pointed out, *"the role of the university is to provide basic theoretical and research knowledge which has to be firm and broad and allows connections with more specific fields from the economy".*

Also an Italian HE manager pointed out that their study programmes are not organised to match labour market demands and have little interest in the labour market, even more generally in the economic environment. While the interviewee did not provide any reasons for this, perhaps they can be explained by a statement made by another Italian interviewee: "*There are many regulative constraints which do not allow universities to take labour market needs into account. Programme design is strictly regulated by law, it requires a long time to be approved by the Ministry /.../ professors are also not well integrated with the labour market and have difficulties interpreting it".*

However, on the other side there are interviewees and institutions that offer big support for that kind of cooperation. An Italian HE manager says that their *"study programme is planned and implemented with a huge commitment of companies, institutions and practitioners and also a number of qualifying academic courses are taught by practitioners".*

It was also noticed that regarding the inclusion of employers in study programmes there are also differences among higher education institutions concerning whether they are public or private. As the analysis of the interviews shows, the private ones are much more in favour of cooperation with employers that might also have their ownership interests: "*Due to its ownership*[1]*, institution X has a widespread network in relationship with economic organisations and there is a strong attitude to let practitioners to teach in curricular courses" (IT).*

Further, a representative of a Polish private HE institution says that "*plenty of new programmes are created based on the cooperation of the HEI with the top companies from the market. Even classes are co-led by market leaders. The HE also aims to react rapidly to the needs of the market (for example, as soon as they noticed that the market requires experts in online journalism, a new programme was set up for this field)*". We can explain this with a statement by a Turkish manager from a private higher institution: "*As we are a private university, we need a high employment rate*". Therefore, it might be true that private institutions are taking current needs more into account and enabling graduates a direct entrance to the labour market which can serve as good promotion for enrolment in their institutions.

However, the point of view that study programmes need to rapidly react runs contrary to the opinion of a Slovenian public HE manager who says that "*the faculty has to be aware that the needs of employers are expressed for the current situation and not in the long term. The faculty has to provide knowledge which will be useful for some time /.../, therefore the needs of employers cannot be taken into account as the faculties are not educating for concrete work placements"*. But an Austrian HE manager from a public

institution sees a middle way: "*Employers' needs (and graduates' feedback) should be more accounted for in curriculum development. This does not mean, however, fully servicing their wishes".*

### *Supporting internationalisation*

The internationalisation of higher education and study programmes can be viewed from different aspects: the internationalisation of the curricula itself, the international orientation of teaching staff, and the international orientation of students.

Many study programmes that were renewed in accordance with the Bologna reform took the curricula of foreign institutions into consideration to allow a cross-country comparison of study programmes. The interviewees reported there are some international exchanges of the teaching staff but especially in the form of international research projects they are involved in, although there were no reports of foreign guest lecturers etc. Interviewees from Turkey and Italy also reported that study programmes should take into consideration the international scope of those professions; however, there should also be an emphasis on and awareness of national and local issues.

The scope of internationalisation was most often seen through the international exchanges of students. The most frequently mentioned programme for student exchanges was Erasmus. The majority of HE institutions greatly support international exchanges and also recognise the credits gained abroad. However, in the interviewees' opinions international student exchange is more important for gaining multicultural experiences than for gaining professional knowledge: *"A great share of students attends international student exchanges and students are free to choose their subjects at the foreign institutions as there are no complications with credits. The most important thing about international mobility is the multicultural experience a student can get from studying abroad" (SI).* Some specific study programmes from these professional fields also require an international scope as in one German institution which implements a study programme of peace and conflict studies where an international placement is obligatory.

### *Inclusion of research activities*

In almost all the DEHEMS countries (except Germany) the respondents mentioned research activities as a factor that helps graduates in their transition from education to work, providing them with practical knowledge and views of wider aspects and understandings of the area. The research activities may be implemented in various ways. Very often only academic staff are involved in research projects through which they further develop their expertise and skills so they can in turn provide students with better learning courses. Such cases were noted in Italy, Slovenia and Turkey. Or these staff would only include very few particular students who they choose, like a case in Italy: "*Those professors having their own research activity, pass on widespread knowledge and competencies to their students but it is not an institutionalised pattern. Therefore, it is useful just for a few students whom professors involve in research projects and related activities"*; and in Slovenia: *"Research work depends on the professor and how they will include their students"*. Most of the time only students of the second and third level are involved in research activities because the number of students is lower and the programme usually requires more research work. Such answers were provided in Slovenia *"...second and third level students are included to a larger extent"*, in Italy *"Research activities mainly involve graduates attending PhD programmes"* and in Austria *"Students are included in a research project already in later stages of the bachelor but particularly in the master and most intensively in the PhD programme"*. However, there are also faculties in Italy, Poland, Turkey, Slovenia and Austria that already include bachelor students in their research activities, mostly though if the students decide to participate.

Interviewees at most faculties are aware of the relevance of research activities in order to help their graduates in their transition to work and therefore run them to different extents. However, a lot of the respondents also highlighted the need to further develop and implement research projects at their institutions.

### *Other issues raised*

As the countries' education systems differ along with their realities, there are also different needs and issues, solutions and programmes that educational institutions use in order to help their graduates in their transition to work. However, there is still one common aspect many interviewees mentioned: career guidance for graduates. Institutions offer different services via different bodies to provide their students or graduates with career counselling. In Poland and Turkey faculties usually have career centres that provide professional advice, training in communication and presentation skills, internship and work offers. In the Turkish faculties they organise career days for students where they invite bureaucrats from public institutions twice a year and give students a chance to interact with them. Italian institutions cooperate with the university unified office for labour market orienting, which offers internship placement services and individual or group counselling on CV writing, job interviews and organising career days with the involvement of companies. In Austria HEIs provide students with trainings and workshops where they learn how to appropriately apply for a job. One of the German respondents mentioned they have a position at their institution that is responsible for career service and alumni contacts. We may thus conclude that in one way or another, offering career guidance is also one of the services HEIs offer their graduates in order to ease their transition to the labour market.

In Poland, respondents highlighted that 30% of their curriculum is open for students to choose their subjects, which are not only field-specific but other subjects such as dance, film etc. and by that they can develop other skills that will help them find employment.

Turkish institutions had to change their programmes and adjust them to the State Staff Selection Exam which most students want to take in order to work for the state. Therefore, the faculties adjusted their programmes to better prepare students for this exam.

One of the Italian respondents mentioned that their faculty is involved in the AlmaLaurea national project which is considered a useful tool for extensively promoting graduates and collecting information about labour market needs.

Faculty in Slovenia promote the use of foreign languages in its programmes using foreign literature so as to also expand students' horizons in this manner.

The introduction of admission exams was a helpful solution for at least one of the Austrian faculties, helping it to ensure better quality teaching and the allocation of other resources.

In Germany, respondents highlighted the importance of the development of soft skills, which is implemented in modular curricula and examinations. They see these skills as crucial for graduates to possess when entering the labour market.

In order to help their graduates in their transition to work, education institutions providing sociology and psychology programmes most often offer broad programmes, implement new teaching methods with practical training, involve employers and other stakeholders in the learning process, support and promote internationality and provide career guidance. Beside these common solutions among DEHEMS countries, faculties apply specific strategies to help their students according to their needs and the environment.

#### *5.6.6.3 Developmental needs*

Due to differences in the education systems of the countries, their developments and specifics, there are also differences when it comes to their development needs among the interviewed higher education institutions delivering sociology and psychology programmes. Some of them see a need for changes in funding, some in practical training, while others need to improve the internationalisation of their programmes and include more research work in studies. However, there also some needs that are common to several countries such as improving collaboration with stakeholders, developing or re-opening career centres, changes in the curriculum design process and developing programmes more in a lifelong learning direction.

##### *Cooperation with stakeholders*

The most often mentioned development need (noted by at least one respondent from each country with the exception of Poland) was the need to improve the cooperation with stakeholders, mostly employers. Based on the number of interviewees who mentioned this need, the strongest need for better cooperation with stakeholders is in Italy. They are aware there that successful cooperation with employers and other institutions is crucial for the improvement of academic activities and financial resources: *"Business world involvement must be strongly underpinned to bridge the growing lack of public financial resources and to improve academic activities and reputation" (IT), "Stakeholders, companies and other institutions should be involved in academic activities and play a more relevant role to plan and implement study programmes" (IT)*. In Slovenia and Turkey the respondents explicitly expressed a need for better cooperation with employers: *"We do not have much connection with employers" (TR)*. A similar situation is seen in Germany where an interviewee sees the need for institutionalised collaboration with the professional world. In Austria they miss cooperation with employers' associations in order to obtain their feedback to help develop the Master programmes. The need to improve the collaboration with stakeholders, especially employers, is the most common need throughout all the DEHEMS countries.

##### *Career Centres*

Career counselling is seen as another important area that needs improvement by the German, Turkish, Polish and Slovenia informants. In Slovenia, one respondent would like to see the development of a career centre within the faculty which would also trigger better cooperation with employers and the labour market. In one Polish faculty they used to have a career centre already but it was closed due to the financial situation, which the respondent sees as a mistake and believes it should be re-opened. In Turkey there is already a working career centre there is a need for its further development with the addition of activities such as a follow up system of graduates, an entrepreneurship centre etc. However, one of the German faculties needs an office for internships such as already exists at other faculties to provide students with internship opportunities. We may conclude that in some countries there is a need to develop or improve career centres in order to help their students in their transition to work and to improve the collaboration with employers and graduates.

##### *Improving curricula*

In four DEHEMS countries respondents expressed a need for changes in the curriculum design process in order to improve academic activities. In Germany, they would like to see greater creativity in curricula designing and more freedom to include the development of key competencies or soft skills. A Slovenian interviewee said that the redesigning and changing of curricula should be less bureaucratic and faster and

more flexible: *"Changing and adapting the study programme should be a demand and not barrier" (SI)*. In Austria, they believe that employers' needs and graduates' feedback should be considered to a higher extent in curriculum development, but again it should not fully serve their wishes: *"What I decisively oppose is to do only demand-oriented skills training. Studying at university has a special character and this should not be changed in principle"*. A similar need was expressed by a Turkish respondent who would like to see more programme development according to labour market needs. Therefore, we can conclude that our respondents understand that there is a need for a more flexible process of curriculum development whereby labour market needs should be taken into account to some degree.

### *Lifelong Learning*

In Italy, Germany and Turkey the need for programmes to move in the direction of lifelong learning was stressed by the informants. *(TR) "…educational activities should be provided to students to enable the first step in lifelong learning"*. One German interviewee shares the opinion and believes that universities should position and establish themselves as active parts of lifelong learning. On the other side, in Italy second-level studies should be more lifelong-learning-oriented and not just be a continuation of the first level according to a respondent. Aligned with EU directives, university staff in the areas of sociology and psychology are also more and more aware of the importance of lifelong learning and the role of the HEI in that.

### *Other*

Apart from the most common needs among the countries, some were expressed that are a little more country- or two-country- specific. In Slovenia and Austria, the interviewees also expressed a need for a greater extent of research work being implemented within the programmes: *"Also work in research projects should become even more widespread" (SI)*. *"Well-structured PhD programmes to provide students with the possibility to develop networks in the research community" (AT).*

In Germany and Austria there is a need for the further development and inclusion of practical training in programmes. In Austria there is a more general idea of students learning skills through practical tasks: *"To teach tasks from practice so students know about the use of their skills" (AT)*. In contrast, a German informant is specifically concerned about how to intensify the integration of practice-oriented components into the field of social studies, which have been shortened due to the reduction of the study time from nine semesters of traditional diploma to the six semesters of the BA programme.

Both Italian and Polish informants believe there should be changes in funding in order to improve the academic activities. In Poland this particularly concerns the financing of private institutions that are offering a more personalised approach to students: *(PL) "The most important would be the introduction of state funding to private HEIs. Increased effort and personal involvement should be financially rewarded and not punished by the system"*. On the other side, an Italian informant claims that there should be more funding from companies and financial aid for deserving students.

Another development need relevant to Austrian and Slovenia is to improve the internationalisation of sociology and psychology programmes. An Austrian respondent suggests that studying abroad should be promoted more, which would enable students to develop important soft skills. Similarly, the greater support of the internationalisation of programmes and practical training by faculty is needed in Slovenia, according to one of the interviewees.

In Poland and Italy the need to improve the role of tutors was also mentioned as highly important in order to help students during their academic life time and transition to work, but also to ensure that the HEI no-

tices the students' interests and abilities at an early stage and can thus construct the product it offers in such a way that creates the optimal fit.

The most common development needs in tertiary education programmes for sociology and psychology among the countries are improved collaboration with stakeholders (mainly employers), the establishment or improvement of career centres and moving in the direction of lifelong learning. In some countries, changes to funding systems, more practical training, the greater internationalisation of programmes, more research work and development of the tutorial system are also needed.

### 5.6.7 Conclusion

In most cases the study programmes of sociology and political sciences offer a broad spectrum of knowledge as they don't educate students for specific occupations and job positions. The study programmes are offered by both, public and private institutions. These professional fields are not regulated by the state and also not the entrance to the labour market.

From the analysis of the interviews we did with representatives of HEIs providing sociology, political science or psychology programmes across six DEHEMS countries, we may conclude that they share an understanding of their graduates' success. Some informants highlighted the importance of the graduates' flexibility for being successful due to the diversity of job positions. Some informants see job satisfaction as the factor that defines success, while still others believe graduates are successful when they find a professional occupation that matches their study programme. However, all of these dimensions are correlated and depend on each other.

According to the interviewees, most graduates are employed in the public administration on national or local levels, while the other fields of occupations include business, finance and banking, media, diplomacy and non-governmental organisations. Psychology graduates often work in the health sector.

In most countries the informants share the opinion that programmes in the fields of sociology, political science and psychology provide their students with more basic and broad knowledge of these disciplines than specific knowledge, which also explains why the graduates' job positions have such diversity. The majority of these programmes have implemented or are still implementing new teaching methods and practical training so that the curricula are becoming more interactive and individual-oriented. Quite a few institutions cooperate with employers, mainly by including them as possible designers of study programmes and as partners in the implementation of practical training and internships. Both HEI managers and professors are in favour of such cooperation and even expressed a need for the further development of such cooperation. Growing support for the internationalisation of programmes has also been noted across the DEHEMS countries, but this internationalisation has three main dimensions: the internationalisation of the curricula itself, the international orientation of the teaching staff (their involvement in international projects) or the international orientation of students (in exchange programmes). The informants also pointed out the importance of research activities included in the programmes or institutions. Mainly academic staff are included in such activities, however at some institutions also students (mostly from the second and third levels) are participating in research projects through which they further develop their knowledge and skills.

In addition to all of the activities the institutions already run in order to help their graduates through their transition from education to work, the informants also expressed crucial developmental needs that would

further improve their programmes and the quality of learning. The method most often mentioned was co-operation with stakeholders (mainly employers), which needs to be formalised and better structured in order to gain even more from it. In a few countries, the development of career centres is needed to improve the career counselling and guidance for graduates. Some respondents also mentioned that they would like to see changes in the curricula development process, whereby they would include more of a labour market perspective and greater freedom of institutions when designing curricula. The importance of lifelong learning is also growing and a few respondents mentioned that their programmes should develop more in this direction in order to prepare graduates for lifelong learning. These were top four needs most often mentioned by the interviewees, but due to differences in the education systems of countries, their developments and specifics, there are also differences when it comes to their development needs.

*Daniele Vidoni, Samo Pavlin, Mateja Melink **

# 6 THE EMPLOYABILITY AND DEVELOPMENT OF HE MANAGEMENT SYSTEMS

## 6.1 INTRODUCTION

This chapter expands and completes the picture sketched out in the previous chapters by providing the point of view of stakeholders at different levels (HE policy-makers, employers, labour unions, students) on the actual use and eventual further need of evidence on student employability data for higher education management.

Consistently with the approach taken to collecting the views of HE managers, the HE stakeholders were requested to respond to semi-structured qualitative interviews. The characteristics of the instruments and of the process, along with an overview of the respondents are provided in the next section.

The interviews focussed on two main dimensions: the structural characteristics of the systems and the use of data for system administration, and an assessment of the use of hard data on student employability to improve the system. In terms of the first aspect, the interviewees were asked whether and how hard data is used in the implementation of higher education programmes in terms of the accreditation and reaccreditation of study programmes, teaching and learning modes, practical training, recognition of non-formal learning, alumni, career advising, programme promotion, cooperation with the world of work etc.

Section 3 provides an overview of the results and highlights the existence of differences among the countries and identifies the institutions responsible for the various tasks. In general, elements related to content, student advising and collaboration with the world of work are the responsibility of the individual university, while a spectrum of institutions (ranging from an individual university to the central government depending on the country) bears the responsibility for aspects related to the recognition of studies, the validity of degrees, and the accreditation of programmes.

In terms of the second aspect, the interviewees were asked to provide their opinions on the use of hard evidence for strategically managing the system and to express their views on what would be their desired situation in terms of data use and interaction with HE institutions. While the necessarily limited number of interviews that were conducted and the intrinsically different composition of the group of interviewees across the countries perforce limits the direct comparability and the possibility of generalising the results, some common trends can be identified. In general, there is a common request for a more substantial reflection on student actual outcomes when devising the contents and characteristics of an educational programme and there is the request by labour unions and employers to be more directly involved in the devising of educational programmes. These elements are described in detail in sections 4–7.

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## 6.2 RESPONDENTS AND QUESTIONS

Work package 7 included the conducting of semi-structured qualitative interviews with five different higher education stakeholders: HE generalists/experts, HE managers, HE policy-makers, employers, representatives of trade unions and representatives of student organisations.

Each project partner conducted 15–16 interviews following previously prepared national road maps. The interviewees were selected regarding their experiences and knowledge of the higher education management systems and also their availability and willingness to participate in the interview. They were contacted in advance and in some cases also the questions were sent in advance to allow them to prepare the answers. The interviews were mostly conducted in person with some exceptions where they were conducted by phone or e-mail for different reasons[79].

The questions were differentiated with regard to the interviewees. The HE generalists/experts provided a broader picture on the issue under research and were approached with the following questions:

- *Who (in what way and how often) decides on the implementation of higher education programmes (in your country) in terms of the (re)accreditation of programmes, teaching and learning modes, practical training, recognition of non-formal learning, alumni, career advising, programme promotion, and cooperation with the world of work? Are there any differences across the fields of study?*
- *What data and hard evidence (e.g. on employability, skill needs, quality assessments…) are considered as part of implementing HE programmes?*
- *Can you please describe (the most relevant) concrete actions involved in considering the evidence?*
- *How should/could this be done?*

Other participants were approached with similar questions with an emphasis on the utilisation on employability data:

- *Which of the following aspects of the HE curriculum, if any, are impacted by the data and hard evidence mentioned above: (re)accreditation of programmes, enrolment policies, teaching and learning modes, practical training of students, recognition of non-formal learning, alumni, career advising, programme promotion, and cooperation with the world of work?*
- *What data and hard evidence (e.g. on employability, skill needs, quality assessments, research…) are considered as part of implementing HE programmes? Please describe the source in somewhat more detail.*
- *Can you please describe (the most relevant) concrete actions involved in considering the evidence?*
- *How should/could this be done?*

Most interviewees from HE management have top positions in higher education institutions and thus have relevant insights into and experiences of managing HE systems. HE generalists are mostly those who have relevant experience in research into higher education and related issues. Among HE policy-makers, there is a prevalence of representatives of ministries responsible for the higher education area.

[79] The interviews – originally in the national language of the respective country – were later transcribed and translated into summaries in the English language and sent to both the leader of the work package and coordinator of the project. The interview summaries have been analysed and synthesised in this report.

## 6.3 THE CONTEXT OF EMPLOYABILITY DATA UTILISATION: THE IMPLEMENTATION OF HE PROGRAMMES[80]

This subchapter provides an overview of DEHEMS countries concerning the implementation of higher education programmes from legal perspectives. It looks at the implementation procedures in terms of the accreditation and reaccreditation of study programmes, teaching and learning modes, practical training, recognition of non-formal learning, alumni, career advising, programme promotion, cooperation with the world of work etc.

*In Austria* public and private universities do not need formal accreditation. The implementation of particular study programmes is discussed internally within the institution. This also includes teaching and learning modes and practical training. Non-formal learning generally is not recognised, although some institutions offer a chance to replace particular courses with proven and relevant non-formal knowledge and experiences. Based on a general regulation that requires each HE institution to provide career services of some kind, most institutions make individual decisions on career services and counselling.

Private universities in Austria are accredited as institutions for a certain period of time (usually a few years) and are then free to implement study programmes. Universities of applied sciences seek accreditation for each study programme.

There is also a strong difference between the public universities and universities of applied science. On one side, public universities offer quite a broad education, preparatory training for a job and conduct basic research while, on the other side, universities of applied sciences tailor their curricula to the labour market. These needs (of the labour market) and the employability of their prospective graduates are factors for the accreditation for universities of applied science (and private universities). Regarding the degree of specialisation and practice orientation public universities are lacking in practical relevance, but the universities of applied sciences are too specialised. Public universities are oriented to long-term employability and universities of applied sciences to short-term employability.

Regarding differentiation between degrees, bachelor curricula should offer an education that enables graduates to enter the labour market without the need to carry on with a master degree. Whether this should be a broader or more specific education is subject to discussions.

*In Italy* in the last 20 years, HEIs' subordinate attitude has experienced an in-depth crisis. At the moment, HEIs are neither subordinate to the economic world nor fully independent. Currently, around the world a new effective relationship model between HEI and companies suitable for deciding on the implementation of HE programmes does not exist. The question is not who decides on that but what should the mentioned relationship model be to enable higher education pathways. Such a relationship model should be established to collect and analyse economic context signals and infuse HEIs with a proactive attitude to innovation and its propagation among companies.

*In Germany* the accreditation of study programmes is conducted by accreditation agencies that are certified by the Accreditation Council and are entitled to award the Council's official seal. The process of accreditation is carried out according to the Council's guidelines, and is conducted by all agencies in a formalised similar way. The summative inspection of quality within the accreditation aims to prove

[80] Question: Who (in what way and how often) decides on the implementation of HE programmes in terms of the (re)accreditaiton of programmes, teaching and learning modes, practical training, recognition of non-formal learning, alumni, career advising, programme promotion, cooperation with the world of work?

on the basis of the (given) criteria whether a study programme possesses a coherent content and structure with regard to the outlined and to-be-achieved objectives.

Alongside the accreditation of individual study programmes it is possible to perform a cluster-accreditation of study programmes (on the condition that the content, resources and organisational components are closely interlinked in these programmes) within a given HEI. A cluster-accreditation allows the faster and cost-efficient certification of study programmes, and was implemented in the BA/MA restructuring of study programmes in Germany. A third type of accreditation – a system accreditation – was introduced by the Accreditation Council in 2008, where the subject of accreditation is the internal quality assurance system of an HEI in the domain of study and teaching.

However, the existing accreditation system has been criticised by both universities and educational policy actors. "The current system of accreditation, with its high degree of regulation, leaves too little room for the creative and innovative capabilities of autonomous universities," said HRK81 President Prof. Horst Hippler, summarising the position of the HRK Senate. "We are asking for a type of accountability which is aligned with the goals of each individual university and which goes beyond mere compliance with regulations" (Press Release from 13.06.2012 "HRK Senate: Recommendations of the German Council of Science and Humanities on accreditation are not far-reaching enough", http://www.hrk.de/95_2935.php).

When comparing different disciplinary domains, the teacher education programmes in Germany – unlike many university branches of study that are still relatively free to design their curricula and study programmes – are standardised on the federal level and follow standards adopted by the Standing Conference of the Ministers of Education and Cultural Affairs of the States (Länder) in the Federal Republic of Germany (Kultusministerkonferenz/KMK). In addition, there is a small degree of freedom for a few study programmes on the state level to add elements into a teacher study programme. But since the teacher education programmes in Germany end with a state examination, the programmes are highly standardised.

Currently the higher education system *in Poland* is in the phase of large organisational and structural changes as a new law was passed in October 2011 changing different aspects of the HE system. So far, the programmes offered by HE institutions must be based on the core curriculum outlined by the Ministry of Science and Higher Education. It is also possible that institutions prepare their own programmes that are inconsistent with core curricula, which in turn must be approved by the ministry.

Most interviewees from Poland underlined that programme evaluation is an extremely important issue. This is mainly the task of the Polish Accreditation Committee that checks if HE institutions abide by the standards of the core programme outlined by the ministry. The Committee aims not only to complete a checkbox of formal requirements, but it is also interested if the institution has an adequate approach to the higher education.

The degree of modernity regarding teaching and learning modes, practical training, recognition of non-formal learning, alumni, and career advising varies significantly by domains. For example, the education process in the domain of education tends to be very static, while areas such as medicine face a much stronger need to keep up with modern developments.

Currently in Poland, the National Qualification Framework is being implemented. Many interviewees expressed the opinion that it will entirely change the approach to the quality of higher education. There

81HRK (Hochschulrektorenkonferenz) – German Rectors' Conference

will no longer be a core curriculum that must be met in a given specialisation. Instead, every degree programme will be described with a list of learning outcomes. It will include elements of knowledge, skills and social competencies. The role of the Polish Accreditation Committee will significantly change as it will now assess whether an HEI does in fact teach the skills, abilities and qualifications that it declares.

In Slovenia, the implementation of higher education programmes is the responsibility of the universities and faculties while the (re)accreditation of programmes is done by the Slovenian Quality Assurance Agency for Higher Education. However, with the last intervention act more jurisdiction was given to HEIs. The ministry responsible for higher education area does not have any jurisdiction over the implementation of study programmes. Yet the role of the ministry is to support national programme of higher education.

All the other aspects, such as teaching and learning modes, practical training, alumni, career centres etc., are the responsibility of the HEIs themselves. The ministry of higher education only provides a basic framework in the act (for example, the recognition of non-formal learning) but the implementation is up to the HEIs. Slovenia has not decided to implement a national system that would be obligatory for all institutions and there is no authority on the national level. But the institutions can decide to implement their own systems (for example large universities) but, so far, no institutions have done this.

As previously mentioned, career counselling is also the responsibility of HEIs but the ministry financially supports it with structural funds. Also the framework and percentage share of obligatory practical training is somehow given, although it is up to HEIs how they will implement it.

There are big differences among HEIs in the recognition of non-formal learning. In some institutions, students need to find a placement for practical training on their own, while at others there are people employed to take care of this.

*In Turkey* in the implementation of HE study programmes a big role is played by the Council of Higher Education that is a corporate public body which approves programmes for their initial implementation. The departments themselves are later responsible for the continuous development of their programmes also in terms of teaching and learning modes as the university management does not play any role regarding the teaching and learning modes.

The decision to introduce a new programme is taken by the faculties' departments that prepare a proposal to be approved by the university education committee, senate and finally the Council for Higher Education.

The accreditation of higher education programmes is done by the Council for Higher Education as well but only at the opening stage of the programmes, then the universities and faculties themselves are responsible for the curriculum development and quality assurance of the programme. The faculties and their departments are free to apply for the (re)accreditation of their programmes by international accreditation agencies but this process is generally supported by the management of the university, especially as a result of the Bologna Process.

Non-formal learning is not recognised in the Turkish higher education system, except for the work placements that are embedded within the course programme. Recently, a qualifications framework for HE and for the main fields of HE has been in force and this will be a source for implementation of the

programmes. A national quality assurance agency will soon be established and the qualifications framework is expected to provide hard evidence for the accreditation of course programmes.

## 6.4 UTILISATION OF THE EMPIRICAL FINDINGS ON EMPLOYABILITY – THE PERSPECTIVES OF HE MANAGERS AND POLICY-MAKERS

### 6.4.1 Contemporary use of employability data in the implementation of HE programmes[82]

As seen in the above subchapter, there are some differences among the DEHEMS countries concerning formal views on the implementation of HE programmes. This subchapter deals with other aspects taken into consideration when implementing HE programmes; this involves utilisation of the employability data.

Like before, this aspect of the implementation of HE programmes also varies among the countries. Based on the answers provided by the interviewees, we can distinguish between countries where utilisation of the employability data is already taken into consideration from those where this is still not done or is in the early beginning phase.

Germany and Italy are two countries where the implementation of graduate surveys and employability data utilisation already have a longer tradition. This is mostly done on a university (also on faculty- and specific study programme) level, however the interviewees from both countries also provided some examples of the implementation of graduate surveys and utilisation of employability data on regional and national levels.

Italian and German representatives reported different perspectives regarding the implementation and utilisation of employability data. While some reported specific examples, others provided a general picture of the issues discussed.

According to a survey of the German Rector's Conference conducted in 2006, about 65% of higher education institutions in Germany had conducted at least one graduate survey within the previous five years, however about half the institutions do not conduct graduate surveys regularly. The results of these surveys are mostly used for internal purposes[83].

In the German case, reports were also given about the initiative of INCHER-Kassel which in 2007 launched a cooperation project in which higher education institutions in Germany are working on building a system of graduate surveys close to decision-making, that are supposed to contribute to the quality development of higher education (course development, quality management, reaccreditation). INCHER-Kassel's role is to advise higher education institutions on the design of the study, questionnaire development and the analysis of the results. Currently, more than 60 institutions across Germany take part in the KOAB project (Kooperationsprojekt Absolventenstudien). The participating institutions survey all their graduates regularly about 1.5 years after graduation and again about 4.5 years

[82] Question: What data and hard evidence are considered when implementing HE programmes?

[83] At the German national level, the HIS GmBH has conducted graduate surveys regularly every four years since 1989, and includes a sample of about 6,000 to 12,000 respondents. The graduates are surveyed about one year after graduation and again about five years after graduation. The reported disadvantage of the survey is that it is not possible to conduct an analysis of individual institutions or study programmes since the sample is too small.

after graduation. INCHER-Kassel compiles a common data file from the surveys of the individual higher education institutions that forms the basis of comparative statistical analyses. Apart from the analyses on academic and professional careers, there is a special focus in the analysis on the impacts of study conditions and offers on the further life and career success of graduates.

If we move more to the institutional level of data utilisation – a representative of a German university made it clear that no direct impact of data implementation and utilisation on study programmes can be identified as the results of graduate surveys have a more informative character. Further, another higher education manager commented that the use of graduate surveys in the implementation of higher education programmes, as well as for accreditation and reaccreditation, is very limited so far.

As was evident from the answers provided by the representatives of Italian higher education management and higher education governance, there is no common knowledge on employability data utilisation and the implementation of graduate surveys among the Italian interviewees. A higher education manager reported there are many efforts among Italian universities to enhance specialised skills that match labour market needs. In his opinion, the universities are mainly concern with data collected from graduate surveys one and three years after graduation.

A representative of a higher education regional governance body was even more explicit when reporting on the importance of the STELLA project undertaken by nine regional universities. It was created in 2002 with the aim of setting up a data bank for monitoring the characteristics of study paths taken by graduates, graduate aspirations and their entrance to the labour market. The interviewee also underlined how universities in the region are attentive to regional demand as the universities promoted inter-university consortia aimed at evaluating the regional university market.

On the contrary, a representative of an innovation park whose task is to promote, develop and coordinate cooperation between higher education institutions and the world of work argues that data and hard evidence are not taken into consideration when planning and implementing HE programmes and that companies and higher education institutions speak different languages and do not interact. In his opinion, higher education institutions do not look at labour market needs and do not even update their course contents, and the data are only collected occasionally. Another representative of higher education governance admitting he does not know what is really considered in practice when it comes to the utilisation of data and hard evidence in the implementation of higher education programmes.

The most known case in Italy is Almalaurea which serves as a meeting point for graduates, universities and the business world and currently involves 78% of Italian graduates with the total number of curricula from 64 Italian universities amounting to more than 1,620,000 units. Almalaurea is run by a consortium of Italian universities with the support of the Ministry of Education, University and Research.

On the other hand, the representatives of HE management from Austria, Poland, Slovenia and Turkey reported that systems for the implementation of graduate surveys and employability data are not established in their countries and they therefore did not provide any examples of the contemporary use of employability data in the implementation of HE programmes.

An interviewee from Austria had a clear focus on the relationship between the HE on one hand and graduates' careers and employability on the other. The fact that experts did not mention the utilisation of empirical data on employability is a strong indicator that it lacks importance. It can be concluded that in general there is little data and no systematic collection. Some HE institutions conduct surveys,

but even at these institutions the data has limited relevance and does not play an important role in either designing or implementing HE programmes.

*In Poland*, it can be said that in general HEIs' curriculum process is not based on labour market requirements (or any other hard data), but on the resources of the HEIs. In recent years, there has generally been no space for data consideration due to the fact that the HE programmes implemented by HEIs have largely been based fully on the core curricula set by the ministry, which can also be confirmed by statements by two Polish representatives:

> *"Currently no such data are taken into account. HE programmes are designed on the basis of national standard minimum curricula with some intuition and general knowledge concerning the labour market situation. It is not based on any hard evidence" (HE manager),* and
>
> *"Currently HE is in a phase of large organisational and structural changes. The old curriculum was relatively artificial. The curricula were created according to the opinions of people who are experts in the given subject, and they henceforth created the curricula according to their abilities and needs" (HE policy-maker – ministry).*

Also another HE manager stated that only details of the programme content have been formulated on the basis of an internal discussion among HEIs' teachers and managers, without any use of hard data and evidence. The lack of use of the hard data in Poland is expected to change exponentially in a few years due to implementation of the new legislation on higher education. One of the most important aspects of the new legislation is the introduction of an obligatory graduates' survey. For many HEIs, the results of these studies may be surprising and might greatly influence the methodology and content of the curricula.

*In Slovenia* there is no unified system of gathering data and hard evidence on graduates' careers which would serve as a tool for different analyses on the employment of graduates, permeability, the quality of higher education study programmes and institutions etc. Data on the employability of graduates and other related data are gathered and analysed in several different places: by the Statistical Office of Republic of Slovenia, individually by higher education institutions (on their own initiative but this is not done to a large extent), the Ministry of Higher Education (in cooperation with the statistical office) and by few HE insitutions.

Most of the interviewees from HE management as well as from HE governance did not report any special measures being taken into account when implementing the study programmes or, as one interviewees from HE governance stated: "*Universities follow their graduates only to a limited extent. Some faculties are working on tracer studies, but most of them are not. Therefore, they don't follow where their graduates get employed, how it is with their employability, what are the trends of employment etc. Slovenia is very weak in this respect compared to some other countries."*

On the side of higher education governance, a representative of the ministry of higher education explained that when preparing the national programme of higher education they gathered data on how the previous national programme was implemented and also data on the situation regarding the major themes of the programme. They also made an overview of foreign education models – statistical analysis, international comparison of foreign higher education legislation, they invited foreign experts for workshops and thus also their opinion was taken into account when implementing new policies. The representative of the ministry expects that HE institutions should take empirical data and analysis into

consideration when developing and implementing study programmes, although no legislation makes tracer studies obligatory.

As reported by a representative of the Slovenian quality assurance agency, Slovenia took one step forward with implementation of the electronic higher education information system (EHEIS). In 2012 it was made publically accessible to all stakeholders of higher education. The system includes various data: data on the institution, data on study programmes, curricula etc. It is also available to pupils of secondary schools before they enrol in higher education.

As in Poland and in Slovenia, also the universities in Turkey generally do not have hard evidence with some exceptions of small universities that have recently been following their graduates and obtaining feedback from them on employability, skill needs. An HE generalist from Turkey stated that "*the state universities do not worry so much about quality assessments because of the lack of a national accreditation system as well as the very high demand for state universities due to their low fees*". However, some universities collect data to follow their alumni but this is not done widely on the national level.

One of the HE generalists from Turkey reported that the implementation of higher education programmes is based on meetings, seminars and working groups in the universities in different fields of study in collaboration with the world of work, certificate programmes, graduate follow up in some universities, economic indicators, results of the Turkish Statistical Institute, which are all sources for the faculties' departments, universities and the Council for Higher Education when it comes to the implementation of higher education programmes in the country.

To conclude the subchapter it can be said that there are differences in utilisation of employability data and implementation of graduate surveys. There is Germany with already some years of tradition in this field. The interviewees reported on the utilisation of data and implementation of surveys on different levels, from university to national, however this is not done regularly and the data serves more as informative parameters.

The tradition of data utilisation in the implementation of graduate surveys was also noticed in some cases of Italian interviewees; however, they did not share the same opinion on the topic – some showed great knowledge but some admitted they do not know much about the use and implementation of employability data.

The representatives of the other three countries – Poland, Slovenia and Turkey – reported that the data utilisation in the implementation of graduate surveys is not systemised and does not play a big role in the running of higher education study programmes.

### 6.4.2 Description of concrete actions to consider the evidence[84]

The following subchapter provides the examples on concrete actions to consider the evidence provided by the representatives of higher education institutions and higher education governance bodies. The examples are in line with the extent of the implementation and utilisation of employability data in particular countries – the German and Italian representatives reported more concrete actions while the representatives from Poland, Slovenia and Turkey could not describe any specific actions.

[84] Question: Can you please describe concrete actions involving the consideration of evidence?

*Austria:* As an institution occupied with different HE domains, the Austrian Agency for Quality Assurance has different approaches to the whole topic of careers. It conducts graduate surveys and three years ago it took a look at the occupational relevance of bachelor studies. Further, in the course of its quality audits it examined how universities deal with employability when developing/enhancing their curricula. The interviewee from the QA agency was critical that there is no systematic survey system (although admittedly some HEIs conduct some research on their own).

One expert (HE generalist) reported that the ministry conducted a graduate survey but all other capacious surveys are unfortunately not conducted in-house. In general, he stated that universities should be responsible for conducting surveys.

A representative of a career centre at the University of Vienna reported that the institution conducts student tracer studies (time from graduation to the first job; first income) and provides the information (regarding employability) to HE managers, i.e. the respective deans. Also high school graduates are informed about the different studies in order to help them decide which study to enrol in.

By and large, the fact that most experts did not mention empirical data on employability leads to the conclusion that evidence generally receives little consideration in either HE institutions' activities or HE governance and policy.

*Italy:* In Italy the interviewees provided several examples of evidence being considered, although there were more concrete examples from representatives of higher education governance than higher education management.

An interviewee from higher education management reported that where evidence is taken into consideration, there is a strong charismatic professor to lead it. For example, spin-off projects are always underpinned by a charismatic professor, involving his best students and directing them towards a profession. Some concrete actions are undertaken regarding evidence but they are neither systemic nor institutionalised. They are merely driven by professors and their own individual attitudes.

A representative of regional higher education governance referred to the VULCANO service (On-line University Graduate List with Curricula Vitae for Companies) when describing concrete actions involving the consideration of data. The VULCANO service is based on a web platform where graduates, graduating students as well as companies can register. The web platform is in practical terms a sort of 'display case' for students and companies and facilitates both supply and demand in the labour market. This process is underpinned by research criteria (and filters) related to the particular profiles offered/required.

VULCANO was set up in 1996 in order to assist the swift employment of graduated students. Nine universities in Lombardy take part in the completely web-based service which is intended for:

- graduates, school-leavers, research doctors and specialists seeking employment by means of advertising their curricula vitae to a broader range of the public;
- companies in search of qualified personnel so as to shorten the process, i.e. the times involved in seeking the required information; and
- universities looking for a complete set of information.

A representative of an Italian statistical office provided another example of concrete data utilisation. He referred to the "*Indagine campionaria sull'inserimento professionale dei laureati*" (http://www.istat.it/it/archivio/8338), which is a survey about the working conditions of graduates three years after obtaining a degree. The survey is a source of data for a comparative analysis of job

market returns of different degrees and an instrument to assess the effectiveness of the university system as a whole. The first round of the survey was carried out in 1989 and the 8th round was completed in 2011, with the data being currently distributed. The survey involves roughly 62.000 students identified in a two-stage procedure. The questionnaire used investigates five areas: the curriculum studied and qualification activities, work experience, job search, mobility, individual and family background characteristics.

*Germany:* The range of concrete actions regarding the consideration of evidence includes the following: a short report on the results is offered to graduates who participate in the survey (by e-mail or mail); daily press addressing topics such as unemployment, income, satisfaction with the study programme; the university website; scientific work (PhD and *Magister* theses) which is done on the basis of the results of graduate surveys; intense networking activities etc.

One of the interviewees from HE management was convinced that graduate surveys are important to the relationships of graduates with their HEI. Graduates have the feeling that their HEI is still interested in them after they leave the HEI. Background information: graduates who participate in the survey are offered to get a short report on the results around one year after the survey (by e-mail or mail). Further, there is a practical aspect: the addresses of the graduates are collected and forwarded to the Alumni Association of the university.

Then, the interviewee underlined that the local media (daily press) is highly interested in the results. Roughly once a year, articles appear which deal with selected results and aspects of the graduate surveys such as unemployment, income, satisfaction with the study programme, and whether or not graduates stay in the region. In the interviewee's opinion, this is quite important for the university since one of the main results is that it is worthwhile studying. Further, there is information available on the university website. Sometimes, articles in the HEI's magazine deal with graduate surveys.

Another interviewee from HE management reported that the local media (daily press) was informed that graduate surveys had been undertaken at this university. In addition, one or two specific results were forwarded to the local press, e.g. how students finance their studies, and there was a longer article in the university magazine.

Moreover, the interviewee mentioned an external request: a bank wanted to know where and in which fields graduates work after their graduation. The results – presented in the form of a map – were quite surprising because most graduates stayed in the city (against the widespread belief that young people come to study but leave after they graduate). The university is involved in intense networking activities with regard to teacher education, e.g. with schools in the region. The interviewee presented specific results with regard to teaching studies at meetings of stakeholders of teacher education in the region.

Finally, the interviewee pointed out that there are associations such as "friends of the university" that want to have information on the transition to the world of work of graduates. Further, these kinds of associations or other university institutions were looking for information on graduates in the framework of events such as the "information days" of the university.

An HE manager from a German university underlined that "*graduate surveys only make sense if the results of graduate surveys are used for research*" and emphasised that it is necessary to work further with the data (scientific validation, reports and presentations).

A representative of quality assurance management at one German university provided an example of the use of employability data utilisation in the department of cultural studies where during develop-

ment of the questionnaire there was firstly a very low level of interest in a graduate survey from the side of the departmental members. However, the presentation of the survey results triggered a lot of interest from the side of these colleagues and, as far as the interviewee is aware, the results are really taken into account by the faculty. One example is a newly developed advanced training programme at the department that derived partially from the graduate survey results.

*Poland:* As mentioned, it is hard to find any examples of the impact of hard data on the study curriculum. A small number of higher education institutions have taken steps to find the optimal approach to adapt to the needs of the labour market. At the University of Warsaw and the Warsaw School of Economics regular meetings are held with employers and companies. These meetings are organised by the Careers Centres, as well as the Foundation for the Development of the Education System. One should note that this is a grassroots initiative – it is not on the national scale.

A higher education generalist reported that until now large institutions have aimed to gather data on their own about the creation and success of graduates. There are not many of these institutions although these studies usually look as follows. Only students are surveyed on how they experience the HEI, and this in turn influences hiring decisions with the HEI's staff. This system however does not create much change but the aspects with the potential to do more for the curricula are the studies on graduates one or two years after their graduation.

A representative of higher education management reports that every department and specialisation has a Curriculum and Methods Committee whose task is to gather all possible information, first of all from graduates and, secondly, from employers and on this basis create tools which will advance the quality of education. Each of these curriculum bodies consists of approximately eight members – experienced and practical experts with different backgrounds.

*Slovenia:* As elaborated in previous chapters, in Slovenia there is neither a unified system of collecting data on the employability of graduates nor a common practice of data utilisation. However, some institutions have already established different ways of providing data that are used in the implementation of higher education programmes.

An interviewee from a business faculty (representing HE management) explained that, besides empirical data, the faculty also collects data from the Assessment of Learning where the measurement involves a very complex system. Firstly, the objectives of every study programme are determined and then they measure specially defined points to see if the objectives of the study programme are reached. In this framework, the orientation group discusses the implementation of study programmes. A special measurement system is given to every student – for example, when someone has a diploma thesis defence they measure their presentation abilities etc. They assess this on a scale from 1 to 5 which gives an average for all students. If a student is below-average, they has to improve specific skills. This is done with the cooperation of the centre for counselling and student development, free lectures and seminars, workshops on issues where students have problems. At the same time, they make corrections to the subject itself. Besides the student surveys they implement, this database allows yearly conclusions on evaluation of the study programme. First, they determine the objectives of study programmes and later parts of study programmes, seminars, diploma thesis where they measure specific skills and experiences.

A representative from higher education governance provided an example of the preparation of a national programme of higher education. First, they gathered data on how the previous national programme had been implemented and data concerning the major themes of the programme. They also made an overview of foreign education models – statistical analysis, international comparison (over-

view and analysis) of foreign HE legislation, invited foreign experts to workshops – their opinion is also taken into account when implementing new policies.

*Turkey:* The interviewees in Turkey provided some short examples of concrete actions to consider evidence. A representative of a Turkish university reported that some universities collect data about student satisfaction but this is not done widely throughout the country or on the national level. Another interviewee reported that some universities receive feedback from their graduates through surveys, meetings or other universities collect information from stakeholders before the implementation of study programmes.

### 6.4.3 Impact of the employability data on HE activities[85]

The interviewees did not provide any extensive answers about the impact of the data on different aspects of the higher education curriculum. As is evident from the responses, the accreditation and reaccreditation of study programmes are two aspects of higher education curricula most frequently mentioned by the interviewees and they are impacted by employability data. This was reported in Germany, Poland and Slovenia, but the Italian and Turkish interviewees did not mention that such data have any impact on higher education curricula.

In Germany, besides the impact on the (re)accreditation of study programmes, the results of graduate surveys are also used to improve the quality of teaching and learning, practical training for students on key competencies, cooperation with the career service centres of the faculties in terms of career counselling and coaching.

The Polish interviewees reported that, despite the lack of employability data utilisation, the Accreditation Committee is one of a few institutions with access to a wide range of data – mostly of a qualitative type, offering a holistic view of the HE system. However, according to the interviewees, this asset is somewhat wasted. For instance, employers are not aware of the results of the Committee's activity. However, some higher education institutions have started tracing their graduates' career paths. Even these initial activities have had some positive impact. The results of surveys may be used to change programmes, teaching modes or career counselling.

As mentioned, data on graduates are also in use in the Slovenian national agency for quality assurance in higher education but they use data from the newly established electronic higher education information system which involves different indicators used in the (re)accreditation of study programmes and does not include data on following graduates' career paths.

The Italian and Turkish interviewees did not provide any evidence on the impact of employability data on higher education curricula, although it cannot be said that they are not taken into account as it is possible that this issue was simply not mentioned during the interviews. One of the representatives of higher education management only mentioned that feedback from the alumni and the world of work has some impact on implementation of the higher education curriculum but that impact is very small.

[85] Question: Which of the following aspects of HE curriculum, if any, are impacted by the data and hard evidence mentioned in the previous questions?

### 6.4.4 Future developments of links between the labour market and the HE curriculum[86]

Considering the future developmental needs of links between the labour market and the HE curriculum, especially from the viewpoints of employability data utilisation and the implementation of graduate surveys most interviewees from the DEHEMS countries shared a similar opinion – stronger connections should be established between higher education and the world of work. And one of the means for providing this connection should also be graduate surveys. In the interviewees' opinions, they should also play a bigger role in the implementation of higher education programmes.

The German interviewees pointed out that graduate surveys are essential for the implementation of HE programmes. They serve as a very helpful tool for self-monitoring and feedback for the higher education institutions as regards the quality and composition of the study programmes, including practical phases, and are thus an important tool for the development, quality improvement, accreditation and reaccreditation of study programmes on the Bachelor and Master levels. Results of graduate surveys with regard to study programmes that do not prepare for a special occupation are considered to be extremely interesting for getting information regarding questions such as: Do graduates find a first job? In which fields do graduates find their first job? Is there a need for the graduates of this study programme?

Polish representatives of higher education management and governance all agreed that there is a need for better knowledge of labour market conditions among higher education managers. However, some interviewees argued that the situation could be improved as well if employers were more aware of what is going on in the education system. The flow of information and data between employers and higher education institutions would thus be beneficial to both sides.

All interviewees from Poland also agreed that the proper way of building a curriculum would be to base it on labour market data regarding the needs of employers. For example, an analysis can be carried out by professional labour market researchers. They also raised an idea about taking labour market needs into consideration to work out narrow specialised study programmes based on the needs of particular firms. With these firms, higher education institutions could sign bilateral contracts and establish long-term relations. In this way, higher education institutions would be able to precisely shape the qualities an employer requires. An example of this process reported by an interviewee looks as follows: the employer formulates his specific requirements for the skills and knowledge required of an entry-level worker. The curriculum is then formulated and a study programme opened. Programme graduates are then employed by the firm, which once again is able to judge whether the curriculum is adequate and what is still lacking. The HEI then alters its curriculum appropriately to cater to these points. At first glance, it would appear that this bilateral approach is to a company's advantage and at the cost of the HEI. However, HEI experience suggests that graduates really can benefit from the programme and gain skills and qualifications which are generally desired in the labour market, and most likely not only in the company participating in the programme.

In the case of Slovenia one of the interviewees firstly pointed out that the system of gathering data on graduates and their career paths should become unified. So far, this data is gathered in several different places where it is also difficult to access it. This shortage currently influences different stakeholders: decision-makers, researchers and future students.

A Slovenian interviewee from the ministry of higher education stressed that the utilisation of employability data is very important, especially when preparing new study programmes. But the HEIs should

[86] Question: How should/could this be done?

not simply follow the current labour market needs as they change faster than the study programmes. There is also no forecast in Slovenia of future developmental needs so HEIs cannot take these changes into account. In the interviewee's opinion, another problem in Slovenia is that there are many small enterprises where it is more difficult to predict their needs. Therefore, HEIs should offer more courses on entrepreneurship, self-initiative etc.

Most of the interviewees from Slovenia thought it should be the responsibility of the universities to gather these data and also take trends in the labour market into consideration or as one interviewee put it: »*Higher education institutions and universities should be more interested in providing information on the quality of their study programmes and therefore responsible to gain this information*«. He shared an opinion that employability data »*should be more emphasised in the higher education system and somehow also connected with the financing of higher education institutions*«. The universities should also be aware of the actual matching of education gained at their institution and job positions occupied by their graduates.

One of the Slovenian higher education experts pointed out that evaluations should also be made among employers and students but this would require special studies and should be established by the individual institutions sending graduates into the job market.

Also, an Italian representative stressed that higher education institutions are missing an attitude to the external environment and a wide and strong relationship network should be established with companies. So far, higher education institutions strongly maintain a self-evident attitude or base their choices on "internal power games".

Another interviewee from an Italian higher education institution strongly stressed the on-going construction of a dedicated website containing information about the assessment of programmes' quality, job orienting information per programme, internships and job offers. It represents the main tool for enhancing graduates' employability. It is a project of the central office for student assistance. This office shall improve on this matter and, once the website is fully working, keep it updated and actively find companies offering internships and jobs. It is also appointed for any activity related to job orienting and placement. In more detail, it is in charge of planning, organising and implementing courses and workshops on core skills, events such as career days and recruiting days, participation at other national events such as BIP (the international fair of placement – Milan) and any activity considered to enhance graduate employment and career opportunities.

The Turkish interviewees agreed that universities should take account of all the feedback from different stakeholders and develop their study programmes according to the needs of society and the world of work. One representative of a higher education institution wished that the supply-demand balance could be calculated as that would bring important data to support the implementation of higher education curricula.

## 6.5 EMPLOYERS' POSITION ON THE ROLE OF HE INSTITUTION IN PREPARING GRADUATES FOR WORK

Among the category of employers, the DEHEMS interviews encompass a wide variety of factors ranging from a representative of employers to professional associations and chambers. We must note, however, that the majority of interviewees mainly represented fields of applied sciences while only a minority represented the social sciences.

The positions expressed vary from country to country on the basis of the existing characteristics of the higher education system and of the labour market; yet – in general – employers tended to express the need to rely more and more on hard evidence (surveys collecting data on graduates' competencies as well as the labour market situation) and on closer collaboration with the HEI. They also had coherent ideas on how HE programmes should be implemented and concrete expectations regarding the desired situation in the world of work.

Across the countries, the different employers are well aware of the characteristics of the different HE programmes which are preparing students for future employment in their organisation/s and are very interested in playing an active role in ensuring an overall match between study and occupational area (person-job fit). Although opinions might slightly differ depending on the country context or the field of study (e.g. applied sciences versus social sciences), most employers share similar concerns regarding the following issues:

- the need to balance scientific and practical skills in HE programmes;
- the need to address the development of both soft and hard skills through the HE curriculum;
- the need to acquire more actual work experience during HE studies;
- the mismatch between the demand and supply of jobs and the lack of skills required by other 'less attractive' jobs as a result of uninformed study choices;
- the (sometimes) over-specialised curriculum etc.

Therefore, the interviewed employers made several suggestions for the implementation of HE programmes and often thought they should be more (formally) involved in planning and delivering the HE curriculum. They are also very supportive of the use of hard data concerning HE and HE graduates. Specifically, they tend to see the use of such information from a dynamic perspective and identify several interrelated beneficiaries of the feedback provided by data collection mechanisms (such as graduate and labour market surveys): *Students* – who will be better informed about choosing a specific field of study and further on about how well they match a certain profile; *the HEI* – which would be able to inform curriculum improvement actions; *Employers* – which would be able to use the data for recruitment but also for providing feedback to the HEI.

### 6.5.1 Employers' position on the role of HE institution in preparing graduates for work

#### *6.5.1.1 A better match between the demand and supply of jobs and better qualifications*

Another issue that became apparent in most contexts was the concern that the supply exceeds demand in some domains while it is lacking in others. This is complemented by the fact that some graduates are at times insufficiently prepared. The issue of supply exceeding demand was particularly raised by the interviewees in Austria who noted that *"The truth is that we shouldn't produce more graduates than we need"* but this was supported across the countries. Employers consider that both the large supply in some domains and the level of preparation could be addressed by *tightening up the entry*

*examinations*. More selective entries based, for instance, on assessments which combine quantitative and qualitative data (grades and interviews) are thought to be solutions leading to the diversification of study programmes and, in the end, to a better balance between supply and demand.

Moreover, regarding the level of preparation, one of the Austrian interviewees also pointed to the danger of *overspecialisation* in some programmes at an early stage (during bachelor programmes) and noted *"I wouldn't be surprised if there's a study programme for marketing of the left sneaker".*

Further concerns about graduates´ level of preparation were raised within the context of implementing the *Bologna Process*. Although across the countries employees are overall satisfied with the Bologna Process, some uncertainty regarding the competencies of the new wave of graduates is noticeable. In Slovenia, for instance, one interviewee described the uncertainty surrounding the expectations of graduates of Bologna study programmes and noted that is quite difficult to know what to expect from such graduates and how to compare them with graduates from the old study programmes. This debate is also present in the Austrian and German contexts. Some Austrian interviewees, when referring only to the 3-year bachelor structure, tended to think that with the new structure students do not spend enough time at school (e.g. *"Politicians say they want students to study as fast as possible in order to save money and at the same time demand the best quality… that doesn't fit"*). In the German context, some interviewees made the point that this structure might work only if the graduates carry out a "dual study programme" in cooperation with the company.

Apart from the abovementioned desire to be more involved in HE curriculum development and better informed about prospective employees, across all countries employers seem to share similar concerns and would like to see some improvement in HE programmes and graduates' competencies concerning several aspects: *a balance between theoretical, practical skills and work experience* in HE programmes, the development of *both soft and hard skills* through the HE curriculum, *a better match between the demand and supply of jobs, better qualifications.*

#### *6.5.1.2 The centrality of work experiences*

In most countries, the interviewees pointed out a mismatch between the content of HE study programmes and the occupational area. Graduates often enter the workplace without any work experience. In many cases, this implies that further training should be carried out at the workplace. Addressing this issue, employers would like to see an improvement of the abilities of HEIs to provide training which combines theoretical and practical knowledge and wish that graduates would enter the work field with some work experience already acquired during their study: "I think it's alarming that someone can graduate in a study without ever having been in practice". This seems to be mostly attainable through work experience acquired at a potential employer institution via internships and joined research projects (writing a thesis in cooperation with the employer's organisation). However, employers show some concern about how well or how frequently these practices are carried out in the DEHEMS countries.

For example, as well as their colleagues from the other countries, the Austrian employers highly support cooperation structures between the HEIs and companies especially in the form of internships followed by research collaboration. As one of the interviewees highlighted, they consider that this collaboration should become more intense, students should be trained to become more proactive (e.g. in order to independently seek contact with companies, project work) and the shared work should provide a basis for the reflection of all actors involved: "The HEIs should force students but also companies to reflect what went well and what did not regarding internships/projects. We need more practical

relevance in the education and practical experience. Do a reality check". A rare example of best practice is provided by one of the Austrian interviewees who considered that the practice of his organisation (employing bachelor graduates for a period of time before they continue with their master-level training) is very successful in building graduates' work experience.

German employers voice similar views: "*Companies hire based on skills. Professional experiences and practical competencies are decisive*". They also considered that a master thesis written in collaboration with the employer and internships are seen as major tools for providing students with work-related experience. They further indicate that these forms of collaboration do not have the sufficient length at the bachelor level when compared with higher levels of education.

The Italian interviewees agreed that "*Students who have previous work experience and internships find jobs that are more consistent with their profiles"* but also noted some differential effectiveness for such modules depending on the field of study: "*internships are most effective in the domains of medicine and applied sciences – where there is a closer link between theory and practice*".

In the Polish context, "*experience which is so hard to attain"* is *"valued much higher than education"* by employers. Nevertheless, acquiring this experience seems to be problematic in Poland*: "job placement (internships) programmes seem to be a missed opportunity".* The interviewees indicated that these programmes have yet to be organised and could benefit highly from closer cooperation between employers and the university as well as potential governmental incentives rewarding such initiatives.

In Slovenia, employers also noted that "*The graduates would be more employable if they have additional knowledge which is connected to the job position"* and support prior training in the work field which seems to be needed by graduates. The Slovenian case points out a particular asset of such experience which could help graduates make a softer transition to the work place: developing an *appropriate attitude to work* and *working values* already during the time of their study programme. Expressing a shared opinion in the Slovenian context, one of the interviewees noted: "*Students usually come to apply for a job with very basic knowledge ... they don't have any knowledge and information about the company, but on the other side they have high demands and expectations concerning the salary and benefits. The graduates should be aware that we are not waiting for them with our hands opened and they should put in more effort at the beginning, only a diploma is not sufficient for a company."*

Also in Turkey, research work and practical training are highly valued: *"in our recruitment process, generic competencies and internships are crucial"* or "*I think for all kinds of occupational groups, internship periods and varieties should be increased*". However, with a few exceptions the interviewees mentioned that "*students have problems getting practical training in the company".*

#### *6.5.1.3 Focusing to soft skills*

Across all the DEHEMS countries employers unanimously agreed that there should be a balance between theoretical and practical knowledge and that the HE curriculum should aim to develop both hard and soft skills. In fact, they could not have stressed more the importance *of developing soft skills* in HE programmes. They often thought that, next to acquired work experience, soft skills outweigh hard skills in the recruitment process and in the work field: "*In the process of pre-recruitment, the sum of these skills is even more important than just the marks of the final degrees"* or "*With experience and motivation you can make up for a lot"*.

Therefore, although in all countries employers are overall satisfied with the level of theoretical knowledge provided by the HE degrees, they consider that the knowledge should be complemented with hands-on experience at a future work place and a curriculum focused on developing soft skills. However, they note that in most cases the study programmes (especially the bachelor ones) do not contain anything beyond a direct basic education. They would highly encourage HEIs to focus their curriculum on the development of soft skills. Due to the high level of agreement here, we will not differentiate the topic depending on the country context but summarise the desired skills mentioned with a high level of frequency in all the countries:

- *social and communication skills,*
- *job self-efficacy,*
- *adaptability,*
- *flexibility,*
- *teamwork,*
- *leadership skills,*
- *intercultural competence and sensitivity (preferably acquired via international experiences),*
- *foreign language skills,*
- *ability to engage in conflict resolution,*
- *ability to proactively use results of an external evaluation,*
- *lifelong learning skills,*
- *entrepreneurship,*
- *a positive work attitude etc.*

#### *6.5.1.4 More coherent and formalised collaboration with HE institutions*

A strong opinion unanimously shared by interviewees in all countries is *the need to strengthen and formalise the collaboration with HE institutions,* with the aim of creating more possibilities for aligning the labour market demands with the content of HE programmes. In all countries, employers would like to be more involved in curriculum development and career counselling at an HEI in a more formalised manner (e.g. by having formal advisory functions in the HEI advisory boards).

Nevertheless, the interviewees give several examples of good practices that take place in a less formalised manner. For instance, in the Austrian context, several channels of collaboration were indicated, including cooperation with HE career centres, teaching at HEIs, thesis coordination, offering traineeships to students, joined research projects with the HE and sometimes even involvement in designing the curriculum. Also in Germany, all of these forms of collaboration were mentioned along with some cases in which employer representatives do have advisory functions in the HEI.

The difficulty of collaboration is noticeable from the statements by the Italian employers, although this situation seems to be mainly characteristic of the domain of teacher training (e.g. other domains such as economics seem to have stronger cooperation systems in place). The interviewees from the teacher training field noted a lack of collaboration between different universities and universities and the schools where students do their internships. This lack of collaboration is, in their view, a result of "*an overall structure of the system by which the Ministry of Education indicates general lines but avoids any imposition on specific issues. There are a number of institutions, having authority at different level of HE (national, local or single universities) which release decisions on curricula and related issues, often overlapping each other".*

In Poland, most interviewees seem to strongly agree that "*the expectations of the employer should be taken into account more during the shaping of the curriculum".* One of the interviewees suggested that

"*the HEIs as well as the Ministry of Education, namely those that create the main curricula, can invite experts for consultation and debate on how HE curricula should look".* They also seemed to stress the need for more intense forms of cooperation (e.g. visits, internships).

Although differences are notable depending on the profile of the employer interviewed, the Slovenian testimonies also reveal examples of good practices such as intense collaboration between university professors and co-mentors in companies, employer involvement in student practical training and providing scholarships etc. However, great need for better organised structures of collaboration and a wish to contribute much more to curriculum development are noticeable.

In Turkey, the situation seems to be similar: "*We have cooperation with the universities in the field of internships, practical work, applicative projects, direct recruitment from schools, and cooperation with career centres"* but *"We would like to be part of the curricula development mechanisms in the universities".* Turkish interviewees also noted that "*there are some barriers between companies and universities such as the long bureaucratic process in the universities, the lack of enough funds"*. An important distinction in this context is between `foundation universities` and `state universities`. As one of the interviewees stated, "*Foundation universities give more importance to collaboration with the world of the work than the state universities do. I guess the mentality of the foundation universities is closer to the market system than that of the state universities".*

### 6.5.2 Employers' position on utilisation of hard evidence of graduates' employability

As indicated, the employers' main concerns relate to the issue of the person-job fit. Therefore, overall, they see great value in using hard data on HE graduates and the labour market situation and in more coherent and formalised collaboration between employers and HE institutions which in their view provides an immediate 'reality check' of the relevance and quality of HE programmes.

Concerning the use of hard data on HE graduates and the labour market situation, the employers went further by specifying a greater level of detail and multiple foci of such surveys such as evaluating HE programmes (with the goals of benchmarking and accreditation), evaluating student competencies during their HE study programme and further following their success after employment. However, from the different testimonies received, the actual existence and use of such hard data seems to be problematic.

In countries such as Germany and Austria, the interviewees agreed that surveys collecting data on graduates' competencies as well as the situation in the labour market are both conducted and used. They certainly provide information on the development and improvement of study programmes. However, they point out some limitations of the data such as low response rates, an insufficient level of detail, results that are highly dependent on the company conducting the survey, "huge differences in the way HEIs deal with the results of graduate surveys" etc. Based on these shortcomings, several areas of quality improvement were suggested as summarised in the opinion of one of the German interviewees: "Graduate surveys should be conducted on the basis of standardised instruments, they should be representative, they should implement the panel approach, and they should include the European perspective. And this kind of feedback is important for both sides: for those who are teaching (universities and faculties) and for those responsible for the speciality training". Further, for achieving the desired impact employers in these countries seem to think that such surveys should be publicly available "The results of graduate surveys should not only be used within the HEI but also in the general public".

The situation is different in countries such as Italy, Poland and Slovenia in which "it is very difficult to survey graduates' careers". The Italian interviewees stated that "Surveys are not implemented and those that do exist are not taken into consideration with regard to the establishing of programmes and courses: the updating of programmes is only due to technical issues". They also drew attention to a basic structural problem which poses obstacles to any data collection attempt (an example is the initiative of the Chartered Accountants Association), specifically the state regulations on individual privacy which make it difficult to ensure sufficient and reliable data as well as a further follow-up of the subjects.

Poland seems to show a slightly similar situation at least in terms of the availability and use of such surveys. The Polish interviewees however stressed the importance of such data and subscribed to the general position regarding the need for strong panel studies and objective criteria for assessing graduates' labour market success (e.g. a graduate's salary, promotion steps during their career path).
A similar view was shared by the Slovenian representatives in this survey who also noted with disappointment that such data is not used but necessary. One interviewee voiced his unsatisfied interest in such data by providing a very concrete example: "Recently it was said that there are too many graduates with social sciences profiles and on the other side it is said we need more engineers. However, nowhere is it written how many of them we need nor how to get them". According to the Slovenian testimonies, "the data which should be used in the implementation of HE study programmes should include data on the employability of graduates in the labour market and the labour market's needs and there should be a special emphasis on future trends in the labour market". Although some showed concerns regarding the (logistic) implementation of such surveys, others highlighted potential initial sources of information such as the database of the Employment Service of the Republic of Slovenia, the OECD etc.

Once again, this situation is also reflected in the Turkish context where, although some exceptions were noted, all respondents agreed that the "faculties don't systematically follow their graduates to obtain feedback. Therefore, they do not have any data about how the curricula affect the graduates' working competencies". Some Turkish interviewees made the point that the situation could be improved if such a mechanism could be used as a criterion in accrediting HE programmes.

## 6.6 TRADE UNIONS' POSITION ON THE ROLE OF HE INSTITUTION IN PREPARING GRADUATES FOR WORK

Within the DEHEMS project, representatives of eight trade unions were interviewed across the countries, encompassing a wide variety of positions. The trade unions pointed to the need for the greater involvement of social partners in the planning of HEI activities because their daily contact with employees and – in general – with the world of labour puts them in the position of knowing about the most current needs of future and present workers. In general, the social partners lament the very scarce use of hard data on graduate labour market outcomes as a means for devising and organising university curricula.

These considerations are shared across the countries and are coupled with a relatively sceptical assessment of the effectiveness of the Bologna Process and the opportunities it has supposedly brought about for the younger generations.

### 6.6.1 Trade unions' position on the role of HE institution in preparing graduates for work

As indicated, trade unions considered the existing levels of consultation between HEIs and social partners as generally insufficient, and stressed the need for HEIs to use both formal and informal processes of consulting stakeholders when planning study courses and programmes.

For example, in Turkey the process of the definition of HEI courses and programmes is very top-down and depends on targets specified by the ministry, the Higher Education Council, and university leadership. The interviewees considered that these indications are often bureaucratically applied and are not based on sufficient evidence of labour market conditions and perspectives.

In Italy, there is no integrated and coordinated activity for HE curriculum formulation. Decision-making processes and decisions about it are not unique at the national level. There is a lack of coordination due to the Ministry of Education's attitude to avoiding impositions. There are a number of institutions with authority at different levels of HE (national, local or individual universities) which issue decisions on curricula and related issues, often overlapping each other.

Also in Poland, the lack of cohesiveness and strategy of acting between different institutional bodies is regarded as a major limit. The interviewees indicated that schools decide on what they educate, without collecting information about the labour market, but simply according to the demand for their classes. Thus, in practice, the trend regarding a certain subject in high school dictates what is taught in HEIs. Still, the interviewees underlined the difficulties related to the difficulty of having hard evidence and data available for the creation of university curricula.

An exception is provided by Germany. Indeed, the interviewees pointed out the existence of an articulate consultation process that takes the indications of the social partners in the HEI accreditation process into account. Specifically, it is possible to distinguish three levels of involvement in the accreditation of study programmes:

1. Two seats on the Accreditation Council are foreseen for trade unions. One of these positions is filled by the organisation of the interviewee.
2. Accreditation agencies: this trade union is a member of one accreditation agency that has a special member structure.
3. Accreditation process: this trade union has together with other trade unions and stakeholders founded a network of experts and reviewers ("*Gutachternetzwerk*"). This network places voluntary experts for accreditation processes.

### 6.6.2 Trade unions' position on utilisation of hard evidence of graduates' employability

In general, the TUs aim for a more pervasive consultation process that is able to take into account their knowledge of the labour market. Indeed, trade unions are instrumental for observing the excess demand and supply of labour in different sectors. In addition, all the problems in a sector are observed by labour unions. In this respect, an important point is that trade unions are one of the relevant institutions with an idea about the qualifications employees need that should be attained during higher education.

In different countries the focus on the activities that could be carried out and the elements that are to be highlighted varies slightly depending on country-specific challenges.

For example, in Poland there are indications pointing to the existence of an issue related to the lack of hard evidence and data in the way education translates into success in the job market. The interviewees

suggested the reason behind this problem is the excessive fragmentation of labour market policy-making processes. Due to this, currently in Poland many local labour market policies are in place. In every county a local employment and labour market body exists. After decentralisation, the cohesiveness of the country's labour market policy completely broke down. Moreover, employers lack basic information about the characteristics of the study programmes renewed through the Bologna Process.

Thus, the trade unions seek labour market policies of a wider scope that encompass the needs of the entire country and allow for a more coordinated development process. The collection of hard data, making information on the characteristics of HEI courses and programmes after the Bologna Process available to employers, and relying on TUs' knowledge of the labour market and employees' needs should be relevant elements of an improvement strategy.

In Turkey, there is evidence of a dual process. On one side, the state universities follow paths that depend on the bureaucratic indications, while private universities are more responsive to market needs. Yet, the interviewees suggested the reason for the strong relationship of private universities with the world of work or employers is that the private universities perceive higher education or universities as a tool to supply labour to the job market rather than places to produce knowledge and science. Thus, it would be important to mediate such positions in order to guarantee scientific quality and the effective usability of the degrees.

In Italy, the interviewees regret the lack of a culture of commitment and collecting upstream data, which should be overcome. A national statistical office on graduates' employment involving all stakeholders should be set up, and it should be based on a managerial attitude, flexibility, effectiveness and efficiency.

The German interviewees, instead, indicated that "*graduate surveys as an instrument are not taken as seriously by accreditation agencies and HEI as is wished. Implementation of the results of graduate surveys for the development and improvement of study programmes is wished for but currently not done."* This consideration suggests the existence of a formal data collection process, but hints at the possibility that the results of these surveys do not translate into practical consequences. Thus, there is a call for the opinions of graduates to be more substantially used as a real source of information as they are the ones who convey their educational experience and convey it to the business world.

## 6.7 STUDENT ORGANISATIONS' POSITION ON THE ROLE OF HE INSTITUTION IN PREPARING GRADUATES FOR WORK

On average, the representatives of the student organisations involved in the interview process are individuals who appear to be well aware of the characteristics of the HEI in which they study, have strong opinions on what they expect from the future, and are eager to proactively contribute to development of the system. Especially the Slovenian, Italian and Turkish students appear to be concerned by the growing unemployment rate of young people and the vulnerability of those looking for their first employment, which is the case for many of them. For this reason, they feel the need to be heard as clients and relevant stakeholders of the HEI. Moreover, they are concerned about how much the HEI can provide them with hard and soft competencies, which are both necessary for succeeding in the job market.

### 6.7.1 Students concerns on the role of HE institutions in preparing graduates for work

As indicated, the students' main concern is about what will happen when they graduate, and their considerations on the effectiveness of using hard information on student employment results for HEI management reflect this topical issue. For example, a German representative pointed to the existence of substantial differential effectiveness, which depends on the subject area under consideration. In fact, implementing the results of graduate surveys in the development and further development of study programmes is likely to be most effective in subject areas such as engineering and hard science where the competency profile of graduates is pre-defined by classical occupations.

In these fields, students have a relatively clear idea of the professions in which they will work after graduation. The situation is substantially different in programmes of the arts and humanities. In fact, the professional opportunities offered to students of these subjects are currently decreasing, especially with respect to traditional occupations. If students are to succeed in the job market, they need new skills and possibly new jobs. If HEIs are to be at the forefront in supporting their students in this quest, they need to be attentive to job market trends and emerging opportunities. Thus, in these subject areas, crucial information that should be collected through graduate surveys pertains to items such as the professional fields where graduates work.

Across all the countries, students were concerned about the effectiveness of HEIs in providing them with the skills they need to succeed in the job market. If hard data on student employability would certainly be an asset for orienting HEI management, student councils and associations could also provide support to HEIs with information and requests concerning what they consider crucial for future success.

Indeed, one element most interviewees highlighted is the relevance of student bodies and committees as stakeholders of HEIs. One instrument that should be especially valued – and which was mentioned by the Polish, Italian and Turkish students – is the use of student assessments of course quality as necessary feedback for the instructors. Moreover, they also stressed the need for a more institutionalised approach to some key aspects.

First, internationalisation: All students across all the countries pointed to the relevance of having some international experience and knowledge of foreign languages.

Second, internships: Indeed, previous work experience is almost a must when trying to access the labour market and the university years should be an opportunity for students to gain such previous experience. Yet, an Italian interviewee indicated that humanistic and some social sciences programmes should be improved in that respect, which is currently very weak.

Third, soft skills: This aspect was especially highlighted by the German interviewee who pointed to the fact that “soft skills” cannot be learned in seminars, but must be acquired hands-on. In fact, for example, teaching “social skills” within a study programme requires that students learn this competence in contact with human beings and in teams. The same is true of project management: you can learn project management only by doing it. Yet, these skills are crucial for any future position the students shall apply for.

### 6.7.2 Awarenes on utilisation of hard data on graduates employment

Student organisations have knowledge and awarenes on utilisation of hard evidence on graduates employment only in some countries. A similar position was shared by an Italian interviewee who pointed to the work of the Almalaurea Consortium as a best practice as the consortium is very effective in collecting the CVs of graduates and matching them with existing company openings. The result is that most graduates using the system find a job within six months of graduation.

While sharing the Italian and German viewpoints, an Austrian interviewee suggested the need for the HEI to stay ahead of, rather than follow, the job market. For this reason, the focus of the HEI should not necessarily be on employability, but on innovation and the future.

On the other side of the coin, the Turkish interviewee regretted the fact that in Turkey there is currently no hard data available for the implementation of HE programmes. Consistently with colleagues from other countries, the Turkish interviewee was concerned about the actual ability of the HEIs to both produce knowledge and science and contribute to the employment chances of their graduates. For this reason, clear knowledge of the demands of the world of work would be beneficial for the implementation of HE programmes and it would be necessary to find an institutional process for transferring this information to HEI management as is done in other countries. The current process of consulting stakeholders when designing HE programmes – as is also done in Slovenia, Italy and Austria – is certainly important, but possibly quite weak. Especially in Turkey, the HEIs that are most attentive to the demands of the world of work are the private universities (foundation universities), which – unlike state universities – develop their study programmes in close accordance with labour market requests.

## 6.8 CONCLUSION

The chapter reported the key concerns and considerations of stakeholders about the two main questions in which the DEHEMS project was engaged:

- *How does HE management take employability data and surveys into account?*
- *How should/could HE management take them into account/How much is and should this be evidence-driven?*

Overall, the analysis of the interviews each partner conducted provides a fairly scattered picture as the potential use of hard data for HE system administration varies widely. Although the necessarily limited number of interviews implemented and the intrinsically different composition of the groups of interviewees across countries perforce limits the direct comparability and possibility of generalising the results, some common trends can still be identified.

First, two countries (Germany and Italy) reported evidence on the existence of systematic approaches to data collection in terms of student outcomes and labour market results. Yet, even in these two countries the actual use of such data is currently limited in terms of HE management. Poland lies at the opposite end of the spectrum reporting the lack of any systemic or widely applied instrument for acquiring information on the outcomes of HE graduates. The other countries lie somewhere in the middle, with Turkey highlighting the existence of a dual process. On one side, the state universities there follow paths that depend on the bureaucratic indications, while the private universities are more responsive to market needs.

Yet, even when data collection procedures are in place, the interviewees did not provide any extensive answers about the issue of the data's impact on different aspects of the higher education curriculum. The two areas in which the interviewees most often perceived the existence of an impact of employability data were related to the accreditation and reaccreditation of study programmes. This was reported in Germany, Poland and Slovenia, but the Italian and Turkish interviewees did not mention that such data would have any impact on higher education curricula.

In terms of the interaction between stakeholders (employers, labour unions and students) and HE institutions, the interviews confirm instances already depicted in the theoretical framework (See chapter 2). In fact, the main point at stake is matching individual skills with actual labour demand, and stakeholders are chiefly concerned about whether and how universities provide students with the methodological competencies and skills graduates need to actively enter the world of work.

Stakeholders – especially employers and labour unions – expressed the need to rely more and more on hard evidence (surveys collecting data on graduates´ competencies as well as the labour market situation) and on closer collaboration with HEIs. Moreover, the TUs pointed to the need for the greater involvement of social partners in the planning of HEI activities because their daily contact with employees and generally with the world of labour puts them in the position of knowing about the most current needs of future and present workers.

These considerations are shared across the countries and are coupled with a relatively sceptical assessment of the effectiveness of the Bologna Process and the opportunities it has supposedly brought for the younger generations.

Representatives of student organisations are generally concerned about the possibility of finding in higher education programmes the credentials and skills they need for their future careers. Especially the Slovenian, Italian and Turkish students appear to be concerned by the growing unemployment rate of young people and the vulnerability of those looking for their first employment, which is the case for many of them. For this reason, they feel the need to be heard as clients and relevant stakeholders of HEIs. Moreover, they are concerned about how much their HEI can provide them with hard and soft competencies, which are both necessary for succeeding in the job market.

In general, the picture that emerges from the interviews suggests that the use of data is currently left to the initiative of individual HE institutions, which generally tend to limit the interaction of stakeholders in the HE management process. Still, there is agreement about the need to more closely link the contents of HE programmes and the actual results of graduates, and this situation should be a strong push for increasing awareness on the topic on the part of HE management and systematising future initiatives in the area.

*Samo Pavlin*

# 7 CONCLUSIONS AND IMPLICATIONS FOR HIGHER EDUCATION MANAGEMENT SYSTEMS

## 7.1 INTRODUCTION

As might have been anticipated, we can say that HE systems in all of the studied countries are becoming increasingly framed by expectations from the world of work and society at large to improve students' professional career paths. In this context, HE managers and staff particularly see own role in further improvements in developing general and field-specific competencies by strengthening practical training, increasing internationalisation and making improvements in teaching and learning modes. However, employers, trade unions and students want more than this. First, they see a clear need for any improvements in HE to be based on hard facts, such as the results of graduates' tracer surveys. They want these results to become broadly available, and integrated into HE systems in a transparent way. Students would then be better informed about choosing a specific field and be able to plan own careers. Employers, on the other side, would be able to use the data for recruitment and providing feedback to HE institutions. Moreover, employers, trade unions and students want to have a formal role in these processes. Yet the response to this request on the part of HE institutions is slow and varies significantly across the countries and study fields.

In the over 360 interviews conducted within the DEHEMS project the need to establish and improve the work of career centres and establish systems for tracking graduates has not been seen from the HE system perspective as a priority in all study domains and countries. At the same time and because of this, HE managers and staff perceive graduates' career dimensions and their determinants in a surprisingly intuitive way. Concrete activities and processes that presumably strengthen the responsiveness of HE systems to the world of work depend more on country than on study field bases.

The main conclusions are synthesised in this chapter in the four following interrelated sections: "Differences and similarities of HE study fields", "Determinants and dimensions of HE graduates' career success, and how HE experts perceive them", "Views of academics on the role of the HE institution in supporting HE graduates for entering the labour market" and "Positions of employers, trade unions and students on the link between HE systems and the world of work".

## 7.2 DIFFERENCES AND SIMILARITIES AMONG THE HE STUDY FIELDS

The main part of the DEHEMS report seeks to ascertain differences and similarities among the highly diversified study fields, exploring several aspects of them such as socio-demographic characteristics, programme structures, the transition to employment and graduates' job characteristics. In this project we analysed the following study domains:

> *Business and economics*, which prepares graduates for a broad range of jobs in various economic sectors, covering a wide variety of programmes (e.g. more than 1,100 in Germany). Therefore, one can assume that graduates in this domain are highly equipped with general competencies that are ready to be applied

in various work situations. Over the last few years, this domain has in most countries experienced a massive increase in enrolments, like in Turkey for example (more than 30% from 2005 to 2008).

In teaching and learning practices, there are several large variations among the DEHEMS countries. Examples include the highly above-average use of multiple-choice exams in Poland, the extensive practice of oral presentations and problem-based learning and group assignments in Austria, or lectures as the traditional teaching mode in Germany. In Austria and Germany, employers are more familiar with the content of programmes than in other countries (as was also found for other domains). There are substantial differences among the DEHEMS countries in the way study programmes have equipped graduates with work competencies. In Austria and Germany, 7 out of 10 graduates reported their programme had prepared them well for work, while in Turkey this is only the case for one out for three graduates and in Slovenia only for one out of four graduates.

In comparison to other countries, graduates in this domain most often look for jobs in advertisements in newspapers, through private employment agencies (except in Turkey), the Internet and family, friends and acquaintances. They less often find a job by setting up their own business (except in Poland and Slovenia where this happens more often), with the help of the HEI (except in Austria and Italy) or through a work placement during HE (except in Germany and Poland).

*Education and teaching* is mainly preparing graduates for public sector careers. The domain is highly feminised, indicating HE's surprisingly low capabilities to prepare graduates for work in most countries, even though the share of satisfied graduates is the highest among all the study fields. In line with statistical data the number of enrolments is still increasing, albeit not as much as for 'business and economics' or 'sociology and political science'.

The most obvious differences in the assessment methods among the countries in this domain include the above-average use of multiple-choice exams in Poland, while in Germany, Slovenia and Austria it is far below-average, also in comparison with other REFLEX and HEGESCO countries. Problem-based learning is quite equally used in all DEHEMS countries, with the highest scores in Poland. The assessment method of a research project is on average rarely used across the countries; the highest use is noted in Turkey and the lowest in Austria and Germany. In the DEHEMS countries more than 7 out of 10 graduates find a job as a teaching professional: the highest match is in Slovenia with 84% while the lowest is in Turkey and Italy with around 60%. Less than half of the graduates reported their programme has been a good basis for starting work to a high or very high extent, especially in Austria, while according to our data the worst prepared are in Slovenia.

Graduates find employment by contacting employers on their own, which is an especially popular method in Poland and Austria and not so much in Italy. They quite often also use family, friends or acquaintances (most often in Italy and Turkey), an advertisement in a newspaper, or they are approached by an employer (most frequently in Slovenia and other non-DEHEMS countries) to get a job. As expected, they often find a job by setting up their own business, through the Internet and private employment agencies (except in Austria) than graduates from all the other domains.

*Engineering* This highly masculine domain is one of the key pillars of the Europe 2020 strategy and experiences stable enrolment levels in most DEHEMS countries. Differences among the DEHEMS countries can be observed with regard to group assignments, project and problem-based learning and written assignments: teamwork and group assignments are emphasised the most in Poland and at a level far below the average in Slovenia. Graduates in Poland reported a strong emphasis on project and/or problem-based learning, which was again not the case in Slovenia.

There are big differences among the six DEHEMS countries with regard to the issue of study-related work experiences during study: with almost three times higher scores in Austria, Germany and Slovenia than in Poland, Italy and Turkey. Like in many other domains, graduates are best prepared for work during their studies in Austria (which is also at the top among all 19 analysed countries) and Germany. This is followed by Poland, Italy, Turkey and Slovenia.

Engineering graduates most often find employment by contacting employers (especially in Poland), through family, friends and acquaintances (especially in Turkey) and through an advertisement in a newspaper or they are approached by an employer. Every tenth graduate has been approached by an employer, which was not so much the case in Poland. Employment agencies (except in Germany) are far less frequently used in this field than in others.

*Medicine* is traditionally the most professionalised sector, and experiences stable enrolment levels. Similarly to the domain of Education and teaching, it is very feminised and has the biggest share in all domains of graduates with highly educated parents. In contrast with the two-cycle programmes within the Bologna Process framework, this is one of the few domains whose programmes are still mainly provided in a single cycle lasting 5 to 7 years.

Country differences in this domain are characterised by the above-average use of multiple-choice exams in Germany and Poland, while in Italy it is well below-average. In Austria, oral presentations are less typical than in other DEHEMS countries. In all DEHEMS countries graduates see their programme as a good basis for personal development, performing current work tasks and starting work. They often find work by contacting an employer on their own initiative (except in Turkey), with the help of the HEI (except in Germany and Austria) or through previous work (except in Germany and Austria). They less often use private and public employment agencies (except in Austria and Turkey), family and friends or the Internet. Every second graduate across the DEHEMS countries reported that their programme has been a good basis for starting work to a high or very high extent; the lowest result was found in Slovenia and the highest in Turkey.

*Science* encompasses four subdomains, namely life sciences, physical sciences, mathematics and statistics and computing, with quite different shares of students among them. In Poland and Austria, the domain structure is highly biased towards computing, with shares reaching 50% of totals for the domain, while Italy, on the other hand, is strongly biased towards the Life Sciences subdomain.
This domain is characterised by several differences in teaching modes such as, for example, an above-average stress on multiple-choice exams in Poland, oral presentations in Italy, Germany and Austria, low involvement in research projects in Poland and Slovenia, and an above-average involvement in Turkey. With regard to the level of acquired skills for work, the best result has been reported in Austria in Poland, and the lowest in Turkey. However, large differences are related to enrolment differences among the specific subdomains.

Graduates most often use the following job search methods: approaching an employer on their own initiative, the fewest in Austria with 16% of graduates and the highest in Poland with almost 46%; making use of family, friends or acquaintances is the second most popular method in the DEHEMS countries with the highest shares in Turkey and Italy and the lowest in Germany and Slovenia. On average, one out of ten graduates has been approached by an employer, the highest in Austria and the lowest in Poland. In Poland, graduates reported that their HE institutions provided almost no job-search assistance.

*Sociology and political science* have over the last few years been entering into new professional areas like human resource management, European studies etc. and generating a wide range of professionals for work in business, finance and banking, media, diplomacy or non-governmental organisations (to name just a few). Similar to the domain of business and economics, graduate numbers from the field of social and behavioural science have been growing in all DEHEMS countries, except Italy.

Programmes in this domain are strongly characterised by lectures and theories in comparison to other REFLEX and HEGESCO countries. There are a few differences between countries like, for example, the above-average use of written assignments in Austria, while in Italy and Turkey it is below-average. As was expected, it is important to stress that across all the studied countries students see the programme more as a good basis for personal development than for starting work. According to our data, the situation is (like in some other domains) better in Austria and Germany and the worst in Turkey and Slovenia. The

> majority of graduates were working five years after graduation under fixed-term contracts, only in Austria and Turkey are there more graduates who have time-unlimited contracts.

As briefly presented above[87], there are significant differences across the study fields in the way the HE institutions prepare their graduates for work and how employers absorb these graduates in relation to the economic situation, labour legislation, organisation of HRM practices etc. However, despite these differences we could pinpoint some similarities among the studied domains, clustering them into the following three groups: *analytical domain* (science, engineering, and medicine), *social science and business*, and *education studies*.

A general characteristic of the *analytical domains* is the relatively easier access graduates have to jobs – even though there is substantial turbulence in some sub-domains due to the economic crisis – study costs (for the education provider), and well-defined occupational paths. The *social sciences and business* domain has in the last few years experienced an over-supply of graduates, which in the last decade has in several countries been accompanied by the development of the private sector in higher education. Careers for most graduates within this domain are broad. The *education domain* shares some similarities with social sciences and business. The study costs are low, however public costs arise once graduates enter a well-defined labour market. The three clusters differ in several respects, such as hours of active teaching modes, the share of part-time students, entry requirements, prestige of the programme, international mobility, ownership sector (public or private), wage level etc. Moreover, all three domains vary in terms of the factors determining the labour market success of their graduates:

> *"In the domains of Engineering, Medicine and Science, the greatest impact on factors of professional success comes from personal traits and the environment and the surroundings in which respondents work. Generally speaking, education-related factors (study programme, teaching modes etc.) are less important. In the domain of Social Science and Business, the most relevant appear to be factors related to the education process, particularly those factors which allowed the respondents to stand out in a competitive labour market such as, for example, a diploma from a well-respected institution or possessing other certified skills or practical experience. Finally, in the Education field the influence of study process characteristics, personal attitude or international mobility were found to be insignificant for labour market success. This can be directly related to the fact that state regulations regarding the teacher profession create formal requirements as an employment entry condition. Meanwhile, their current work characteristics and teaching and learning modes have proven to be more important, as these are the factors in which graduates might potentially be more differentiated" (Conclusion of Chapter 4).*

In the DEHEMS report we have found large discrepancies between graduates' careers success empirical data, and the career success perceptions of academics, HE managers and HE stakeholders.

[87] The full set of DEHEMS analyses is available at the webpage http://www.dehems-conference.eu.

## 7.3 DETERMINANTS AND DIMENSIONS OF HE GRADUATES' CAREER SUCCESS, AND HE EXPERTS' PERCEPTIONS OF THEM

### *Academics are generally aware of only a few career success dimensions*

The common practice of measuring HE graduates' success only by employment status, occupational category and income does not adequately cater to larger research or policy interests. Instead, several complex models of graduates' transition from education to the labour market have been developed. Key dimensions of graduates' early career success identified in the DEHEMS project were: *education-job matching, challenging work tasks, job security, autonomy of work, work-life balance, and job satisfaction (with the highest correlations with e.g. high earnings, status, learning possibilities, career prospects…).* These dimensions are related in various ways to the possibility of mobilising the acquired competencies. They depend on the following factors: sociobiographic characteristics, study process characteristics, study programme characteristics, teaching modes, personal attitudes, work experience and current job characteristics.

Academics generally have surprisingly mixed and individualised understandings of career success, although there are certain commonalties depending on study fields. In *business and economics*, most respondents linked career success with job satisfaction that is related to the salary, job search duration and doing meaningful work. However, most interviewees were well aware of the difference between short- and long-term success, the level of acquired professional skills and the (mainly vertical) education-job match. While the perceptions of career success in the business and economics domain vary significantly among the countries and respondents, this was not the case in the *teaching and education* domain. In this domain, academics share a similar understanding of career success: *"the career success of teachers is first a matter of finding a job and then being a good teacher, which is the key source of job satisfaction"*. The perception of career success is also relatively harmonised among academics in the domain of *sociology and political science*. Most respondents stressed career success as being graduates' high level of flexibility as a competence allowing one to adapt to different jobs and tasks.

Similar to the teachers, most graduates from *medicine* build a career in their own professional domain. For most respondents the career success of medicine graduates depends on finding the proper path within the broader domain and the ability to deal with several stakeholders. The understanding of graduates' success in the *science domain* depends highly on the subdomain: academics from computing (and to some extent Life Sciences – biotechnology, chemistry) perceive the success of a graduate more in terms of finding attractive employment, a high salary and skill utilisation during the process. Interviewed academics from other subdomains emphasised the ability to develop one's own professional path, similarly as in medicine. In the domain of engineering, academics were surprisingly aware of difference between the elements of *subjective* (adequate level of employment, a link between the field of study and competencies acquired during study and work tasks, job satisfaction) and objective career success (employment status, income), although the way they defined career success varied widely among the respondents.

In a nutshell, we can draw two conclusions about academics' understanding of graduates' career success. While they are generally aware of the importance of subjective satisfaction with the job, education-job match and career development, they seldom stressed the importance of job stability and security, work-life balance, the status of work or a decent salary (as mainly stressed in the business and economics domain). Moreover, they rarely link these career success dimensions to the context of originand students' individual attributes. The general impression from the interviews was that most informants only give priority to certain elements of job success based on their own perceived profes-

sional responsibility or own life experience. *Second*, they have developed an understanding of career success in a very intuitive way – very few respondents referred to statistical employability data or surveys.

### *In most countries, empirical data on graduates' employability receive little attention from HE institutions and HE governance*

Despite the domain differences described earlier, the trajectories of graduates' careers depend more on a country than a domain-level basis. In most countries, the main sources of information on graduates' employment needs are alumni networks or own personal networks and experiences. However, in some countries occasional tracer studies are conducted and in some individual institutions stipulated by quality audits. A few interviewees mentioned that information is gathered at the level of career centres but these services focus more on supporting graduates in their job searches rather than by systematically collecting data. Interestingly, only a few respondents conceded that own contacts and alumni networks involve a certain risk of not yielding the right information because these sources often include only the most motivated students.

In addition, in most DEHEMS countries in the *domain of teaching* and *medicine* where career path options are the narrowest, information sources on graduates' careers are typical based on assumptions and experience from informal interactions with graduates. In these domains, academics are becoming particularly aware of graduates taking up roles in public administration, supervision, research, guidance, psychological services, curriculum development etc. due to the limited employment possibilities in their own traditional areas. In the *science domain*, HE experts reported there are associations of graduates who share their experience with the transition to the labour market with current students: this is particularly the case in German HE institutions via practically-oriented colloquia. In general, the interviewees admitted there is a lack of systemic data. However, some HEIs have conducted formal surveys of graduates in Germany and Italy: the results are largely used for the (re)accreditation of study programmes and in principle for the quality of teaching and learning, practical training for students and cooperation with career service centres, yet during our observations very few concrete actions were described.

From our observations, among the surveyed countries particularly HE institutions in *Germany* use the largest number of channels to track their graduates, and in many cases assign the responsibility to track graduates to HE experts and managers: *"According to a survey of the German Rector's Conference conducted in 2006, about 65% of higher education institutions in Germany had conducted at least one graduate survey within the previous five years, however about half these institutions do not conduct graduate surveys regularly"*. The best known system for monitoring graduates in Germany is the INCHER-Kassel initiative that currently links more than 60 institutions across Germany taking part in the KOAB action (Kooperationsprojekt Absolventenstudien).

In *Italy*, there are some cross-university associations that conduct graduate employability surveys. The most well-known is Almalaurea which serves as a meeting point for graduates, universities and the business world and currently involves 78% of Italian graduates with the total number of curricula from 64 Italian universities amounting to more than 1,620,000 units. Another network is the VULCANO service (On-line University Graduate List with Curricula Vitae for Companies) based on a web platform for graduates, graduating students as well as companies.

In *Austria*, only a few HE institutions conduct graduate tracer studies that in any case have a limited impact on either designing or implementing HE programmes. *"The fact that experts did not mention the utilisation of empirical data on employability is a strong indicator that it lacks importance. It can be concluded that in general there is little data and no systematic collection." (from the Chapter 4)*

However, there are a few accredited HE institutions that do conduct graduate tracer studies on a very high expert level. A large national graduate survey was recently conducted in this country.

HE representatives from *Poland*, *Slovenia* and *Turkey* reported that systems for graduate tracer studies are not formalised and they therefore did not provide any examples of the contemporary use of employability data in the implementation of HE programmes. This entails a particular problem because new programme development is based on internal discussion, without any underlying hard evidence. In Poland and Slovenia changes are foreseen due to legislative changes leading towards obligatory graduate surveys. However, at the moment in both countries different sources from national statistics have started to be used in addition to the subjective expert observations.

## 7.4 THE VIEW OF ACADEMICS ON THE HE INSTITUTION'S ROLE IN SUPPORTING HE GRADUATES IN ENTERING THE LABOUR MARKET

Most respondents in the *business and economics* domain claimed the best way to support graduates in their careers is to tailor study programmes to labour market needs. They see this as a difficult issue as the goal of the HE institution is to provide general usable knowledge and not specific training. However, several respondents were aware that the curricula are still strongly theoretical at the moment – and there is little knowledge of how it fits with employers' demands – which is becoming an increasing requirement for retaining sustainable enrolment levels. Few interviewees admitted that the close monitoring of labour market developments is missing. Most interviewees see the future challenges in this area in cultivating studies of graduates' employers, the further development of teaching modes – even though we detected some uncertainty in these developments – limitations on student numbers per class, while the direction, autonomy and centrality of the role of career centres remained unsettled.

In the *education and teaching* domain, respondents generally agreed about the importance of practical training being the key element of preparing graduates for work. Practical training was described as the necessary tool that makes the difference from content-centred to learner-centred curricula and also an empowering tool for the development of soft skills. Respondents in this domain stressed the need for lifelong learning activities and the great relevance of the internationalisation of programmes. As for future challenges, most respondents emphasised the need to further strengthen relations with stakeholders and develop practical work and problem-based learning. In the future they were concerned about the autonomy of curricula development in order to make regular updates in line with emerging student needs. There were some indications that these needs are related to wider employment fields for graduates, which is why some interviewees mentioned the role of career centres.

A very important part of preparing graduates for work in the *engineering* domain is generating flexible graduates. Experts from all six countries mentioned that engineering graduates experience a smooth transition to the labour market. Because of this, flexibility is not seen in the sense of being provided with a wide spectrum of knowledge (as in the social sciences), but in the ability to constantly adapt in the face of technological change. The respondents emphasised that a practical orientation, cooperation with industry, and internship are key tools for enhancing graduates' employability skills which should also be properly combined with research activities. Regarding future challenges, they stressed three elements: the development of recruitment services and career counselling including maintaining contacts with former graduates, and student-centred learning.

A clear mission of HE institutions in the *medicine* domain is to cultivate a good doctor: "*The university programme shall provide students with the theoretical and practical knowledge necessary for being responsible professionals when they finish their studies".* Interviewees see the main mechanism for achieving this goal in enhancing the traditional focus of the medicine programme, further development of an international orientation and, in the first place, practical experience in medicine which is inseparable from theory. They stressed that, despite budget cuts, research for students is best conducted in university hospitals, although there is still room to increase cooperation with private employers. The four elements most stressed as future challenges were related to: (a) increasing graduates' scientific skills and social competencies; (b) increasing curriculum interdisciplinarity; and (c) flexibility within the existing tradition, with teaching methods paying special attention to continuing medical education. A few of the respondents stressed that the necessary condition for any improvements in the area is to maintain the current allocation of funding.

In the *science* domain, despite differences in the subdomains, the interviewees' perceptions about their role of supporting graduates' careers were quite similar. Most admitted that the programmes are not very oriented to labour market requirements because most disciplines within the domain are hard sciences where the core curriculum is well defined by the nature of the discipline. An exception to this is computing. Therefore, programmes in the science domain are generally reported as not offering much flexibility. The challenges for the future here relate to teaching modes that properly combine practical and theoretical approaches (where possible) and providinggeneric competencies – which can be achieved, as one interviewee noted, through closer cooperation between students and professors. In all domains, research activities are seen as a very important element for fostering student employability. In some cases, mainly in the subdomain of computing, the existence of career centres is thought not to be so important as there is still a huge demand for studies. Many interviewees mentioned that an improvement in the quality of education leading to the higher employability of graduates would require better technical facilities and access to the latest technologies, laboratories and equipment. Another key problem they exposed is the issues related to HE drop outs, and a system that stimulates competition with studies attracting massive enrolments.

The central element of making graduates employable in the *sociology and political science* domain was described as the continuing broadness of the study programmes. This means preparing students for lifelong learning abilities rather than specific knowledge: "*We don't see graduates only as a workforce who would only satisfy the demands of employers and particular job positions. /…/ Learning in the workplace is the responsibility of employers and they have to enable their employees to get the knowledge which is demanded for a certain job position".* Other issues included the implementation of new teaching modes – including research and practical training – internationalisation and the involvement of employers in the implementation of study programmes, which is already taking place in several HE institutions. In some countries, the respondents stressed the need to further develop career centres, which was also described as a future development challenge.

In summary, what are the HE institution's main activities that currently and will in the future support graduates in their preparations for work? Our analysis shows several similarities and differences when a certain activity is placed in a disciplinary focus. Respondents from the business domain directly admitted they should respond better to employers' requirements. A similar impression is gained in the area of sociology and political science, although the perspective there was related more to generating new professional areas rather than adjusting in line with employers want. Interestingly, we detected some tendency in the education domain to widen the employability focus of the graduates, which may be attributed to the limited financial sources in the public sector. However, in the domain of science (except computing) the respondents admitted it is hard to adapt to employers' expectations due to the importance of generic competencies.

The need to develop career centres and implement tracer studies was chiefly stressed in social sciences, engineering, and business and economics. In all other areas, we only detected individual needs or no need for these activities. On the other hand, persisting autonomy was largely stressed in the case of teaching (mainly referring to curricular autonomy), medicine and social sciences. Lifelong learning activities were stressed in education and medicine, while in the other domains only in a few individual cases.

The most cross-domain, universal activities for supporting graduates in their careers are: (a) the development of generic competencies; (b) practical training which only in the sociology and political science domain was not so emphasised; (c) the internationalisation of all HE aspects (students, teachers and research); and lastly (d) improvements in teaching activities – which was related to all of the three other activities. Respondents in the domains of medicine and education saw a big role in maintaining the highest professional standards as it is only they that can safeguard the development of their areas in the longer term.

## 7.5 POSITION OF EMPLOYERS, TRADE UNIONS AND STUDENTS ON THE LINK BETWEEN HE SYSTEMS AND THE WORLD OF WORK

### *Employers' perspectives*

In general, employers were satisfied with the level of theoretical knowledge provided by the HE degrees but believed that HE graduates lack practical experience. They were surprisingly well aware of the importance of general competencies such as, for example, social and communication skills, job self-efficacy, adaptability, flexibility, teamwork, foreign language skills, intercultural skills etc.

Hence, the employers' main expectation of HE systems is that they ensure a short- and long-term job fit. As a result, they are largely interested in tracer surveys and other hard data in general. However, they expressed the need for multiple foci of such surveys: possibilities of benchmarking, accreditation and the acquired level of graduates' competencies. Particularly in Germany, where over the last few years tracer studies have been developed the most, they expressed a concern about the "*huge differences in the way HEIs deal with the results of graduate surveys".* In Poland and Slovenia, employers expressed disappointment that such data are not used but still necessary.

Employers in all countries indicated the need to empower their cooperation with HE institutions, although they would like to participate on more formal bases. One of these is to create a robust mechanism for adapting HE programmes to their needs. From their point of view, this can best be achieved by being involved in all aspects of curriculum development. However, the interviewees gave several already existing examples of good practice that also take place less formally.

### *Trade unions*

Trade unions regretted the very scarce use of hard data on graduate labour market outcomes as a means for devising and organising university curricula. Similar to the employers, they would like the social partners to become more involved in HE institutions' planning as they have unique observations of the labour market, particularly concerning the current and future needs of today's workers they represent. *"These considerations are shared across the countries and are coupled with a relatively*

*sceptical assessment of the effectiveness of the Bologna Process and the opportunities it has supposedly brought about for the younger generations."*

### *Student organisations*

Representatives of the student organisations were eager to proactively contribute to development of the system, particularly in that point where the system creates general and specific competencies. In some countries, especially in Slovenia, Italy and Turkey, they were concerned by the growing unemployment of young graduates. As *'key clients' representatives'* they expect to be more involved in the shaping of HE systems. Moreover, they are concerned about how much the HEI can provide them with hard and soft competencies, which are both necessary for succeeding in the job market.

Student organisations see the implementation of graduate surveys, and utilisation of the results, in the design of study programmes as the most effective tool: Italian students appreciated the work of the Almalaurea Consortium as a best practice in the country, while the Turkish interviewees regretted the fact that in Turkey currently no such system is available. In most countries, the student representatives made it clear that if HEIs are to be at the forefront in supporting students in their transition to the labour market, *"they need to be attentive to job market trends and emerging opportunities"*. The process of stakeholders' involvement in the implementation of HE programmes is in the view of the student representatives slow and in many countries weak. In Turkey, the student representatives pointed out that private universities (foundation universities), unlike state universities, develop their study programmes in close cooperation with employers. In all countries, student representatives see internationalisation, internship and the production of soft skills as key developmental perspectives in HE.

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