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Mobilization of human resources

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The Flexible Professional in the Knowledge Society:

General Results of the REFLEX Project

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The REFLEX project is a joint collaborative project of the following institutes

Austria	Institut für Soziologie (IfS), Universität Klagenfurt
Belgium	Hoger Instituut voor de Arbeid (HIVA), Leuven
Czech Republic	Education Policy Centre, Charles University Prague
Estonia	Ministry of Education and Research
Finland	Research Unit for the Sociology of Education (RUSE), University of Turku
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Portugal	CIPES, Centro de Investigação de Políticas do Ensino Superior
Spain	Centre for the Study of Higher Education Management (CEGES), Technical University of Valencia (UPVLC)
Sweden	Statistics Sweden
Switzerland	Bundesamt für Statistik
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The REFLEX project (acronym for 'Research into Employment and professional FLEXibility') is a large scale international project that has been carried in 16 different countries. It focuses on the demands that the modern knowledge society places on higher education graduates, and the degree to which higher education equips graduates with the competencies to meet these demands.

In the project three studies were carried out: (1) a country study highlighting the main structural and institutional factors that shape the relation between higher education and work in the different countries involved in the study; (2) a qualitative study on graduate competences in the knowledge society; (3) a survey of higher education graduates in these countries (for more information, see www.reflexproject.org). The results of the first two studies have been published separately (Koucky, Meng and Van der Velden, 2007; Arthur, Brennan and De Weert, 2007)[1]. The current report presents the general findings of the third study, the survey among graduates.

A project like this cannot be carried out without the effort and involvement of many colleagues. In the different countries the following persons participated in the project (the coordinator is always mentioned first, the rest in alphabetical order): Austria (Paul Kellermann, Helmut Guggenberger and Gunhild Sagmeister), Belgium/Flanders (Walter van Trier, Kathleen de Rick), Czech Republic (Jan Koucky, Petr Vorisek), Estonia (Tiina Annus, Liis Kraut), Finland (Osmo Kivinen, Jouni Nurmi), France (Jean-Jacques Paul, Lisa Bydanova, Julien Calmand, Philippe Maalouf), Germany (Ulrich Teichler, Oliver Bracht, Marek Fuchs, Harald Schomburg), Italy (Roberto Moscati, Angelo Di Francia, Michela Frontini, Michele Rostan, Matteo Sgarzi, Marco Vinante), Japan (Keiichi Yoshimoto, Yuki Inenaga, Naoyuki Ogata), the Netherlands (Jim Allen, Han van Dongen, Timo Huijgen, Paul van der Kolk, Hans Rutjes, Egbert de Weert), Norway (Liv Anne Storen, Clara Arnesen), Portugal (Virgilio Meira Soares, Armando Rocha Trindade), Spain (Jose Gines Mora, Lourdes Badillo Amador, Amparo Gómez López, Daniel Martinez Aceves, Jose María Nyssen González, Luis Vila), Sweden (Kenny Petersson, Daniel Samuelsson), Switzerland (Sabina Schmidlin, Katrin Schönfisch, Andrea Witmer), United Kingdom (John Brennan, Lore Arthur, Rod Hick, Brenda Little, Alan Woodley). These people were responsible for the national surveys and contributed much to the design of the project and the analysis

1. J. Koucky, C. Meng and R. van der Velden (2007), REFLEX Country Study, Research Centre for Education and the Labour Market/Education Policy Centre, Maastricht/Prague. L. Arthur, J. Brennan and E. de Weert (2007), REFLEX – the Qualitative Study: Employer and Higher Education Perspectives on Graduates in the Knowledge Society, Centre for Higher Education Research and Information/Center for Higher Education Policy Studies, Milton Keynes/Enschede.

of its results in the international workshops held in Valencia, Maastricht, Klagenfurt, Neuchatel, Pavia and Kassel.

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Rolf van der Velden (project coordinator)

Maastricht, 22 October 2007

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Management Summary

Introduction

Higher education policy has increasingly gained a European dimension, with its own distinct influence over national education policies. Against this background, a major project was launched, the REFLEX project, which aims to make a contribution to assessing the demands that the modern knowledge society places on higher education graduates, and the degree to which higher education institutions in Europe are up to the task of equipping graduates with the competencies needed to meet these demands. The project also looks at how the demands, and graduates' ability to realise them, is influenced by the way in which work is organised in firms and organisations. The REFLEX project has been carried out in sixteen different countries: Austria, Belgium-Flanders, Czech Republic, Estonia, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. At the time of writing, the data for Japan, Portugal and Sweden were not ready for use. The report focusses on the remaining 13 countries. The major part of the project consists of a large scale survey held among some 70.000 graduates from higher education in these countries. In each country a representative sample has been drawn of graduates from ISCED 5A programmes who got their degree in the academic year 1999/2000. The various types of higher education in the participating countries have for the purposes of this report been divided into two main levels. First level programmes are those that do not provide direct access to doctorate programmes, while second level programmes are those that do provide such direct access to a doctorate. The data collection has taken place in 2005, i.e. some 5 years after leaving higher education. In this report, the data from the graduate survey is used to shed light on different aspects of graduates' experiences in higher education, work and other areas of life.

The Flexible Professional in the Knowledge Society

In recent years, three major trends have been identified that affect the demands that higher education graduates face. The first is the increasing emphasis on education and training, the second the increasing volatility of labour market processes, and the third the increasing internationalisation and globalisation. These trends give rise to new demands on the competencies with which individuals need to be equipped. In addition to the more or less traditional demand on higher education graduates to become experts in their own professional domain, graduates face an increased need for to be flexible to ensure employability over their entire career. Moreover, the Lisbon goals imply a strengthening of the innovative capacities of the European economy, and an optimal use of the available human capital. Finally, the globalisation of the economy and society requires higher education graduates to be much more internationally oriented than before. Consequently, there are good reasons to believe that higher education graduates are expected to be more or less competent in at least

the following five areas: professional expertise, functional flexibility, innovation and knowledge management, mobilisation of human resources and international orientation. Chapters 2 through 7 of this report pay attention to each of these demands in turn.

In the survey, we found evidence that these demands are indeed more or less universal. In each of the thirteen countries for which we presented data, the average level of professional expertise, functional flexibility, innovation and knowledge management, and mobilisation of human resources required of working graduates is relatively high. International orientation also seems to be important for a significant proportion of graduates. A large majority of graduates appear to be adequately prepared to meet these demands, but this differs per country. A relatively large share of graduates in Italy, France and Estonia experience quite serious shortages of the relevant competences, and in France a relatively large share experience a surplus. Programmes that were seen as demanding and prestigious were related to higher levels of competence in all four areas, and a strong theoretical emphasis also appeared to be effective. That said, the effects are generally speaking not very large. This certainly need not imply that higher education is ineffective as a producer of competences, only that the variation within and across countries in the way higher education is organized does not account for much variance.

Although the majority of graduates indicated that their study program succeeded in reaching both the short term goal of preparing graduates to start work and the long term goal of providing a basis for further skill acquisition and career development, 15-20% of graduates clearly indicated that this was not the case. This applied particularly in the UK, Germany and Italy, while the Norwegian higher education system stands out as the system providing the best basis for their students' careers. Interestingly, in almost every country, graduates were generally more satisfied with their study programme in terms of providing a good basis for personal development than as a preparation for the world of work. Only 20% indicated that their higher education program provided a good basis for developing entrepreneurial skills. Vocationally oriented and/or prestigious programmes, as well as programmes whose content is familiar to employers, seem to be particularly effective in preparing graduates for working life.

Although only a small proportion of graduates end up in a real elite position in the labour market, most do find jobs that require generalist or specialist training at tertiary level. There are strong differences between fields and levels of higher education in the type of position attained, with studies in the fields of Health, Engineering, Business and Law, and second level degrees in general, dominating the elite positions. Although acquired competences and higher education characteristics and experiences also have some effects on the type of position attained, the effects are much smaller than those for field and level of higher education.

Even after correction for differences in purchasing power, there were strong differences in graduates' earnings. Both in terms of monthly earnings and hourly wages, German, Swiss and Norwegian graduates earn most, and Czech, Spanish, Italian and Estonian graduates earn least. Female graduates clearly earn less than their male peers. Second level graduates (that is, graduates of ISCED 5A long programmes that provide direct access to doctorate programmes) earn more than first level graduates (that is, graduates of ISCED 5A long programmes that *do not* provide direct access to doctorate programmes), graduates in the fields of Engineering, Business and Law have relatively high earnings and those in the fields of Education, Humanities and Agriculture relatively low earnings. A high level of competence in the areas of professional expertise and mobilisation of human resources is related to higher earnings, but higher education characteristics and experiences have only rather small effects.

We found strong indications that the human capital that is produced in higher education is used in the labour market. The unemployment rate is rather low, and most graduates indicate that their knowledge and skills are sufficiently used. That said, around one in four working graduates indicate that their competences are insufficiently used. In addition to countries and fields of study that are known from earlier research to produce graduates who often find it difficult to find work that matches their capabilities, (humanities, Southern European countries), the UK stands out as a country where many graduates fail to utilize their skills. Female graduates have a higher chance of being unemployed, but if they do find work they utilize their knowledge and skills as much or even more than male graduates. Graduates with high levels of competences in the area of mobilizing human resources and those who acquired work experience (whether or not related to the study programme) during study had more chance of being employed five years later. Graduates with high levels of competences related to professional expertise utilize their knowledge and skills more than graduates with less such competences. Graduates of vocationally oriented programmes and or programmes whose content is familiar to employers have both a greater chance of being employed and of mobilizing their knowledge and skills.

The Professional Work of Graduates

There are different conceptions within the academic world, and between academics and lay people, in what we mean by the term "professional". The term can be used very generally for example as a contrast to work done by "amateurs", to indicate someone who has followed specialized training in a given domain, or, as in the anglo-saxon tradition, to indicate occupations which normally require a higher education degree. There are also much more restrictive conceptions, in which a only very limited range of occupations like physicians and lawyers are regarded as professionals. Such definitions or typologies usually point to professionalization as a process that can be analyzed using the so-called escalator model: first a school is established, then an association, then examinations, then licensing, then an ethics code, and finally the occupation arrives at its destination. Others place more emphasis on autonomy, expertise, a body of knowledge as defining concepts of professionals. In order to do

justice to the range of conceptionizations of professions and professionals, a typology of occupations was developed, which allow us to differentiate between broad areas of work of higher education graduates. This typology of professions is used as a way of looking at the professional role and identity of graduates, the professional expertise and the aspects of power like income and exclusivity.

Five more or less distinct types of profession are distinguished, namely business and social science experts (e.g. psychologists, business professionals; 29% of working graduates), science and technology experts (e.g. engineers; 20%), semi-professionals (e.g. teachers and nurses; 20%), classical professions (e.g. medical doctors; 9%), and managers (8%). Only around 13% of all graduates were non-professionals (e.g. clerks). Their were strong gender differences between the different types, with females dominating the semi-professions, and also being in the majority among the classical professions and business and social science experts, but in the minority among the science and technology experts and managers. Semi-professionals were most likely to work part time and, together with classical professionals, to have a limited term contract.

The results cast doubt on the stereotypical image of the autonomous and highly specialized professional who is already an expert in his/her own field at the time of graduation from higher education. Even among the classical professionals, who were most likely of all types to be self-employed, around three-quarters of graduates worked for an employer in a salaried position. In addition, only the classical professionals reported overwhelmingly that there was a highly specific match between the content of their training and the content of their work. Around four out of five classical professionals reported that exclusively their own field of education was appropriate to their work. In contrast, only around half the semi-professionals, a quarter of the science and technology experts and a fifth or less of the social science and business experts and managers reported such a specific match between education and work. This is not to say that there is no link: in all these categories, very few reported that there was no relation between their field of education and their work.

That higher education is not the end point in terms of preparation for professional life is illustrated by the fact that the graduates indicated that it would require on average more than three years of additional experience and/or training to become an expert in their own area of work. Taking into account the actual time spent in higher education, the total estimated time needed to become an expert was around seven years for first level graduates and nine years for second level graduates. In the classical professions the time required after graduation was relatively long (4.6 years on average), and these professionals were also most likely to have undertaken formal work-related training in the last twelve months. Training is almost always undertaken to update one's knowledge for present work (70%) or to enhance one's career (21%).

The competence that most strongly differentiates between non-professionals and all groups of professionals is professional expertise. The managers show the highest own

and required levels of all kinds of competences, including professional expertise. The business and social science experts are also expected to be competent in most areas, but especially in terms of mobilizing human resources. In the case of science and technology experts the main emphasis is on innovation and knowledge management, while the semi-professionals and classical professions are expected to be competent in the areas of mobilization of human resources and to a lesser extent professional expertise.

Although all the types of professionals have a more strongly defined professional role than non-professionals, there are strong differences between the different types in the manner in which the professional role is defined. Managers were more likely than the other types to act as an authoritative source of advice, to keep their professional colleagues informed about new developments in their field and to take the initiative in establishing professional contacts with experts outside their organization. They were also most likely to decide strategies and set goals pertaining to their own work and the operations of their organization as a whole, to be interdependent in their work with others and to assess the quality of work of others. Classical professionals and to a lesser extent semi-professionals were most likely to take account of professional ethics in their work. In contrast to their image as highly autonomous professionals, classical professionals indicated most often that their performance was closely monitored. Business and social science experts and science and technology experts had a less distinctive professional profile, although the former were relatively unlikely to take account of professional ethics, or to set goals or decide strategies for their organization.

Also in terms of work orientations there were strong differences between types of professions. The semi-professions were most strongly oriented towards job security, chance to combine work with family tasks and the chance to do something useful for society. In contrast, managers were relatively more oriented towards new challenges, career prospects, earnings and status. A majority of all types of professional were satisfied with their work, especially the semi-professionals, the classical professionals and the managers. The most important determinant of satisfaction of professionals was work autonomy, with the exception of classical professionals, for whom use of knowledge and skills was more important.

The classical professions conformed most closely to the stereotypical image of highly exclusive occupational domains with great market power. For the other groups the picture is more mixed. We already saw that classical professions were by far the most exclusive in terms of the field of education required for the job, and they also had the highest monthly earnings, followed by the managers. These two types were also most likely to have at least one parent who attained a higher education degree. Classical professionals almost without exception entered higher education after having attended the highest track of general secondary education, and most had attained a second level ISCED 5A diploma or even an ISCED level 6 diploma in higher education by the

time of the survey. For most professionals a diploma in secondary education was a selection criterion for entry to higher education. Grades in secondary education and the results of special entry exams were the main other selection criteria, the former most often for science and technology experts, the latter most often for managers. Classical professionals were far more likely than other professionals to describe their study programme as demanding and/or prestigious, and to report that employers were familiar with its content, and least likely to report that the programme had a broad focus and/or a high degree of freedom to compose one's own programme. Semi-professionals most often described their programme as vocationally oriented and least likely to say that it was academically prestigious. Social science and business experts as well as managers were more likely than other professionals to report that the programme had a broad focus and/or a high degree of freedom to compose one's own programme. The science and technology experts and managers most often work in organizations that are subject to strong competition, which in all types of professions is much more often based on quality than on price. Classical professionals and managers report the highest level of damage potential for their organizations if they were to make major mistakes in their work.

"Being Flexible": Graduates facing Changes in their Work Environment
In the '90s, greater emphasis was placed on flexibility in the graduate labour market from two different perspectives. One view stressed the increasing precariousness of graduate employment, the loss of job security, and the weakening of graduates' bargaining position. The other stressed that graduates are not just victims of a changing set of circumstances, but can take advantage of the new situation by developing a willingness, and ability to deal with changes in a positive way. In this report both perspectives are taken into account. Of the various kinds of changes graduates are exposed to in their working environment, we look at changes in the labour market, which are associated with a need for external flexibility, and changes on the work floor, requiring functional flexibility on the part of graduates.

Looking first at changes in the labour market, graduates differ in the degree of job security offered by their work contract, with temporary contracts and self-employment generally offering less security than permanent salaried positions. A large percentage of graduates start off in a job on a fixed term contract, but most have progressed to an unlimited term contract five years later. In contrast, few graduates start out in self-employment, and five years after graduation this proportion has only risen slightly, to about 10%.

In general, only quite modest levels of actual job mobility are observed in the first five years after graduation. Slightly more than a third of graduates have not changed employer at all, and of those who have experienced changes, about half have only done so once. Spanish and British graduates are most often mobile, and Czech, German and French graduates least often. Female graduates are slightly more often mobile than their male peers. Humanities & Arts and Health & Welfare graduates are relatively

often mobile, while Engineering graduates are relatively unlikely to change jobs. The shift from one employer to the next is often relatively smooth, and even among the very mobile graduates (those who have changed employers more than once), about half have never been unemployed. Only one in ten graduates has been unemployed more than once since graduation. The majority of changes took place within the same occupation and/or economic sector. Only about a third of all working graduates changed occupation code between the first and the current job, and a quarter moved to a different economic sector. Even among the very mobile, around half remained in the same occupation and/or economic sector.

In terms of opportunities for skill and career development, job mobility doesn't hurt much. As one might expect, graduates who have changed employer since graduation have somewhat lower levels of mastery of the own field or discipline five years after graduation, but somewhat higher levels of knowledge of other disciplines, learning skills, alertness to new opportunities, presentation skills, and language skills. Although one may debate the direction of causality here, it makes clear that, in general, mobile graduates are not at a severe disadvantage when it comes to developing their competences at work. Furthermore, mobile graduates are on average about as satisfied as non-mobile graduates. There is also relatively little difference between mobile and non-mobile graduates in terms of the competences that contribute to greater job satisfaction. Only higher levels of negotiating skills and alertness to new opportunities were more important for mobile graduates.

Although job mobility is by no means a bad thing in all cases, the move by graduates towards more unlimited term contracts five years after graduation suggests that most would prefer to be in a situation where they, and not their employer, decide when the time has come for them to move on. Five years after graduation several factors were found to increase the chance of having a temporary contract. The younger one is, the less work experience one has acquired since graduation, and the broader the scope of operations and the smaller the size of the organization in which one works, the more likely one is to have a temporary contract. Graduates in the hard sciences or health studies, or of second level programmes in general, graduates who have obtained post-graduate qualifications, and graduates who work in the education or health sectors, are also relatively likely to have a temporary contract, while graduates in education studies or computer science, or of vocationally oriented programmes in general, graduates working in the manufacturing sector, and graduates working as a manager, legislator or senior official are relatively unlikely to be in temporary employment. Most of these effects remain significant after controlling for temporary employment in the first job.

Turning to the extent to which graduates are exposed to changes in work tasks, with the corresponding need for functional flexibility, this applies relatively often to British and Dutch graduates and relatively rarely to French graduates. It is associated with other forms of change in the organization in which graduates work, and with the

extent of innovation. As one would expect, the longer graduates have worked in a given job the more likely they are to have been confronted with changes in job tasks. In the public sector, graduates working in larger organizations are less likely to face changes in work tasks. The broader the scope, the more likely such changes. Graduates working in private sector firms facing more competition are more likely to face changes.

Graduates who have been exposed to major changes in work tasks report that their work requires a higher level of negotiating skills, ability to mobilize the capacities of others, alertness to new opportunities, coordinating skills, ability to assert authority, ability to perform well under pressure, ability to come up with new ideas and solutions, ability to work productively with others, and ability to use computers and the internet than graduates working in more stable jobs. Most of these competences are in deficit among around a quarter to a third of flexible graduates, but a similar proportion reported that these competences are in surplus. Because deficits and surpluses depend on demand as well as supply characteristics, attention is also paid to the competences that were regarded as strong or weak points of the study programme. Mastery of one's own field or discipline, analytical skills and learning skills were the main strong points mentioned, and language skills, ability to assert authority and ability to negotiate effectively were the main weak points.

The authors also looked at characteristics of the study programme that were more important as determinants of the extent to which graduates felt that their study programme was a good preparation for current work tasks. Emphasis on theories and paradigms was positively related to the evaluation of the programme by flexible graduates but not by non-flexible graduates. In contrast, participation in internships or work placements and emphasis on written assignments was positively related to the evaluation of the programme only for non-flexible graduates.

The Graduates in the Knowledge and Innovation Society

The knowledge economy is located at the confluence of two main developments, namely the growing importance of activities related to human capital and the development of information and communication technologies. Against this background it is only natural that many organizations have responded to increased competition associated with the globalization of the world economy by pursuing innovations in products, processes or markets. There are at present different methodologies to measure the extent of R&D and innovation activities, such as the "Frascatti manual", which emphasizes the human and financial resources devoted to R&D, the "Canberra manual", which aims at measuring Human Resources in Science and Technology, and the "Oslo manual", which offers guidelines for collecting and interpreting technological innovation data. It was not practically possible to incorporate any of these methodologies in a general purpose written questionnaire such as was used in the REFLEX project. Instead, graduates were asked to characterize the extent of innovation in their own organization in terms of products/services, tools/technology/instru-

ments and knowledge/methods, and to indicate whether they themselves have played a role in introducing such innovations. They were also asked to indicate whether their organization was at the forefront or more a follower in terms of innovation.

These measures are emphatically intended as a complement rather than substitute for existing methodologies. Consistent with earlier findings based on these methodologies, innovation was found to be stronger in organizations facing strong competition, with a broader and particularly more international scope of operations, and to increase with the size of the organization (especially in the private sector). Innovations were also relatively prevalent in economic sectors such as Manufacturing, Transport & Communications, and the private sector in general and relatively rare in the Public Administration and Health sectors and the public sector in general. A partial exception to the prevailing pattern was innovation in knowledge/methods, which was a little less strongly related to the abovementioned organization characteristics, and prevalent in the education sector as well as in the more technology-oriented areas of the private sector. In general, UK graduates were more likely to report a high degree of all three forms of innovation than graduates in the other countries, although they were not appreciably more likely to characterize their organizations as being at the forefront of innovation. French graduates reported relatively low levels of innovation in their organizations, and were also less likely than graduates in most countries to report that their organization was at the forefront of innovation. The ranking of countries according to the percentage of organizations at the forefront of innovation was somewhat similar to the ranking according to the European Innovation Scoreboard, but there were some striking differences. Norway was much higher-ranked according to REFLEX, while Italy, Germany and Flanders ranked much higher according to EIS.

The fact that graduates work in innovative organizations is no guarantee that they are themselves involved in introducing these innovations. Graduates most often play a role in introducing knowledge-related innovations, and least often in introducing technology-related innovations. In general, Estonian, Czech, Finnish and Norwegian graduates most often play a role in introducing innovations of all kinds, while relatively few German, Spanish and Swiss graduates play such a role. As was the case for the extent of innovation, graduates working in the private sector were more likely to play a role in introducing innovations in terms of products/services and technology/tools/instruments, while graduates working in the public sector were slightly more likely to introduce innovations in knowledge/methods. Playing a role in introducing innovations was strongly related to other aspects of graduates' work role, such as initiating contacts with experts outside the organization, utilization and/or shortages of knowledge and skills, setting goals for one's own job and deciding how to do one's own work. Innovation was also positively related to the scope of operations, but negatively to organization size. There was strong innovation in the economic sectors manufacturing, trade, transport, business, education and health. Graduates who reported that their study programme was demanding, familiar to employers,

had a broad focus and/or a high degree of freedom to choose, was academically prestigious, emphasized participation in research projects, work placements, theories & paradigms, group assignments, project- or problem-based learning or multiple choice exams were also more likely to play a role in introducing innovations. Playing a role in the introduction of innovation is worthwhile, being associated with an increase in earnings ranging from 3% for innovation of technology/tools/instruments to 6% for the introduction of knowledge/methods. There are some slight differences between sectors: innovation is more rewarded in the private sector that in the public sector.

Several competences were related to the introduction of the different forms of innovation. Graduates who played a role in introducing innovations in the area of products or services were relatively competent in terms of their ability to present products, ideas or reports to an audience, ability to come up with new ideas and solutions, alertness to new opportunities, willingness to question one's own and others' ideas, ability to mobilize the capacities of others and ability to coordinate activities.
Graduates who played a role in introducing innovations in the area of technology, tools and instruments showed high levels of the competences ability to come up with new ideas and solutions, ability to use computers and the internet, analytical thinking and willingness to question one's own and others' ideas. Graduates who played a role in introducing innovations in the area of knowledge and methods were relatively competent in terms of their ability to present products, ideas or reports to an audience, ability to come up with new ideas and solutions, willingness to question one's own and others' ideas, alertness to new opportunities, ability to mobilize the capacities of others, analytical thinking, ability to make one's meaning clear to others, mastery of one's own field or discipline, and ability to rapidly acquire new knowledge. Introducing innovations was somewhat related to the degree of specialization of the occupation relative to the graduates' own field of study.

Mobilization of Human resources
In addition to their role as producers of human resources, higher education institutions may also have a role to play in teaching students how to put human resources to better use. There are two aspects involved here. Students may learn to make better use of their own capacities, and they may learn to put the human resources of others to better use. Based on the assumption that learning by doing is likely to be a good way to develop the relevant competences for this, we looked for evidence that graduates were actively mobilizing human resources during their time in higher education. European students seem somewhat economical with the effort they put into achieving good study results in higher education. Only a minority report doing substantial extra work above what was required to pass their exams. Students appear to be more extrinsically than intrinsically motivated: to the extent that they put in extra effort, they want to see this rewarded in the form of higher grades. There are substantial differences between countries, with Dutch graduates putting in the least and Spanish graduates putting in the most effort according to the indicators used.

If students don't work as hard as they might on their study, this does not mean that they are idle. On average students put in almost 30 months during their study on other activities, mainly paid employment. Again, we see strong differences between countries, with Spanish graduates doing least and Dutch graduates the most. This result would appear to suggest that there is a trade-off between study and extra-curricular activities, but multivariate analyses reveal that the relation between the two is surprisingly weak. Although non-study-related work experience is related to lower levels of intrinsic and extrinsic study motivation, study-related work experience appears to increase both forms of motivation. Neither form of work experience has any effect on study hours. Of various programme characteristics, the degree to which a programme was regarded as demanding has the strongest effects on study hours as well as on intrinsic and extrinsic motivation. In the case of study hours this is only to be expected, but one might imagine that students of programmes that are especially demanding would find extra work and striving for higher grades a luxury that they can ill afford. The positive effect of demanding programmes may suggest that students who are challenged by a demanding programme rise to the challenge by working even harder than they need to get their degree.

Of six competences which were thought to be particularly relevant to mobilizing human resources, the ability to mobilize the capacities of others was most often regarded by graduates as a weak point of the study programme. This applied even to graduates who reported that their own level of this competence is high, which suggests that graduates may develop this competence at work rather than during higher education. Demanding study programmes are particularly effective in fostering mobilization competences. Student-centred modes of teaching and learning like groups assignments and oral presentations also have quite strong effects on several mobilization competences, as does a strong emphasis on theoretical and practical knowledge. A good knowledge base may make it easier for graduates to make the most out of their own and others' human resources. Of the various forms of extra-curricular activities, the strongest effects are found for positions held in voluntary organizations during higher education, especially on the competences thought to be relevant for mobilizing the human resources of others. A little surprisingly, study hours and intrinsic and extrinsic study motivation have almost no effects on mobilization competences.

In general, higher education graduates seem to be rather successful at mobilizing their own capacities in their current work. Most are employed in a more or less full-time capacity in jobs that match their own level and field of education. Relatively few graduates report that their capacities are underutilized. Even those graduates who work in jobs requiring no tertiary education often manage to utilize a good proportion of their capacities, particularly those competencies that were predicted to be relevant for mobilization of human resources. And graduates are not only active in the world of work: a large proportion are also engaged in training, family care or voluntary work. This even applies to full-time working graduates, although they are somewhat less

likely to be engaged in family care or voluntary work (but not training) than graduates who work shorter hours or not at all.

Although the percentages are lower, a considerable proportion of graduates also occupy positions in which they are responsible for mobilizing the capacities of others. About a third of graduates are supervisors, and about a quarter bear a high degree of responsibility for quality control. In small organizations almost half of all graduates bear a high degree of strategic decision-making authority, although in medium and small organizations this proportion drops to about a quarter and a fifth respectively.

Surprisingly, the degree of mobilization of own capacities appears to be more strongly influenced by one's own level of professional expertise than by specific mobilization competences. There are relatively few residual effects of higher education characteristics and experiences after competences have been taken into account. However, one's social network appears to be a good predictor of all forms of mobilization of human resources, suggesting that knowing the right people can help get one into demanding jobs with real authority. Several characteristics of the organizations graduates work in and the context in which it is located have significant effects on mobilization. Private sector employees are less likely to utilize their own capacities, but more likely to play some kind of leadership role in the organization. A similar split is observed for reorganizations, which have negative effects on utilization, but positive effects on mobilization of others. Working in an organization which is at the forefront in terms of innovation has a positive effect on all forms of mobilization.

International Dimensions of Higher Education and Graduate Employment
In the framework of the REFLEX study on graduate employment and work, attention was paid to mobility over the life course: the country of origin and the country of residence at different life stages. About 4 percent of the graduates surveyed in the REFLEX study were born in another country than that where they attended higher education. A higher proportion of graduates – about twice as many across all countries had parents who were born in another country. The proportion of foreign-born graduates varied strongly from about ten percent among those graduating in Switzerland and the United Kingdom to two percent or less in Belgium, the Czech Republic, Estonia, Finland, Italy and Spain. The data show indicate further that most of these graduates did not immigrate in early childhood, but rather came specifically for the purpose of study.

Around a quarter of the graduates reported that they spent a period abroad during their stay in higher education for purposes work or, as was more usual, study. The average time spent abroad was around half a year. There were substantial differences by country, but even countries where experience abroad was less common (Spain, Italy, the United Kingdom, Estonia and Norway), it was by no means an exception.

Not counting foreign born graduates, 7 percent of graduates – around one in six of all graduates who embarked on further study after graduation - reported having spent some time abroad after graduation for the purpose of further study. The average *period* of subsequent study abroad was 4 months. 16 percent of graduates spent time abroad after graduation for work, for an average of 11 months. 4 percent of graduates actually lived abroad at the time of their first employment after graduation, and 3 percent lived abroad five years after graduation. The main destination countries for graduates working abroad were Germany, the United Kingdom, Switzerland and the United States.

Graduates who were internationally mobile during higher education had a smoother transition to employment in some respects than those who were not mobile. Their job search period was somewhat shorter, and their overall period of unemployment during the first years after graduation was clearly shorter on average. In contrast, these graduates changed employers slightly more often during the first five years after graduation than graduates who had not been internationally mobile during higher education.

Of the REFLEX respondents who had graduated in the country where they were born, 15 percent had been abroad only during higher education, 10 percent had international experience both during their course of study and during the first few years after graduation, and 11 percent had been internationally mobile only during the first few years after graduation. Those who had been mobile come more from families with at least one parent who graduated from higher education, have been over-proportionately enrolled in Humanities programmes and under-proportionately in Education or Health and Welfare, are more likely to have been enrolled in second level programmes, were more active in student- or other voluntary organisations, and have participated more frequently in internships or other work experience during the course of study. Despite the well-documented overrepresentation of women in the ERASMUS programme, in the REFLEX survey the percentage of women among the internationally mobile graduates is not higher than among the non-mobile graduates. Also, those mobile during and shortly after the course of study did not report a higher number of hours of study than those who had not been mobile. They did report having achieved higher grades.

In several respects, international mobility during or shortly after graduation seems to lead to somewhat more successful employment. Mobile graduates on average work in higher status jobs requiring at least some tertiary education, in full-time employment, with higher earnings, in more innovative organisations, and especially in more internationally oriented organisations. They are however more likely than non-mobile graduates to have a temporary work contract, and are not appreciably more satisfied with their work in general.

International experience is a key asset for acquiring foreign language proficiency. Graduates who had been internationally mobile before their study, and particularly those who had been mobile during or after their study, reported clearly higher levels of ability to write and speak in a foreign language than non-mobile graduates. Jobs requiring a high level of foreign language proficiency are characterized by higher social status, better career prospects, better opportunities to learn, and higher wages. At the same time, jobs requiring high language proficiency are somewhat more frequently part-time.

Not altogether surprisingly, graduates who were mobile during higher education were more likely to work abroad five years after graduation than non-mobile graduates. Those working abroad stated far more often than the professionally non-mobile ones that their job is characterized by good career prospects, opportunities to learn and high status, that they work in organisations that are innovative with respect to technology, tools or instruments, and that they work in managerial or professional positions. They earned about one tenth more per month than those working at home. On the other hand, those working abroad had a longer transition to employment, and experience lower levels of job security. Finally, more than twice as many graduates working abroad than those working at home are employed in an organisation with an international scope.

Winners and Losers

This chapter looks at both objective and subjective determinants of success and failure in the labour market. The indicators of objective success or failure are the employment situation – have graduates managed to secure paid work, and if so does this match their own attained level and field of higher education? – and the wages earned. The subjective measures concern work values and the realization of these values, and job satisfaction.

Almost three quarters of all graduates were in 'relevant' employment at the time of the survey, that is to say held a job that matched both their level and field of higher education. Slightly less than one in ten graduates were 'vertically mismatched' (that is: held a job for which a lower level of education would have been more appropriate, but which did match their own field of education). Around one in twelve graduates were 'horizontally mismatched' (that is: held a job at their own level for which a different field would have been more appropriate). 6 percent of graduates worked completely outside their own educational domain (that is: held a job for which both a lower level and a different field of education would have been more appropriate). Of those who are in the labour force, 4 per cent of all graduates surveyed are unemployed. These shares differ by country, by level and field of education, and by other personal or higher education characteristics. Relatively few British, Spanish and first level Czech graduates, and relatively many Finnish and Norwegian graduates, were in relevant employment. A large proportion of the Czech and British first level graduates who were not in relevant employment were 'only' horizontally mismatched, and a large proportion

of British and Spanish second level graduates who were not in relevant employment were 'only' vertically mismatched, but all these groups showed high levels of graduates working completely outside their own domain. Unemployment was most prevalent in the southern European countries Spain, France and Italy. Second level graduates in general are somewhat less likely to hold relevant employment than first level graduates, but this is mainly due to their higher propensity to find employment in lower level tertiary jobs. Vertical mismatch among first level graduates is less common, but more likely to involve jobs below tertiary level. Humanities, Services, Social Science and Science have the highest share of both horizontally mismatched graduates, as well as of graduates who work completely outside their own educational domain or are unemployed.

Study-related work experience during higher education increases the probability of holding relevant work, as does having graduated from a prestigious and/or vocationally oriented study. Female graduates have somewhat higher risk of being unemployed or over-educated than males. Having a useful social network reduces the risk of working completely outside one's own educational domain. Higher grades are related to low levels of vertical mismatch as well as of working completely outside one's own educational domain. The risk of unemployment or of working completely outside one's own educational domain is negatively related to total work experience since graduation, while having been unemployed more often and for a longer time seriously increases these risks.

Allowing for differences in purchasing power, graduates from Switzerland, Germany and Norway have the highest wages, while Italian, Spanish, Estonian and Czech graduates earn the least. These differences remain large even after controlling for differences in human capital other factors that are related to wages. After taking such factors into account, large wage differences persist according to gender (females earn less), level and field of study (Business and Computing graduates, and second level graduates in general, earn higher wages, and Agriculture and Humanities the lowest), education-job match (graduates who are vertically mismatched or working completely outside their own educational domain earn lower wages), and type of employment contract (those in temporary jobs earn less than those with a permanent contract).

Turning to the subjective indicators of success, factor analysis of ten work-related values distinguished three types of work orientations, namely a career and status orientation, a professional/innovative orientation, and a social orientation. The average score per country on the career dimension corresponds negatively with wage levels, suggesting that this orientation may be more salient when a successful career is less assured. Country differences are much smaller when it comes to professional/innovative values; such orientations seem to be shared by the vast majority of respondents, although the scores are particularly high in Austria and Switzerland. In terms of social values, Spanish graduates score especially high, and British graduates score rather low. The pattern of scores per country was similar for males and females, although males

scored higher than females in most countries on the career dimension, while females scored clearly higher than males on the professional/innovative and especially the social dimension in all countries.

Defining 'winners' on each dimension as graduates who found the underlying values important and who succeeded in realizing them in their current work, and 'losers' as graduates who found the underlying values important but failed to realize them, the data showed that there were far more winners than losers on all three dimensions. Especially on the professional/innovative dimension the vast majority of graduates – almost two thirds – could be classified as winners. In comparison, just over one fifth of graduates were winners on the career dimension, and almost three in ten were winners on the social dimension. There were few losers on the professional/innovative and social dimensions, but more than one in ten graduates was a loser on the career dimension.

Women were clearly more likely than men to be winners on the social dimension, but in other respects the gender differences were slight. The Estonian, Spanish and the British samples have high shares of winners on the career dimension. In the case of Spain and Estonia this is striking, since wages are distinctly low in these countries. Spanish graduates are also often the *losers* on this dimension, suggesting that objective success or failure may be valued in relative rather than absolute terms, a supposition which is further supported by the finding that the high income countries Switzerland, Germany and Norway do not show high proportions of career winners. The country differences in terms of professional/innovative orientations are less striking, but Italian and Spanish graduates are more often losers and Austrians more often winners. There are few losers in any countries on the social dimension. Norway and Spain show the highest and Germany the lowest share of winners on this dimension. Business and Law graduates are often winners on the career dimension, while those graduating in Education studies are most likely to do well on the social dimension. There are only small differences by field of study on the professional/innovative dimension. Graduates in *Humanities* and *Agriculture and veterinary* are relatively unlikely to be winners on the career dimension. In general, second level graduates are less likely to be losers, but no more likely to be winners, on the career dimension than first level graduates.

Having followed a prestigious study programme increases the chance of being a winner on the career and/or professional/innovative dimensions, as does having a good social network, and having followed a vocationally oriented study programme. Grades in higher education barely have any effect on the chance of being a career winner, but does somewhat improve the chances of being a winner on the professional/innovative dimension. Vocational orientation also has a small positive effect on the chances of being a winner on the social dimension.

Working completely outside one's own educational domain has a large negative effect on the probability of being a winner for *all* the three winner-categories, and a positive effect on the risk of being a loser on the career and professional/innovative dimensions. Being vertically mismatched strongly reduces the chance of being a winner on the career and professional dimensions, but has a small positive effect on the probability of being a winner on the social dimension, which might indicate that some of these graduates prefer a less demanding work situation because this makes it easier to combine work and family tasks. Working in the private sector only slightly increases the probability of being a career and/or professional/innovative winner, but strongly decreases the chance of being a winner on the social dimension. As might be expected, wages have a strong effect on the probability of being a career winner. Wages also have a small impact on the probability of being a winner/loser on the professional/innovative dimension, but little or no effect on the social-values dimension. Having a permanent contract has a small positive effect of the chances of being a career-winner, a small negative effect on the chance of being a winner on the professional dimension, and a large positive effect of being a winner on the social-values dimension.

Overall, more than two thirds of all graduates reported that they were satisfied with their current work. Graduates in the Czech Republic, Austria, Norway, Belgium, Estonia and Switzerland are most often satisfied with their work, while Italy and Spain have the lowest shares of satisfied graduates. Those who are winners on the professional/innovative dimension are most often satisfied with their job, followed by winners on the career dimension, winners on the social-values dimension. The realization of professional/innovative and social values is more important for job satisfaction in higher income countries than in low income countries, but winning or losing on the career dimension has more or less the same effect in the two types of countries. Wages clearly have a larger impact on job satisfaction in the low income countries than in the other nine countries. Mismatches between education and work, especially working completely outside one's own educational domain, has a strong negative effect on job satisfaction. Those who work in public sector are somewhat more often satisfied with their work than those working in the private sector, especially I low income countries. There are generally only small effects of gender, level and field of education, although graduates in Education studies are more often satisfied with their work than the other groups.

Conclusions and policy implications

Several conclusions and policy implications were identified which were thought to be relevant to one or more of following stakeholders: the European commission, national governments, employers, higher education institutions and students.

The mainly policy conclusions for the European Commission were:

- International graduate surveys offer important insights into the changing European higher education systems: they should be repeated at 5-year intervals.

- Although higher education is increasingly internationally oriented, this does not keep pace with the even more rapid trend toward globalization. The European Union should do more to foster international exchange in higher education and to strengthen foreign languages proficiency.

The mainly policy conclusions for national governments were:

- Strengthen both the academic and vocational orientations in higher education. Both have a distinct value in preparing for the labour market
- Encourage relevant rather than non-relevant work experience during higher education
- External flexibility is not always bad. National policy should focus on promoting a smooth transition between jobs, and on encouraging graduates to choose temporary employment above unemployment.

The mainly policy conclusions for employers were:

- Employers should be aware of the large reserves of underutilized human capital at their disposal
- Employers should develop better policies to accommodate the feminization of the graduate labour market, that is, to attract and retain women, also in top positions
- Employers should look for more direct signals of graduate quality, and rely less on traditional signals such as prestige of the programme.

The mainly policy conclusions for higher education institutions were:

- Study programs should be more demanding
- Study programs should focus on strengthening professional expertise
- Student-centred methods may work, but don't ignore the value of knowledge
- Assessment drives learning as well; written assignments and oral presentations should be preferred above multiple choice exams.
- Give credits for relevant work experience
- Don't overestimate the positive effect of internships and work placements

The mainly policy conclusions for students were:

- Follow your interest and talent
- Acquire relevant experience outside higher education
- A good network is highly relevant; take time to develop yours.

Introduction

The policy context

In a recent communication, the European Commission (2003) seeks to start a debate on "the role of Universities[1] within the knowledge society and economy in Europe and on the conditions under which they will be able to effectively play that role". As Europe and the rest of the world moves towards a knowledge society, an effective system of higher education is seen as increasingly important to the economy and to society at large. Given the breadth of the concept, it should come as no surprise that there are differing conceptions of what the knowledge society is and the part to be played in it by higher education. Notions of 'super-complexity' in society and economy (e.g. Barnett, 2000) suggest greater divisions of labour and a further fragmentation of academic disciplines in the university (Clark, 1996). On the other hand, notions of 'flexibility' in professional life suggest greater emphasis on generic 'transferable' skills in the workplace and interdisciplinarity and integration in the university (Mason, 2001). There are similar ambiguities related to the trend towards increased participation in higher education, which inevitably leads to the 'massification' of higher education (e.g. Scott, 1995; Gibbons et al., 1994; Trow, 1996, 2000). Despite the move towards a knowledge society, this has led many scholars to raise the spectre of over-education: according to this view the supply of highly educated labour outstrips demand, and an increasing proportion of graduates are forced to work in jobs for which a lower level of education would be more appropriate (Burris, 1983; Smith, 1986; Asselberghs, et al., 1998, OECD, 2001). Although the evidence for over-education and the interpretation of its effects are disputed (Halaby, 1994; Oosterbeek & Webbink, 1996; Teichler, 1999; Allen & van der Velden, 2001, World Bank, 2002), it is certainly clear that higher education no longer *automatically* confers an elite status on its bearers.

Such ambiguity as to the meaning of the knowledge society is reflected in tensions in the demands made on those fulfilling key positions in the knowledge society. On one hand, these workers are expected to possess the advanced and often highly specialised knowledge and skills required of modern high-level professionals. On the other hand, in many cases they are also expected to be highly flexible and adaptable, able and willing to take up challenges not closely related to the specific field in which they have been trained. For access to key positions, tertiary education is increasingly becoming a necessary, but no longer a sufficient, condition. Whether because of the need to guarantee excellence or of the need to protect privileges of the in-group against outsiders, or a combination of both, entry to many professions is subject to an increasingly complex and demanding set of criteria.

1. Taken to mean all higher education institutions, including for example Fachhochschulen, polytechnics and Grandes Ecoles.

Against this background, higher education policy has increasingly gained a European dimension, with its own distinct influence over national education policies. It is clear that the Bologna declaration and the subsequent initiatives have put higher education in the centre of EU policy with the goal to create a "Europe of knowledge". The EU's stated strategic goal for the next decade is '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 Commission, 2000). Universities play a vital role in this Europe of knowledge, as the recent communication of the Commission has made clear (European Commission, 2003).

The REFLEX project

Recently a major project was launched, the REFLEX[2] project, which aims to make a contribution to assessing the extent to which this ambitious goal is likely to be met, and to identifying possible stumbling blocks that may be encountered on the way. The project focuses first of all on providing a more detailed description of the demands that the modern knowledge society places on higher education graduates. Due to the increasing emphasis on education and training, the increasing volatility of labour market processes, and the increasing internationalization and globalization of markets, we believe that the demands are particularly great in the areas of professional expertise, functional flexibility, innovation and knowledge management, mobilization of human resources and international orientation. A second major focus of the project is on assessing the degree to which higher education institutions in Europe are up to the task of equipping graduates with the competencies needed to meet these demands. Thirdly, the project looks at how the demands, and graduates' ability to realise them, is influenced by the way in which work is organised in firms and organisations. Fourthly, because graduates are motivated by objectives that are broader than just the world of work, the project will pay explicit attention to the goals, aims and orientations of graduates. Finally, the project looks at the transition from higher education to work and later occupational outcomes, and at how these are affected by particular characteristics of graduates, higher education institutions, employers and the broader institutional, structural and cultural context within which all these actors operate.

Methods and data

The REFLEX project has been carried out in sixteen different countries: Austria, Belgium-Flanders, Czech Republic, Estonia, Finland, France, Germany, Italy, Japan,

2. The acronym stands for Research into Employment and professional FLEXibility. For detailed information on the project, see http://www.reflexproject.org

the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK.[3] The major part of the project consists of a large scale survey held among some 70.000 graduates from higher education in these countries. In each country a representative sample has been drawn of graduates from ISCED 5A who got their degree in the academic year 1999/2000. The data collection has taken place in 2005, i.e. some 5 years after leaving higher education.[4] The mail questionnaire focuses 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, assessment of required and acquired skills, evaluation of the educational program, work orientations, and some socio-biographical information. The survey is complemented by a country study that identifies the main structural and institutional factors framing the transition from higher education to work and a qualitative study that sheds light on the main developments in higher education and in the economy that affect the acquired and required competencies.

Higher education in most European countries is characterized by a certain degree of internal differentiation. Around the turn of the millennium, when most REFLEX respondents left higher education, several countries had a binary higher education system, for example the Fachhochschule in the German-speaking countries or the HBO colleges in the Netherlands. In other countries such as France there was even more differentiation, with strong differences in prestige separating elite and mass programmes. Because it is essential to take into account differences in level of higher education, but not practical to report detailed results for each type in each country, in this report we draw a broad distinction between those higher education programmes that provide direct access to a PhD – referred to as second level programmes, e.g. university master level programmes – and those programmes that do not provide direct access to PhD – referred to as first level programmes, e.g. bachelor programmes, programmes offered by Fachhochschulen. A complete overview of the first and second level programmes is included in Appendix 1. Table 1 contains an overview of the number of available respondents and the response percentage per country.

Table 1 makes clear that the number of respondents differs strongly between countries. To prevent certain countries from dominating the mean results across all countries, all descriptive analyses presented in this report are weighted to 2,000 cases for each country. The weighting coefficient used also corrects for over- or underrepresentation of certain levels or fields of higher education compared to population figures. Multivariate analyses use unweighted data, whereby a random sample of no more than 2.000 cases per country has been drawn.

3. At the time of writing, the data from Japan, Sweden and Portugal were not ready for use. This report focusses on the remaining 13 countries.
4. In some countries the data collection ended in 2006.

Table 1
Number of respondents and response percentage per country

	Number of respondents			
Country	First level	Second level	Total	Respons %
Norway	1,397	804	2,201	50
Finland	1,187	1,489	2,676	45
The United Kingdom	1,470	108	1,578	23
Germany	544	1,142	1,686	36
Austria	122	1,699	1,821	38
Switzerland	1,578	3,304	4,882	60
The Netherlands	2,291	1,134	3,425	35
Belgium-Flanders	403	871	1,274	22
France	1,053	599	1,652	32
Italy	255	2,884	3,139	43
Spain	1,566	2,346	3,912	22
The Czech Republic	1,177	5,586	6,763	27
Estonia	820	139	959	18
Total	**13,863**	**22,105**	**35,968**	**33**

Structure of the report

Chapter 2 provides a brief overview of the theoretical underpinnings of the REFLEX project, and describes some of the key findings. Attention is paid to the demands made of graduates and the extent to which they are prepared by higher education to meet these demands. By way of a typology of occupations, the proportion of graduates that ends up in job that has an elite and or specialist (as opposed to mass and/or generalist) character is described. Other key labour market outcomes that the chapter deals with are graduates' earnings, both in terms of monthly earnings and hourly wages, unemployment and skill utilisation. In addition to describing differences in outcomes by country, gender and field and level of higher education, the effects of specific characteristics of and experiences gained in higher education are described.

Chapter 3 deals with the professional work of graduates. Five types of professions were identified, which turned out to be quite distinctive in terms of personal background, educational career, labour market position and the specificity of the match between higher education and work. Attention is also paid to the amount of additional training that is needed to become an expert in the graduates' chosen own area of work after leaving higher education. The chapter goes on to describe the competences that are typically required in the different types of profession, and the extent to which graduates possess these competences. The chapter also provides a description of the strong differences that exist between the different types of professions in the manner in which the professional role is defined, the aspects of work that their incum-

bents find important, the earnings received and selected background and educational characteristics.

Chapter 4 looks at changes in graduates' work environment, more specifically changes in the labour market and changes on the work floor. Looking first at changes in the labour market, the chapter describes differences in job security offered by graduates' work contracts and at actual job mobility in the first five years. Attention is paid to the extent to which job mobility is associated with unemployment spells or changes in occupation and/or economic sector. The consequences of job mobility in terms of competence development and job satisfaction are also investigated, as are the factors associated with the chance of having a temporary contract five years after graduation. Turning to changes on the work floor, a description is given of the extent to which graduates are exposed to changes in work tasks, and other features of the organization or its environment that affect this are described. In addition, the chapter seeks to identify competences that are especially important to graduates that are faced with changes in their work tasks, and to establish whether higher education has provided these competences to a sufficient extent. Finally, the authors looked at characteristics of the study programme that were more important as determinants of the extent to which graduates felt that their study programme was a good preparation for current work tasks.

Chapter 5 is concerned with the role played by higher education graduates in the knowledge and innovation society. The chapter starts by reflecting on the extent to which the measures for innovation specifically designed for the REFLEX project are consistent with existing definitions and measures. The relationship with aspects of organizations or their context that are known to be related to existing measures, such as competition, scope of operations, organization size and economic sector are described, and the ranking of countries according to REFLEX is compared to that based on the index developed for the European Innovation Scoreboard 2006. After describing the extent to which the organizations in which graduates work are oriented towards innovation, the role that the graduates themselves play in introducing these innovations is examined. The authors look for competences and features of higher education or the work organization and/or context that are related to a stronger role in introducing innovations.

Chapter 6 looks at the role graduates play in the mobilization of human resources. The chapter starts with an analysis of the mobilization of graduates own capacities during higher education, in terms of study hours, effort, and extracurricular experiences. Attention is subsequently paid to an analysis of the development of competences which are thought to be particularly relevant to mobilizing human resources, and the features of higher education that contribute especially to this. After this, several indicators are described that are thought to be relevant to mobilization of one's own and/or others' capacities at work, and the effects of competences, higher

education characteristics and experiences, and work and organization characteristics on such mobilization are estimated.

Chapter 7 examines international dimensions of higher education and graduate employment. Attention was paid to mobility over the life course: the country of origin and the country of residence at different life stages, and time spent abroad during and/or after higher education for study and/or work. The relation is examined between international mobility during higher education on one hand and graduates' transition from study to work and early career development on the other. In addition, the relation between international mobility and selected background characteristics, competences and features of higher education and work are examined.

Chapter 8 looks at both objective and subjective determinants of success and failure in the labour market. The indicators of objective success or failure are the employment situation – have graduates managed to secure paid work, and if so does this match their own attained level and field of higher education? – and the wages earned. In addition to describing differences in these outcomes by country, field and level of higher education, the authors identify background characteristics, features of higher education and features of the transition and early career that are related to these outcomes. The subjective measures concern work values and the realization of these values, and job satisfaction. Using factor analysis, three types of work orientations are distinguished, and 'winners' and 'losers' on each of these dimensions are identified. As for the objective outcomes, the authors look for background characteristics, features of higher education and features of the transition and early career that are related to these outcomes. They also look at the effects of objective outcomes on the chances of being a winner or a loser on the subjective dimensions.

Finally, Chapter 9 looks at the main conclusions and policy implications that can be derived from the report. By highlighting and drawing connections between some of the key outcomes in the preceding chapters, some general conclusions are drawn about the higher education experiences and labour market outcomes of graduates in the participating countries. Subsequently, several policy implications were identified which were thought to be relevant to one or more of following stakeholders: the European commission, national governments, employers, higher education institutions and students.

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Chapter 1
The Flexible Professional in the Knowledge Society

Rolf van der Velden
Jim Allen

1.1 Introduction

Higher education policy has increasingly gained a European dimension with its own distinct influence over national education policies. It is clear that the Bologna declaration and the subsequent initiatives have put higher education in the centre of EU policy with the goal to create a "Europe of knowledge". The EU's stated strategic goal for the next decade is '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 Commission, 2000). Universities play a vital role in this Europe of knowledge, as the recent communication of the Commission has made clear (European Commission, 2003). The REFLEX project aims to make a contribution to assessing the extent to which this ambitious goal is likely to be met, and to identifying possible stumbling blocks that may be encountered on the way. In this chapter we will present some general results of the REFLEX project[1].

This chapter is organised as follows. In section 2 we will explore the demands from the world of work: What are the major trends and demands that can be distinguished from the literature? Can we find evidence for these demands when we look at the required competences in the jobs that graduates hold? Are there any differences between countries? Are graduates well prepared to face these demands or do they experience any shortages? Is there any indication of an underutilisation of these competences? And which competences are considered specifically weak or strong points of the higher education program?
In section 3 we turn to the role of higher education in equipping graduates with the relevant competences. Did the higher education program provide a good basis to start working and perform well in the current job? Did it provide a basis for further learning and the long term career? And did it provide a good basis for personal development and the development of entrepreneurial skills? More specifically we will analyse, how

1. The theoretical framework is based largely on Allen & Van der Velden (2005a).

the graduates' opinions on these aspects is affected by characteristics of the program and the modes of teaching.
Next we will explore the role of higher education graduates in the knowledge society in more detail: What kind of positions do they fulfil and how is this affected by background characteristics, competences and program characteristics? What are the economic rewards on the labour market and to what extent are these rewards affected by the competences they have acquired in higher education?
In the final section, we analyse the extent to which the human capital of higher education graduates is fully utilised. The above-stated policy presupposes that the human capital that is produced in higher education is in full demand. But what if those skills are not being utilised, either because graduates cannot find a job or because they end up in a job that is less demanding? In this section we will analyse two major situations of underutilisation of skills: being unemployed and working in a job which does not fully exploit the competences of the graduate. We will identify the major factors that affect this utilisation such as personal characteristics, competences and program characteristics.

1.2 The demands from the world of work

Three trends …
In recent years, three major trends have been identified that affect the demands that higher education graduates face. One obvious trend is the increasing emphasis that has been placed on education and training, which is seen by many as the most important factor affecting economic growth (see for example World Bank, 2002). The term *knowledge society* has been coined to indicate not only the expansion of participation in higher education or of knowledge-intensive or high-technology sectors of the economy, but rather a situation in which the characteristics of work organisations across the board change under influence of the increasing importance of knowledge (Teichler, 1999). Another trend relates to changes in labour market processes. Schmid (2000) introduced the concept of the *transitional labour market* to indicate how in modern society, the demarcation lines between work, leisure time, education and care have been blurred, leading to increased mobility and flexibility patterns, to destandardisation of the life course and to an overall focus on employability. This holds especially true for those in transition from education to work. There is ample evidence that the transition is non-linear and chaotic (Hannan & Werquin, 1999) and that many graduates and school-leavers find themselves in a precarious situation (OECD, 2000). The third trend relates to the *internationalisation* and *globalisation* of product markets and labour markets and their impact for higher education (Van Damme, 2001; Marginson & Van der Wende, 2006).

… and five demands
The abovementioned trends give rise to new demands on the competences with which individuals need to be equipped. Higher education graduates have long been expected

to become experts in their own professional domain. However, the dynamic nature of the labour market and increased mobility also implies a much higher degree of flexibility and the possession of broad generic competences to ensure employability in a range of situations over their entire career. Moreover, the Lisbon goal includes strongly increasing the innovative capacities of the European economy, and an optimal use of the available human capital. Finally, the globalisation of the economy and society requires higher education graduates to be much more internationally oriented than before. Consequently, there are good reasons to believe that higher education graduates are expected to be more or less competent in at least the following five areas: professional expertise, functional flexibility, innovation and knowledge management, mobilisation of human resources and international orientation.

Professional expertise

Many higher education graduates are expected to become experts in their professional field. Experts distinguish themselves from novices by their superior mental organisation of, and ability to recall, domain-specific knowledge, and by the way they approach problems, make diagnoses, use automated procedures, have intuitive feelings about solutions and correctly infer conclusions and interpretations (Boshuizen, 1989). Expertise implies, first and foremost, a high degree of *mastery of the knowledge and skills* that are relevant in one's own domain of work. Mastery alone does not however make someone an expert. A second characteristic feature of experts is *analytical thinking*, the ability to use this mastery to diagnose and solve complex problems in their own area of work. As graduates gain more experience, they will develop tacit knowledge and an ability to quickly recognise patterns. Finally, since experts are often expected to act as an authoritative consultant or advisor for others, they need to be able to *command authority* and act decisively in uncertain situations. It is usually assumed that it takes 5-10 years of relevant work experience to become an expert in this sense (Hayes, 1981; Ericsson & Crutcher, 1990),[2] so few of the graduates approached in our survey will have fully attained this level of expertise. It is however of interest to obtain a view of how far the graduates have progressed along this path, and of course the degree to which employers demand such expertise.

Functional flexibility

The world of work is dynamic rather than static. Rapid developments in technology, markets, organisations and relevant knowledge make it necessary that higher education graduates are able to take up diverse challenges, many not directly related to their own field of expertise, and to quickly acquire new knowledge. They must be broadly employable and have the ability to cope with changes (Schmid, 2000). This may relate to changes in the job content, mobility within the organisation to another job or mobility to other organisations. In order to be flexible, graduates obviously need a

2. It should be noted that we make an analytical distinction between 'expertise', which refers to the ability to perform in an expert manner, and formally designated professional roles assigned to 'experts' working in certain occupations. Of course, many 'experts' in the formal sense will also possess a high level of expertise and vice versa, but the two concepts are not identical.

well-developed *ability to adapt to changes* in the environment, for example by quickly learning new knowledge and skills, by possessing a large reserve of general or multidisciplinary skills, and an ability to cope with changes. It is important to note that such a response, which can be characterised as 'changing the worker to fit the job' is not the only way graduates can respond to change. Another possibility is that graduates *change the environment* in which they work, so as to make better use of their existing skills despite the changes that have occurred in the demands being made of them. Finally, flexible graduates need to possess a high level of *ability to deal with change in a positive way*, seeing changes as windows of opportunities rather than as threats, being eager to learn and to try new things, and using their work as a tool for acquiring new competences through experience.

Innovation and knowledge management

In considering the importance of higher education graduates for the knowledge society, it is important to take account of the fact that such workers are often expected to do more than simply carry out a set of prescribed tasks. In many sectors of the economy, employers look to highly educated workers to provide ways of expanding and improving the way in which they provide goods and services. This relates not only to the innovation capacity of higher education graduates, but also to their ability to create an environment in which knowledge production and diffusion is optimised, and to implement innovation in their own job as well as in the organisation as a whole (Cörvers, 1999). Hence the term *innovation and knowledge management* to indicate the whole process from developing ideas to implementation. There are thus various ways in which graduates can make a contribution. First of all, graduates who possess a high degree of *innovative capacities*, creativity, curiosity, a willingness and ability to question the status quo, absorptive capacity and so on can directly contribute to the development of new knowledge and ideas for the organisation to use. Secondly, since, not all innovations need to be developed within the firm or organisation itself, graduates can contribute to innovation by *gaining access to new ideas* developed elsewhere. For this reason, an ability to notice new opportunities, access to relevant networks and networking skills, organisational learning capacity, ICT-skills, foreign language abilities and communication skills in general can be of crucial importance for the introduction of new ideas to the organisation. Related to this is the ability to *synthesize information* from different sources, to draw connections between apparently disparate subjects and to transfer existing ideas to new applications. Finally, since even the greatest ideas rarely implement themselves, an *ability to implement ideas*, to take an idea from the drawing board to the work floor, requires a high degree of organisational abilities.

Mobilisation of human resources

Higher education graduates are expected to have the ability to effectively mobilise their own competences and actively steer and direct one's own work as well as that of others. Several aspects can be distinguished. First of all, graduates need to possess a strongly developed ability to mobilize and make use of their own competences,

which implies an ability to work autonomously when working alone, to cooperate fruitfully with others when working in a team, to manage their own skills, and to be motivated intrinsically by the work at hand. Secondly, graduates may be called upon to mobilize the capacities of others. This is associated with leadership skills, but the concept is broader, involving an ability to communicate ideas and inspire others, to plan and monitor work processes, and where necessary to be assertive and to take decisive action. Related to the first two aspects, graduates need to be able to organize work so as to make optimal use of the available human resources, creating synergies in teams, setting up clear lines of communication, and where necessary adapting the work environment to fit better with their own competences and those of their colleagues or subordinates.

International orientation
Globalisation and the blurring of national borders increase the importance of a strong international orientation. This requires not only a good command of foreign languages, but also an ability to understand and empathise with other cultures, a willingness and ability to appreciate the limitations of the own national context, in short the development of intercultural competences.

It is obvious from this brief overview that the five demands are by no means mutually exclusive. There are for example good reasons to believe that expert knowledge is an important prerequisite not only for professional expertise but also for innovation and creation of new knowledge. Although the ultimate goal is different in each case, functional flexibility, innovation and knowledge management and mobilisation of human resources are all related in one way or another with graduates' ability to act as an agent of change. Moreover, there are overarching competences like reflectivity (Rychen & Salganik, 2003) that may be important for meeting all these demands.

Operationalisation of the demands
Do we find any empirical evidence that these competences are really in demand on the labour market? In the survey, we showed the respondents a list of 16 competence items and asked them to indicate to what extent this competence was required in their job. These items were a selection of the competences that have been described above for the first four demands: professional expertise, functional flexibility, innovation and knowledge management and mobilisation of human resources.[3] Most of these items are pretty self-evident, but some may need some explanatory notes. As indicated above, the demands are not mutually exclusive and some items may be grouped under multiple headings. 'Analytical thinking' for example is requested in many areas but we feel it expresses most closely the ability of an expert to use his or her knowledge and skills to diagnose and solve complex problems in their own area of work, while 'ability to assert your authority' is seen as an expression of the required ability of professional

3. For international orientation, we included only one item related to foreign language proficiency. As this is insufficient to cover the meaning of international orientation, we decided not to use this for the current analysis.

experts to command authority and act decisively in uncertain situations. 'Ability to negotiate effectively' is put under the heading of functional flexibility as it is probably one of the success factors determining the possibility that graduates change the environment in which they work, so as to make better use of their existing skills despite the changes that have occurred in the demands being made of them.

Table 1.1

Items per demand	Cronbach's alpha
Professional Expertise	**0,52**
mastery of your own field or discipline	
analytical thinking	
ability to assert your authority	
Functional Flexibility	**0,59**
knowledge of other fields or disciplines	
ability to rapidly acquire new knowledge	
ability to negotiate effectively	
Innovation and Knowledge Management	**0,76**
ability to use computers and the internet	
ability to come up with new ideas and solutions	
willingness to question your own and others' ideas	
alertness to new opportunities	
Mobilization of Human Resources	**0,83**
ability to perform well under pressure	
ability to use time efficiently	
ability to work productively with others	
ability to mobilize the capacities of others	
ability to make your meaning clear to others	
ability to coordinate activities	

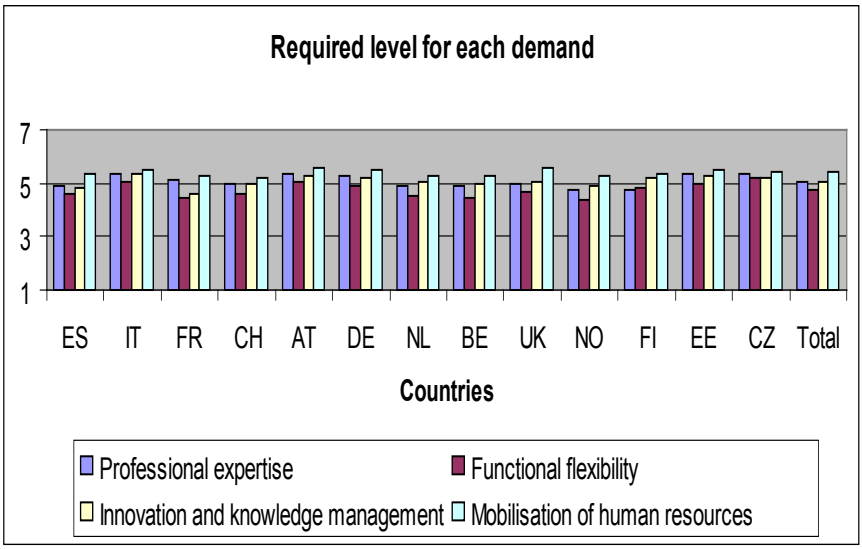
Table 1.1 shows the Cronbach's alpha for the different scales. This coefficient indicates the internal consistency of a scale and is determined by the correlation between the different items. The scales for professional expertise and functional flexibility show low reliabilities (0.52 and 0.59 respectively). However this low alpha is mainly due to the low number of items involved and the fact that some items do not correlate very strongly with the other items (e.g. this holds for 'ability to assert your authority'). Rather than mixing up the items to try and develop stronger scales, we decide to keep these two scales as they are and to use the average scores on the underlying items as an indication for the two demands. With this decision to prefer theoretical purity above

empirical strength, we run the risk that these scales will be contain some 'noise' which will result in less explanatory power. However as we shall see later, the scale with the lowest reliability, professional expertise, actually has the strongest explanatory predictive power in the analyses. The reliabilities for the scales on innovation and mobilisation of human resources are quite good (alpha 0.76 and 0.83 respectively).

Required level

Figure 1.1 displays the results of the required level for the four demands in each country for graduates who are currently working.

Figure 1.1



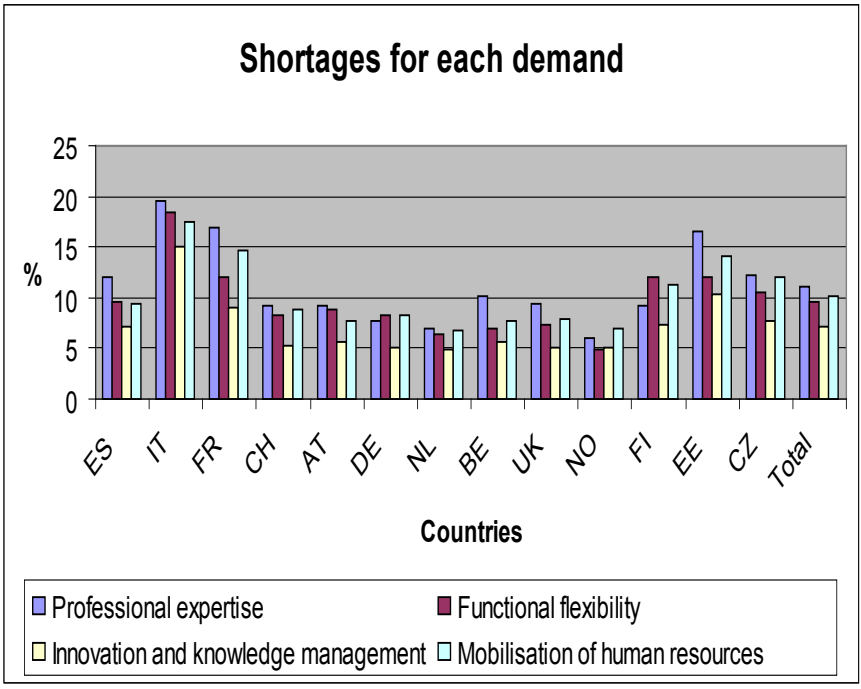
As a general conclusion we san say that in all countries graduates are confronted with relatively high levels of required competences for each of these demands (about 5 on a scale from 1 'very low' to 7 'very high'). Mobilisation of human resources seems a little bit higher in demand (average 5.4) and functional flexibility a little bit lower (4.7). The differences between countries are quite small. Italy, Austria, Estonia and the Czech Republic score relatively high on all types of demands (differences of 0.25 or more from the average). France scores relatively low on functional flexibility and innovation and knowledge management, Norway has relatively low scores on professional expertise and functional flexibility and Belgium scores relatively low on functional flexibility.

Shortages

To what extent are graduates able to meet these demands? Are there any serious shortages in terms of the competences that graduates have acquired? Figure 1.2 displays

the percentage of graduates claiming to have a competence level that falls short of the required level in their job. A shortage is defined as a difference of at least two points between required and acquired level. For each item the percentages of graduates indicating such a shortage has been calculated. The data in figure 1.2 display for each domain the mean of these percentages for the underlying items.

Figure 1.2

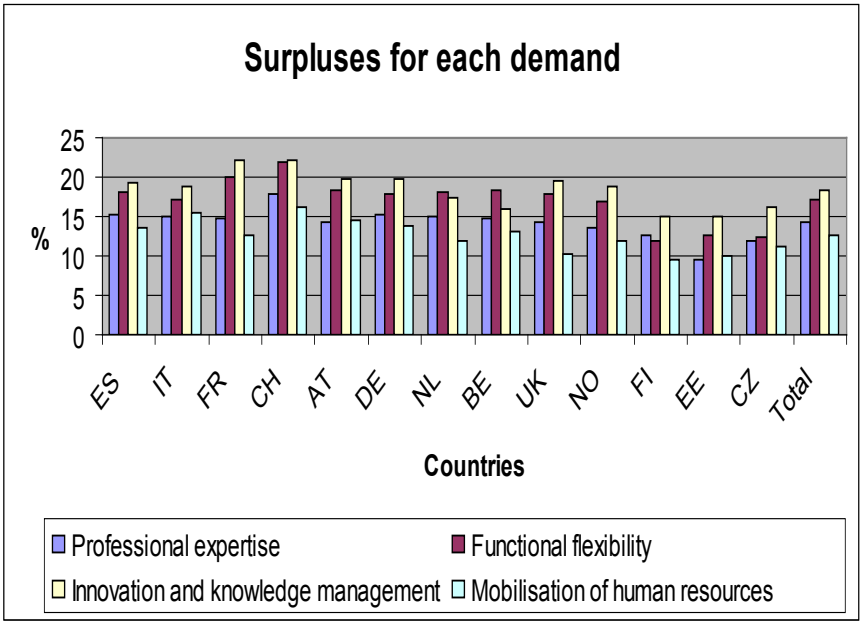


Overall, not many graduates claim that they have a shortage in their competence level for any of these demands. The overall percentage of graduates indicating that they experience a shortage is some 10% for most of the demands and even only 7% in the case of innovation and knowledge management. This means that in general graduates consider themselves quite apt to do the job they hold, a result that is very much in line with the research on undereducation (see Hartog, 2000). Note however that even this may have some serious consequences: a gap of two points on a 7-point scale may seriously hinder the graduates to adequately perform their job. Moreover, there are some important differences between the countries. In Italy the share of graduates indicating shortages ranges between 15 and 20% for each of the four domains. In France and Estonia, graduates report higher shortages in the area of professional expertise (difference of some 5% from the overall figures). On the other extreme, Norwegian and Dutch graduates seem to perceive the least shortages.

Surpluses

Graduates may not only have shortages, they also may have acquired more competences than they are required to use in their job. Figure 1.3 shows the results. Like shortages, we define surpluses as having a difference of at least two points on the scale from 1 to 7 between the acquired level and the required level. For each item the percentages of graduates indicating a surplus has been calculated. The data in Figure 1.3 display for each domain the mean of these percentages for the underlying items.

Figure 1.3



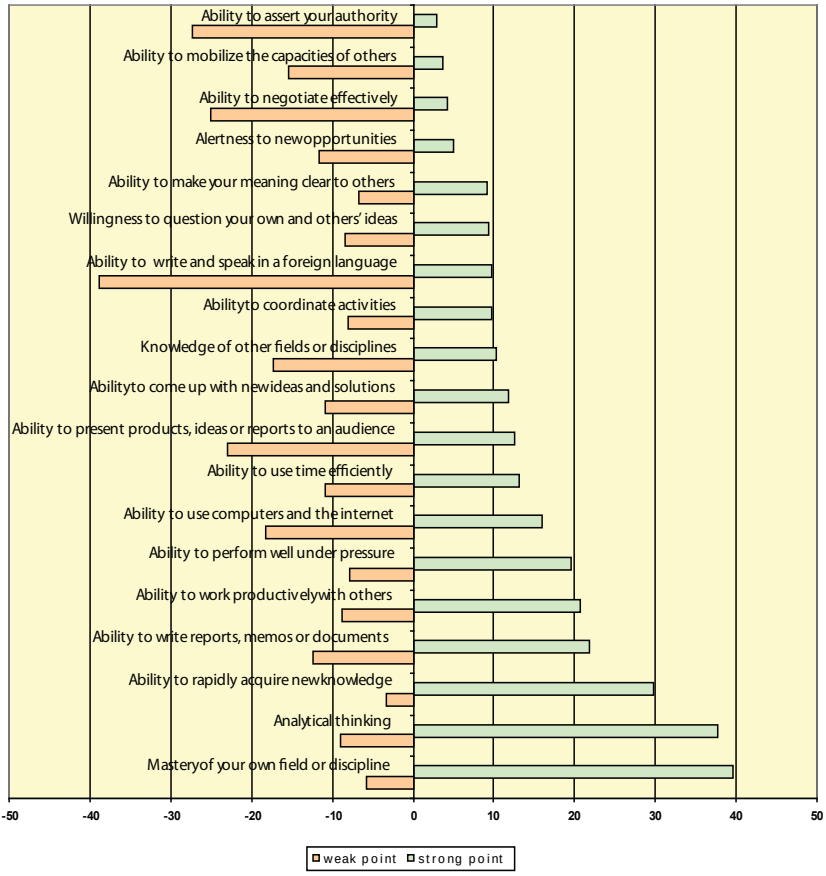
As expected we find that graduates more often report having a surplus than having a shortage. This is in line with the findings from the overeducation research that show that overeducation (that is having acquired more education than is required in the job) is a more frequent phenomenon than the opposite phenomenon of undereducation (see Hartog, 2000). An interesting result is that we find the highest surpluses in the area of innovation and knowledge management (18%) and functional flexibility (17%). Apparently, firms and organisations do not make use of the full potential of the competences of the graduates in these areas, which is all the more surprising given the importance of innovation and flexibility. Compared to these two areas, the extent of surplus is relatively low in the area of mobilisation of human resources (13%) and professional expertise (14%). Again we can note some differences between the countries. Swiss graduates seem to experience the largest surpluses for each demand. Given the fact that they have average scores on required level and relatively low scores

on shortages, this seems to indicate that Swiss graduates have more reserves than the graduates in other countries. For France the situation is less clear as French graduates have relatively more shortages on all demands as well as more surpluses in the area of functional flexibility and innovation and knowledge management. This seems to point more to an ill-functioning allocation mechanism where French graduates either end up in jobs for which they are not sufficiently qualified or end up in jobs that demand too little. Finnish graduates score relatively low on the surpluses. Given the average scores on the other two variables, this seems to point to a more efficient acquisition of competences (no major shortages, no surpluses). Estonian graduates and Czech graduates also score low on surpluses but this may be explained by the relatively higher requirements in all four areas.

Strong and weak points

Which are the skills that graduates regard as relatively strong or weak points of their higher education program? We asked the graduates to name a maximum of 3 skills that they considered to be a strong point of their study program and also a maximum of 3 skills that they considered a weak point of their study program. Figure 1.4 provides an overview of the original 19 items presented to the graduates, and the percentage of graduates that considers these skills as a strong or a weak point of the higher education program.

Figure 1.4



Mastery of your own field, and analytical thinking and ability to rapidly acquire new knowledge are the clear strong points of the European higher education system. 30% or more of the graduates consider these three competences as the strong points of their education, while they are relatively seldom mentioned as weak points. This does not come as a total surprise as these are the skills that higher education programs have traditionally been focusing on. Ability to write and speak in a foreign language, ability to assert your authority, ability to negotiate effectively or to present products, ideas or reports to a wider audience are often considered weak points of the higher education program.

1.3 On the role of higher education in preparing graduates for the labour market

Complex demands on higher education

Graduates' ability to meet the demands that the knowledge society makes of them depends in no small part on the competences that they develop through higher education. However, higher education policymakers face demands that are just as complex as those facing graduates. They have to consider how higher education can be designed so as to equip graduates with the competences needed for successful performance in the knowledge society, or at least to lay the foundation for acquiring these competences through work experience. In doing so, how do they strike a balance between the sometimes apparently contradictory demands made of graduates, such as the need for specialized knowledge and flexibility? How do they decide between investing in the competences of the best and brightest, and making higher education more accessible to a broad range of young people? Although this may seem like an 'either/or' decision, most higher education policies have in fact adopted a strategy in which they develop specialised knowledge *and* flexibility and embraced a policy that furthers inclusiveness *and* selectivity. But what further measures do they need to take to ensure that graduates quickly find their way in the world of work, for example by forging links with employers and employer organisations, by encouraging the direct acquisition of work experience during higher education, or by taking steps to improve the transparency and acceptance of higher education qualifications by employers? Finally, given that education systems are each embedded within their own national constellation of institutions, laws, customs and so on, how quickly can they adjust to the essentially global challenges of the knowledge society?

Different solutions

There is strong evidence that higher education policy makers are well aware of the challenges they face. However, so far there is little evidence that this has led to an integrated view of the part higher education is required to play in the knowledge society. There rather seem to be competing perceptions of the problem. Notions of 'super-complexity' in society and economy (e.g. Barnett, 2000) suggest greater divisions of labour and a further fragmentation of academic disciplines in the university (Clark, 1996). On the other hand, notions of 'flexibility' in professional life suggest greater emphasis on generic 'transferable' skills in the workplace and interdisciplinarity and integration in the university (Mason, 2001). This tension can be resolved to some extent by offering a mix of specialized and more general programs. It is however noticeable that different countries arrive at distinctly different mixes, and that the relative merits of further specialization and greater flexibility are still subject of considerable discussion in most countries.

Different theoretical approaches

The test of whether higher education is up to the challenges posed by the knowledge society will lie in the actual educational practices employed, and the concrete results achieved. The changing demands for graduate competences in the knowledge society

is reflected in the development of educational theories on instruction and learning outcomes at the level of individual study programs. Recent research suggests that there is a strong relation between the development of competences and particular characteristics of the learning environment (Vaatstra & De Vries, 2004). It would go too far to fully discuss all educational theories on instruction and learning outcomes, but we can note a number of recent developments:

- *Situated learning* theories (CTGV, 1990; Glaser, 1991) emphasize that competences and competence development are context-specific. They stress the importance of coherence and context-relevance (e.g. real life experiments, simulation, and practical work experience) in the design of the curricula in order to develop professional expertise.
- *Self regulated learning* theories point to the relevance of meta-cognitive abilities and information processing strategies of students (Kolb, 1984; Vermunt, 1992). Learning styles differ between students ranging from a memorising and rather atomistic way of learning towards a more constructivist approach in which concepts and theories are actively incorporated in a coherent body of knowledge. An interesting finding in this respect is that the way examinations are organised may foster a different learning style than the curriculum actually intended (Semeijn & Van der Velden, 2002): e.g. multiple choice exams foster different competences than the writing of essays, although the actual curriculum may be quite the same.
- *Active learning* theories reject the traditional naïve model of the teacher as the expert, filling so to say the brains of the students with his knowledge. 'Powerful learning environments' (De Corte, 1990) and active instructional methods like problem-based learning and project-oriented education are thought to foster the development of generic competences like problem solving and meta-cognitive abilities.

In addition to these innovative ways of learning based on elaborate theories on how individuals actually learn, educational research has traditionally stressed '*time on task*' as one of the most important factors affecting student outcomes. That is the actual time students spent on education (within the class-room and through self-study) is a good predictor of the learning outcomes net of other characteristics such as intelligence.[4] Other aspects of education that may help prepare graduates to meet the demands of the world of work include:

- Complementarity between education and research: it might make a big difference whether graduates study at an institution with many leading experts in their research field, and if so to what extent they have become involved in research during their study. Much is expected of universities as motors of innovation. It is important to see to what extent this 'rubs off' on graduates, in the form of higher levels of innovative competences.

4. As Thomas Edison famously claimed, genius is 1% inspiration and 99% perspiration.

- *International focus* of education: there has been a large increase in recent years in the emphasis placed on the acquisition of international experience, in the form of exchange programs, internships in foreign companies and the like. Obviously this increases the international orientation of the students, but it may affect other areas of competence as well.

Some empirical evidence

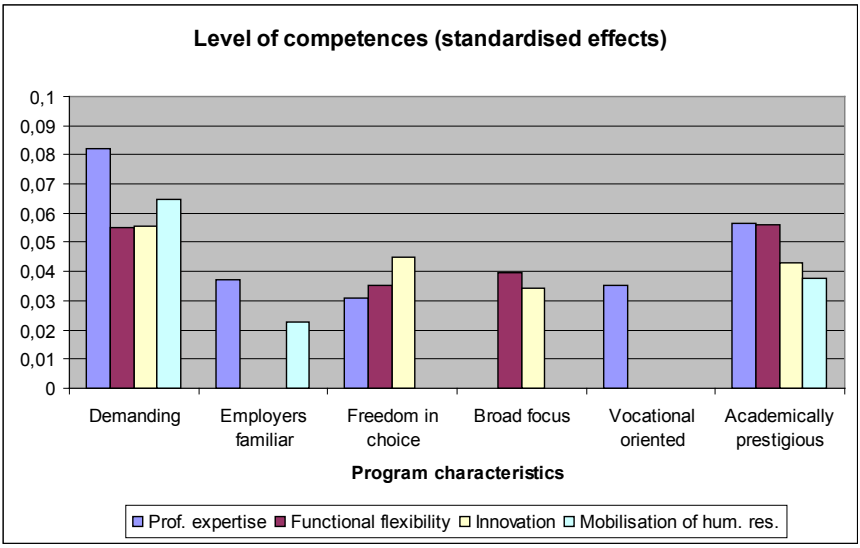
Can we find any evidence for these claims in our data? How is the acquisition of competences related to program characteristics and modes of teaching? The following graphs present the results from some multivariate analyses in which the competences of the graduates in each of the four areas are related to program characteristics, modes of teaching and learning and learning experiences outside higher education. All results are controlled for general differences between countries, fields of study, level of degree and some personal characteristics (gender, age, social background and study behaviour). We deliberately choose not to include any experiences after leaving higher education, notwithstanding the fact that the dependent variable was measured at the time of the survey and thus affected by these latter experiences as well. However these experiences are in turn also affected by the higher education experiences and we wanted to have as close as possible an estimation of the total effect of what higher education graduates have at their disposal when entering the labour market.[5] Although the results are presented in different graphs, all effects are estimated in one analysis, so controlling for all other variables. We present the standardised[6] effects to allow for an easy comparison across the graphs. Full results are available in the statistical appendix for this report on the project's website.

The effects of the study program

Concerning the characteristics of the study program, we asked the graduates to indicate to what extent certain descriptions applied to their study program: 'program was generally regarded as demanding', 'employers are familiar with the content of program', 'there was freedom in composing your own program', 'program had a broad focus', 'program was vocationally orientated' and 'program was academically prestigious'. For each of these descriptions they could assign a score ranging from 1 'not at all' to 5 'to a very high extent'.

5. We also estimated the models including experiences after leaving higher education, but these do not alter the effects of the other variables.
6. By standardisation, the scales are made comparable with a mean zero and a standard deviation one. The parameters display the increase or decrease in the dependent variable when the independent variable increases with one standard deviation. Effects between 0 and .10 are considered weak, between .10 and .25 as moderate and above .25 as strong.

Figure 1.5



All effects significant at 0.01 level. Non-significant effects not shown.

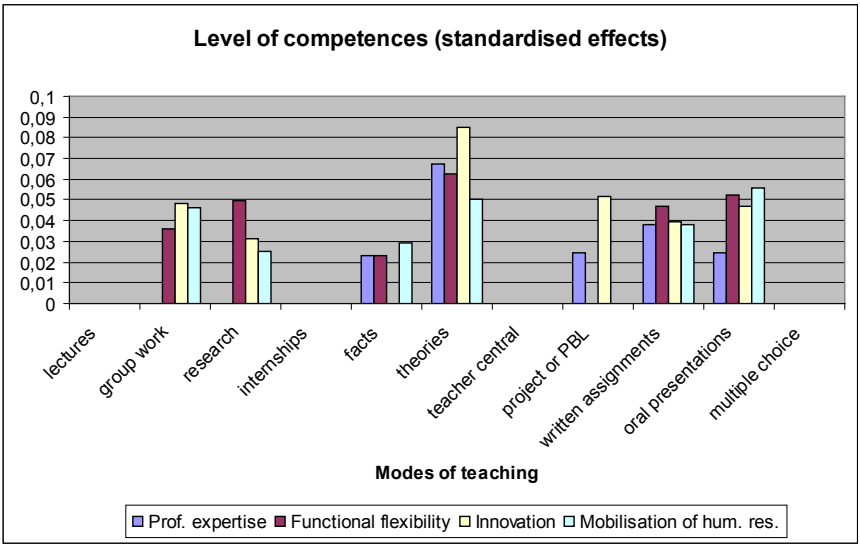
If we look at the results in Figure 1.5, it is clear that in general the effects are quite weak. All estimates are smaller than 0.10, which means that increasing the independent variable with one standard deviation leads to an increase in the dependent variable with less than one-tenth of a standard deviation. Furthermore, we have to keep in mind that the characteristics are not mutually exclusive and different combinations of characteristics are possible. This being said, following a demanding program is clearly related to the competence level in each of the four areas. This is also what we would expect as this characteristic has the closest association with developing competences. Following programs that are academically prestigious or that offer much freedom in composing your own program are also related to the competence level in almost all areas, but the effects are smaller than for the former characteristic ('demanding program'). As we would expect, a strong vocational orientation of the program and employers being familiar with the study program has a positive effect on level of professional expertise, but there is no effect on the competence level in the other areas. Conversely, a broad focus of the program is related with a higher level of functional flexibility and innovation and knowledge management, but has no effect on the level of professional expertise.

The effect of modes of teaching and assessment

Apart from general program characteristics, respondents were asked to indicate to what extent specific modes of teaching and assessment were stressed during their study: 'lectures', 'group assignments', 'participation in research projects', 'internships, work placement', 'facts and practical knowledge', 'theories and paradigms', 'teacher as the main source of information', 'project and/or problem-based learning', 'written

assignments', 'oral presentations by students' and 'multiple choice exams'. Again they could assign a score ranging from 1 'not at all' to 5 'to a very high extent'. Figure 1.6 presents the main results.

Figure 1.6



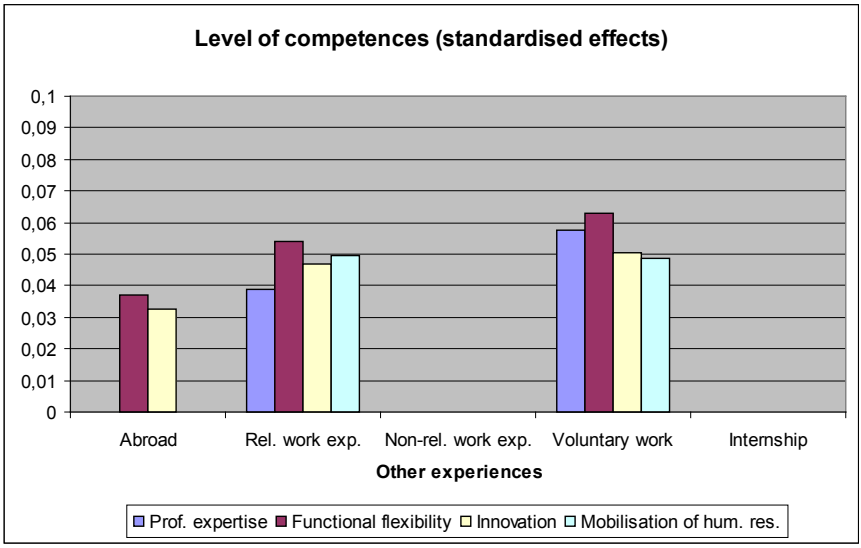
All effects significant at 0.01 level. Non-significant effects not shown.

Again we can note that the estimated effects are weak at best. The level of competence in all four areas is most strongly related to programs that are characterised by stressing theories and paradigms, especially in the area of innovation and knowledge management. Written assignments and oral presentations are also related to higher levels of competence in all four areas. Group work and participation in research is related to somewhat higher levels of competence in all areas except professional expertise, while project and problem based learning is related to a higher level of innovation and knowledge management (but surprisingly not with a higher level of mobilisation of human resources).

The effect of other leaning experiences

Students do not only acquire competences as a result of their higher education program, but also develop skills outside this context. We asked the graduates to report on these other learning experiences, such as study or working abroad during higher education or having had work experience before or during higher education. Figure 1.7 presents the result of the importance of these other learning experiences.

Figure 1.7



All effects significant at 0.01 level. Non-significant effects not shown.

Holding a position in a student or other voluntary organisation or acquiring study-related work experience before or during higher education is related with higher levels of competence in each of the four areas, while – as we would expect – non-relevant work experience has no effect at all. Having had some study or work experience abroad during higher education is related with a somewhat higher level of competence in the area of functional flexibility and innovation and knowledge management, but has no effect on the other two areas. In line with the previous result of modes of teaching, we find no effect of having followed an internship or workplacement. This may come as a bit of a surprise as internships are often considered to provide a good basis for developing professional expertise (e.g. OECD, 2000). However, internships and workplacements may also suffer from a lack of quality control and are not necessarily the best places to develop one's competences.

Does higher education provide a good basis to enter the labour market?

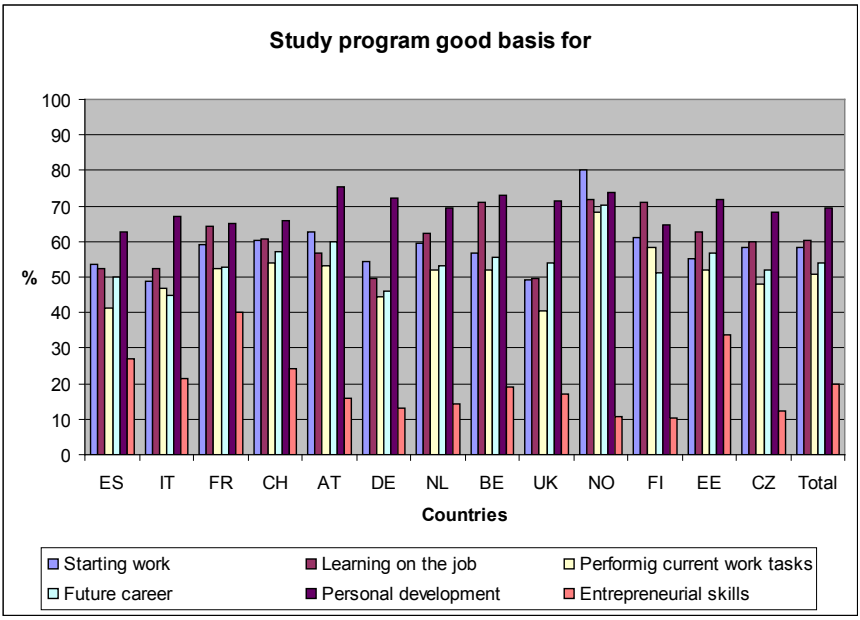
Demonstrating a relation between program characteristics and modes of teaching on the one hand and the level of competences on the other hand does not necessarily mean that higher education provided a sufficient basis to enter the labour market, nor does it necessarily indicate a sufficient basis for the later career. To indicate this, we asked the graduates to assess on a scale from 1 'not at all' to 5 'to a very high extent' whether their study program was a good basis for:

- starting work;
- future learning on the job;
- performing your current work tasks;
- future career;

- your personal development;
- development of entrepreneurial skills.

Figure 1.8 displays the shares of graduates indicating that their study program was a good basis for these different aspects (scores 4 and 5).

Figure 1.8



There are clear differences between the different aspects and between the different countries. Some 70% of the graduates indicate that their study program was a good basis for personal development, while only 20% indicate that it was a good basis for developing entrepreneurial skills. Clearly developing entrepreneurial skills is not a core business of higher education, but there are some unexpected exceptions: it seems to be better developed in France (40%) and Estonia (34%), and less developed in Norway and Finland (each some 10%).

Unlike entrepreneurial skills, one can say that preparing students for the labour market is a central goal of higher education. In this respect we distinguish a short term goal of education, i.e. providing a basis to start working on the labour market and to perform well in their first jobs as well as a long-term goal, i.e. to provide a basis to further develop their skills and to develop their future career. Between 50 and 60% of the graduates indicate that their study program reached these goals. Given the importance of these goals, these percentages are not very high. In fact, if we take the scores 1 and 2 together, 19% of the graduates declared that their study program provided no good basis to start working, 22% said it was no good basis for performing the current

work tasks, 15% said it was no good basis for further learning on the job and 18% said it provided no good basis for the future career. This indicates that the short term goal of higher education (providing a valid entry ticket to the labour market) was fully realised in 50-60% of the cases, while it was considered not realised (at all) in some 20% of the cases. The long-term goal of higher education (providing a basis for long-term employability) was considered fully realised in 55-60% of the cases, while it was considered not realised (at all) in 15-20% of the cases.

However, there are large differences between the countries. In the UK, Germany and Italy, only some 50% of the graduates indicate that their program provided a valid entry ticket to the labour market or a basis for long-term employability (difference of at least 5%-points from the overall averages), while in Norway the share of graduates indicating that their study program provided a good basis for these aspects is around 70-80% (i.e. between 10 and 20%-points higher than average). Also Finland stands out as a country where the higher education system provides a relative good basis for further learning on the job and performing current work tasks, while the Austrian higher education system scores higher on providing a good basis for the future career.

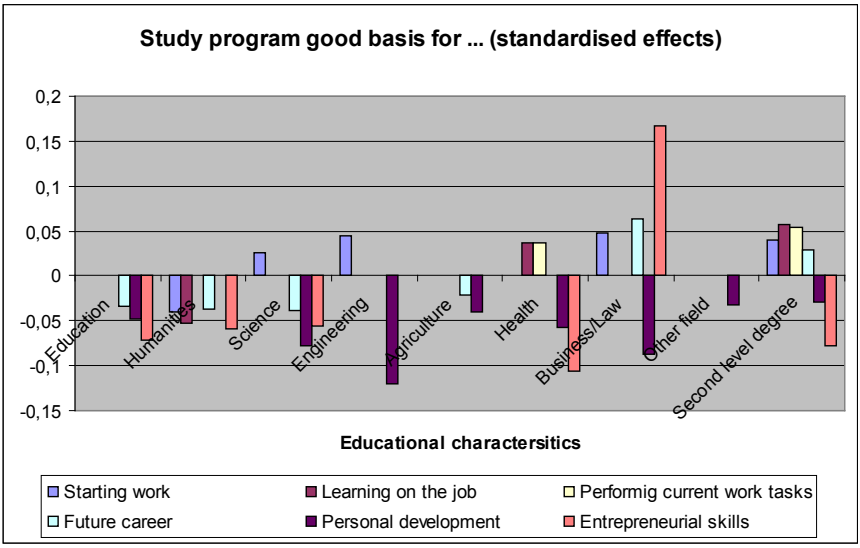
How are these evaluations related to characteristics of the study program? The following figures display the main results of six regression analyses on the opinions of the graduates regarding these six areas. All estimates are controlled for general country differences. As in the earlier analysis all estimates shown are the standardised effects. Full results are available in the statistical appendix on the project's website.

The effects of the educational characteristics

Figure 1.9 shows the results for the field of study[7] and the level of higher education (second level degree versus first level degree[8]).

7. For this analysis we distinguished the ISCED field of study 'social science' into 'business and law' and all other social sciences (such as psychology etc), here labeled as 'social science'.
8. Instead of differentiating between Master and Bachelor level, we distinguish between courses that give direct access to a Ph.D. program (second level degree) and courses that do not (first level degree).

Figure 1.9



All effects significant at 0.01 level. Non-significant effects not shown. Reference category social science.

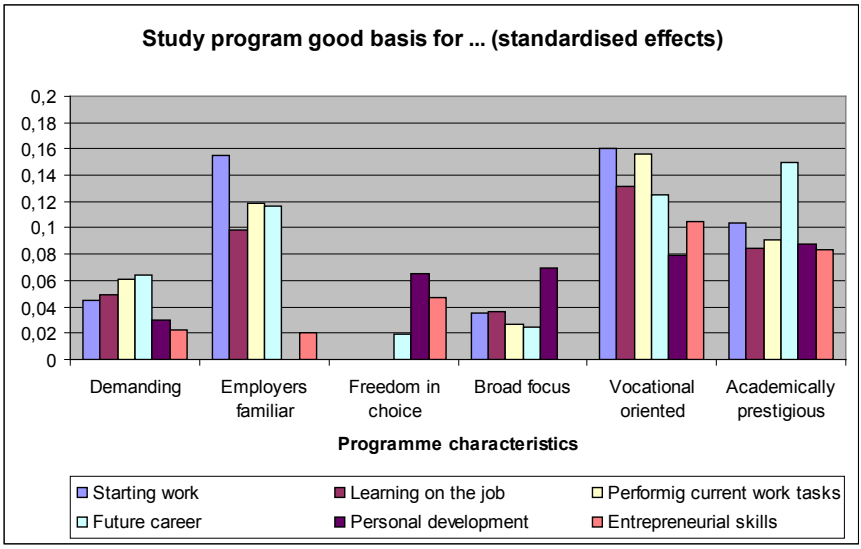
In general, field of study and level of degree show weak effects (effects smaller than 0.10) on the evaluation of the program. Second level degrees provide a better basis for the labour market (both in the short and in the long run) than first level degrees. However the reverse is true for providing a basis for personal development, and the development of entrepreneurial skills. If developed at all, first level degrees seem to provide a better basis for the development of entrepreneurial skills than the more academically oriented second level degrees.

Graduates from science, engineering and business/law think that their study program provided a better basis to start working than the graduates from the reference category social science, while graduates from humanities think that their field of study provided a worse basis to start working. Graduates from business/law also think that their study program provided a much better basis for developing entrepreneurial skills, while most of the other fields of study show negative effects. Social science and humanities seem to be the fields of study that provide the best basis for personal development. Especially graduates from science, engineering and business/law think their study program did not provide a very good basis for personal development.

The effects of the study program

Figure 1.10 presents the effects of the characteristics of the study program.

Figure 1.10



All effects significant at 0.01 level. Non-significant effects not shown.

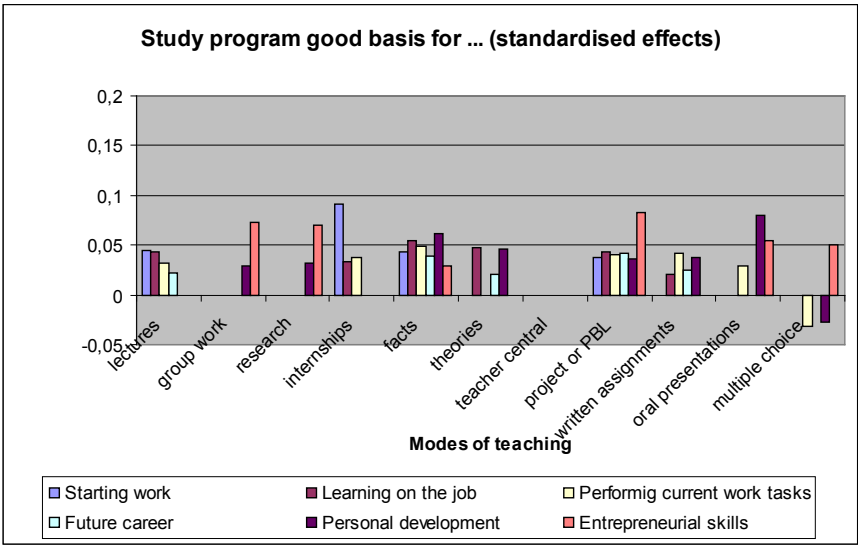
In general the effects of the program characteristics outweigh the effects of field of study or level of higher education. Many effects can be considered as moderate (range from 0.10 to 0.25). Especially vocational oriented programs seem to do a good job in preparing their students to start working, to perform their current work tasks, to provide a basis for further learning on the job, and the future career, and even seem to have a positive effect on providing a basis for personal development and entrepreneurial skills. The same applies to having followed an academically prestigious program although the effect sizes are smaller where it regards the preparation to start working and perform current work tasks, or to provide a basis for learning on the job. Having followed a program that is familiar to employers also seems beneficial at least for the integration into the labour market, not for developing personally. Having followed a demanding program or a program that had a broad focus has a positive effect on the evaluation results in almost all areas, but the effect sizes are much smaller compared to the effects of the previous characteristics. For having followed a demanding program this may seem disappointing low given the larger effects on the level of competence. We will come back to this discrepancy in the concluding section. Finally, having followed a program that offers much freedom in composing your own

program has some positive effect on providing a good basis for personal development and the development of entrepreneurial skills.

The effect of modes of teaching and assessment

In line with the above mentioned theories on learning, we find some interesting results of the modes of teaching and assessment as well. Figure 1.11 presents the main results.

Figure 1.11



All effects significant at 0.01 level. Non-significant effects not shown.

In general the effect sizes for the modes of teaching and learning are smaller than for the program characteristics, and more or less of the same size as the differences by field of study or level of degree.

Stressing facts and practical knowledge and stressing project- and problem-based learning as a mode of teaching has a consistent positive impact on all six areas. Stressing lectures and internships[9] has a positive effect on the labour market related goals, while group work, participation in research and oral presentations seem to benefit the personal development and development of entrepreneurial skills, but do not necessarily provide a good basis for the other areas. In line with what we expected, we find some negative effects of stressing multiple choice exams as a way of assessing students. This has a negative effect on providing a good basis for performing current

9. For internships this seems contradictory to the earlier finding that showed no effect on competence level. However this may simply indicate that internships are important because they provide information to future employers about the skills of the graduates, and therefore result in smoother transitions, rather than providing good learning environment.

work tasks and personal development, but an – unexpected – positive effect on developing entrepreneurial skills.[10]

1.4 Elite and mass

Elite and mass higher education
In addition to discussions on the types of competences needed by graduates in the knowledge society and the ways in which these can be developed, debates have focused on the relative merits of strategies aimed at developing the talents of the top level of students, versus those aimed at increasing the accessibility of higher education. Proponents of the former viewpoint emphasize the economic advantages to be gained by a country whose higher education graduates perform at the cutting edge of new developments in science, technology and the economy in general, and the 'flipside' of this, the ever-present danger of falling behind in the race to be competitive with other countries. Advocates of the opposite view are more likely to emphasize the social and economic advantages of a large highly educated workforce, and the importance of accessibility to higher education from the point of view of social equality. In fact, increased participation in higher education has already led to a certain 'massification' of higher education (e.g. Scott, 1995; Gibbons et al., 1994; Trow, 1996, 2000). It is clear that higher education no longer *automatically* confers an elite status on its bearers. At the same time, there are strong indications that various 'elites' continue to play an important role *within* mass higher education in many countries, based on a stratified higher education system, protected labour market positions, or both (e.g. Brennan, 2002; Brown & Scase, 1994).

Different occupational positions
Alongside the distinction of elite and mass higher education, we can also distinguish between elite and mass positions on the labour market. Firms and organisations that operate at the forefront of their respective fields, and as such form the leading edge of the developing knowledge society are likely to recruit candidates for key positions from the pool of higher education graduates. We would expect graduates who are groomed for such 'elite' positions of power and influence to be recruited differently and be subject to different demands than higher graduates who fulfil 'mass' positions in the knowledge society.

Elite specialists
Within 'elite' and 'mass' positions there are also likely to be differences in demands, depending for example on whether the production of the relevant goods or services require the use of detailed specialized knowledge, skills or routines, as opposed to a high level of multidisciplinary knowledge or generic skills. *Elite specialist* positions

10. As there is no theoretical reason why multiple choice in itself should foster any competence – except stimulating the short tem memory - one might be inclined to relate this to the sometimes vivid market among students in exchanging exam questions.

such as high level physicians and lawyers have a high status based largely on their supposed high degree of expertise, and recruitment for this group is often highly regulated and based on specific educational credentials, giving them a protected position in the labour market.

Elite generalists

Elite generalists are often those occupying the main decision-making positions in society: high-level management positions in private companies, top politicians and civil servants, and in many cases those working directly under these top-level positions as advisors, opinion leaders and so on. Such workers are likely to require a certain amount of expertise in the form of 'dossier-knowledge' but the demands made on them in terms of mobilisation of human resources may be greater. In some countries such as the UK, Japan and France, the prestige of the university (Oxbridge, State University, Grande Ecole) is a typical requirement for entry into this elite group. In other countries, in the absence of such elite schools, selection into these positions will necessarily follow a different route.

Mass specialists

As the terms suggests, 'mass' positions are more plentiful, and recruitment criteria for these positions are likely to be less stringent than for 'elite' positions. This by no means diminishes the importance of these positions for the knowledge society. A major force driving the early expansion of higher education was the growing demand for large numbers of high-level specialists, such as teachers, nurses etc. The professionalisation of these *mass specialist* jobs required high-level training, sometimes organised in separate vocational colleges. Like elite specialists, the workers are likely to be required to possess a high degree of specialized knowledge, but unlike elite specialists they need not necessarily have reached the highest qualifications. Recruitment to these positions is also likely to be subject to strict requirements in terms of qualifications, although unlike elite specialists the entry into the qualifying programs is much less heavily rationed. Their position in the labour market is therefore less secure and more dependent on supply and demand fluctuations. The status of the mass specialists is also much lower and has been decreased as a result of the expansion of higher education.

Mass generalists

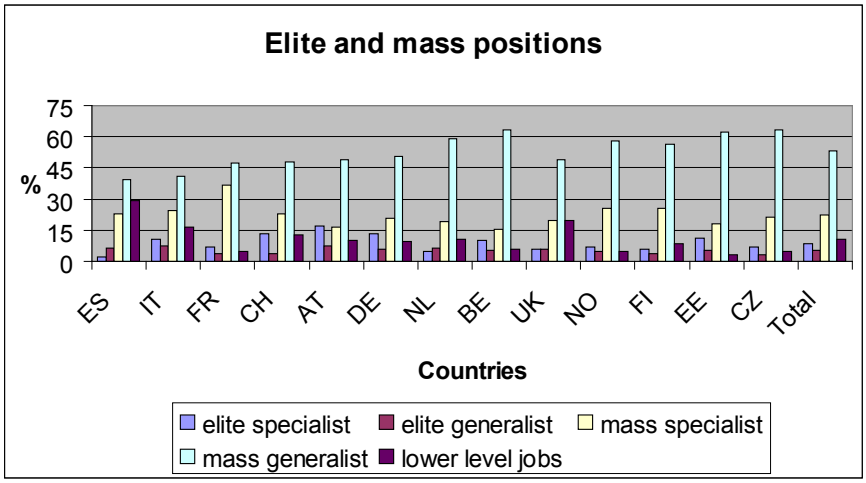
More recently, the growth of higher education seems to stem from the demand for more *mass generalists:* studies like economics and business administration prepare not only for the elite positions, but serve increasingly as a source of providing graduates with a high level of generic competences for mass positions in marketing, sales, as well support staff positions. Professional expertise and innovation and knowledge management is likely to be less important for occupants of these positions than functional flexibility. Recruitment for such positions is likely to be much less regulated than for the other categories.

Three measures to define occupational positions

In our survey, we classified the jobs that graduates hold five years after graduation into these four categories as well as a fifth one, lower level jobs. All jobs were coded into the ISCO88 occupational classification on the most detailed level possible. This classification can be used to assign prestige scores to each of the occupations. We used the Standard International Occupational Prestige Scale (SIOPS: Treiman, 1977) for reasons of conceptual clarity (for a discussion on the different occupational status measures and their pros and cons, see Ganzeboom and Treiman, 2001). Elite positions were defined as those occupations for which an ISCED 5A degree or above was most appropriate to enter the occupation and with a SIOPS score of 70 or above. Mass positions were defined as those occupations for which any higher education degree (also ISCED 5B) was appropriate and with SIOPS scores ranging between 40 and 69. Lower level jobs were defined as all jobs where a higher education degree was not required and/or the SIOPS score was below 40. Within the elite and mass positions a distinction has been made between the generalist and specialist positions. Specialist positions were defined as those jobs where the respondent's own field of study was exclusively required to enter the job.

Elite and mass positions in different countries

Figure 1.12



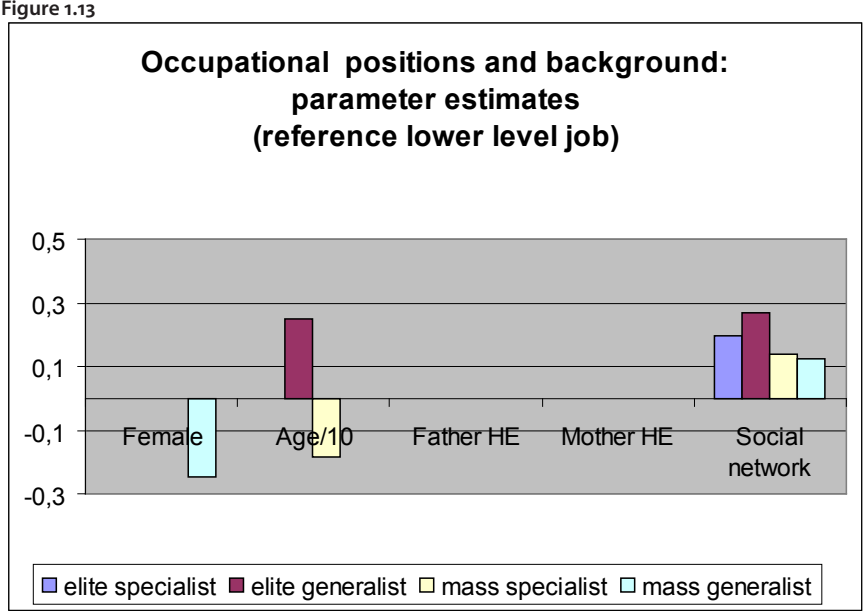
About half of the graduates in all countries work in so-called mass-generalist jobs like business professionals, ranging from some 40% in Italy and Spain to some 60% in the Netherlands, Belgium, Norway, Finland, Estonia and the Czech Republic. One out of five graduates works in mass-specialist jobs like teachers and nurses (in France this is markedly higher, namely 37%). This seems a vindication of the moves towards expansion and the economy needing more and more highly people, mainly in generalist

positions. Elite jobs are – by definition – more scarce. Only some 14% of the graduates are working in what we have defined as elite jobs. Most of these jobs are specialists, like lawyers and medical doctors. Elite specialist jobs occur more frequently in Austria, Germany and Switzerland and less frequently in Spain and the Netherlands. Some five years after graduation, 11% of the graduates are still in lower level jobs, but this differs markedly between the countries. Spain, the UK and Italy have relatively high proportions of graduates working in lower level jobs (29% for Spain, 20% for the UK and 16% in Italy). France, Norway. Estonia and the Czech Republic have only some 5% of the graduates working at lower level jobs.

Determinants of occupational positions

What are the characteristics of the graduates that determine their allocation to these five different occupational positions? Figures 1.13 to 1.17 provide the results of a multinomial regression on the odds of getting a certain position compared to getting a lower level job (the reference category). All results are controlled for country dummies (for full results see statistical appendix on the project's website). Keep in mind that the effects of the different variables cannot simply be compared as they have different scales.

Figure 1.13



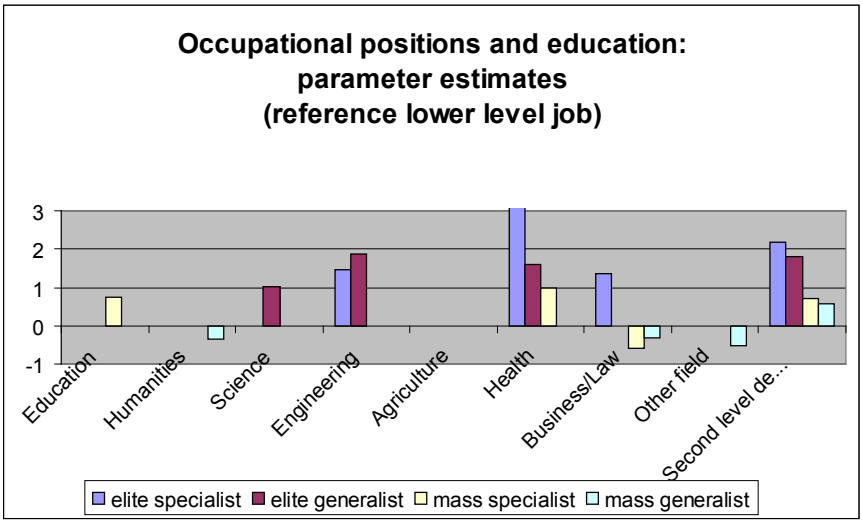
All effects significant at 0.01 level. Non-significant effects not shown.

There is a gender effect in the allocation of graduates to elite or mass positions. Females less often end up in mass generalist jobs, compared to lower level jobs. Older graduates more often end up in elite generalist jobs and less often in the mass specialist jobs. There is no effect of parent's education. We also asked the graduates to rate the usefulness of their social network in terms of help on providing information on the labour market, help in getting a job and help in setting up a business. All three questions were rated on a scale from 1 'not at all' to 5 'to a very high extent'. The variable 'social network' comprises the average score to these questions. As we can see, having a good social network is important to protect graduates from falling down to lower level jobs. It also seems more associated with allocation to elite jobs (especially elite generalist jobs) than with the allocation to mass positions.

Figures 1.14 and 1.15 provide the effects of education and competences on the allocation process. The first thing to note is that the differences by field of study or level of degree far outweigh all the other effects, with most of the effect sizes being ten times larger (note that the maximum of the scale in Figure 1.14 is 3 instead of 0.5 in the other 3 figures). Not surprising, having a second level degree (i.e. a degree that provides direct access to a Ph.D. program) is an important requirement for entering elite positions.[11] There are some profound differences between the different fields of study. Compared to the reference category (social sciences), the graduates from health and engineering have a much higher chance of ending up in an elite position (not surprisingly being graduates from a health program is a prerequisite to enter an elite specialist job). Also science and business/law graduates have a much higher chance of ending up in one of the elite positions (as elite generalist in the case of science or as elite specialist in the case of business/law).

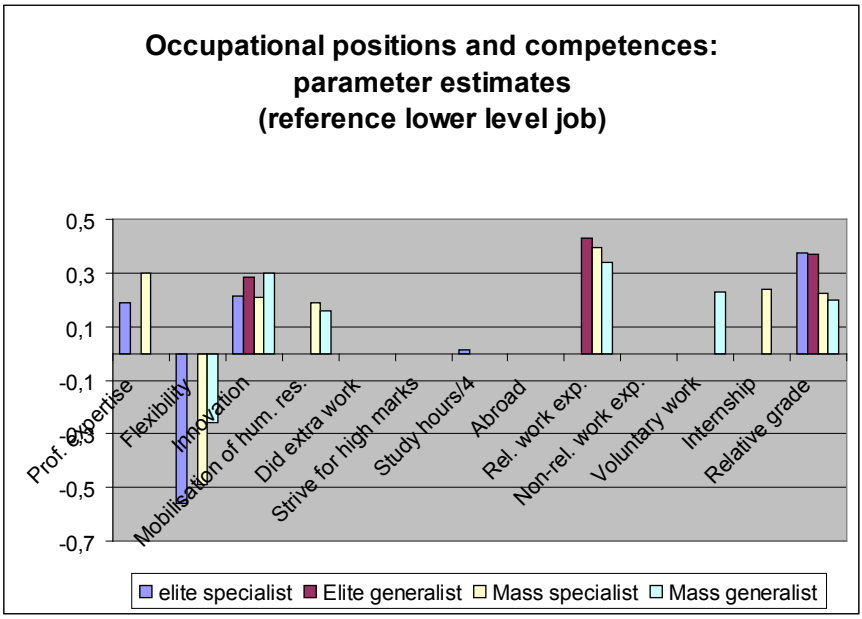
11. Note that a distinction between first and second level degrees was not directly taken up in the classification of occupations.

Figure 1.14



All effects significant at 0.01 level. Non-significant effects not shown. Reference category social science.

Figure 1.15

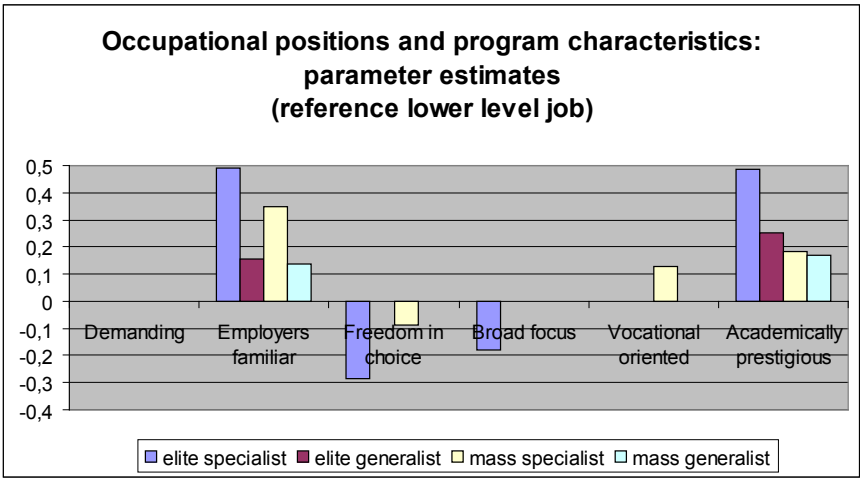


All effects significant at 0.01 level. Non-significant effects not shown.

Figure 1.15 shows the effects of the competences of the graduates. A note of caution: as the competences are measured at the moment of the interview, these effects should

not be interpreted as indicating a causal mechanism. They merely indicate the association between certain competence levels in the one hand and being in a certain occupational position on the other hand. In comparing these results with the results of Figure 1.14, one must also bear in mind that the education variables are all dummies, while the competence variables are variables with a varying length of scale. Not surprising, having a high level of professional expertise is associated with being in a specialist position, either at elite or at mass level. Functional flexibility has the opposite effect: it is associated with a lower chance of being in a specialist position. A high degree of innovation and knowledge management is associated with a low chance of being in a lower level position and increases the likelihood of being in all elite and mass positions. A high degree of mobilisation of human resources seems more related with being in mass positions. Doing extra work above what was needed to pass the exam (an indication of intrinsic motivation) or striving for the highest possible marks (indication of extrinsic motivation) does not affect the position nor does the amount of hours studied during a normal study week. Having studied or worked abroad during higher education also has no effect, but work experience before or during higher education does. It protects graduates from ending up in a lower level job, but only if it was relevant work experience; non-relevant work experience has no effect. Holding a position in student or other voluntary organisations increases the chance of ending up in a mass generalist job, while an internship is typically associated with a mass specialist position. Finally, we asked the graduates about their grades in higher education. We asked them to compare their grade with other students from their study program on a scale from 1 'much lower than average' to 5 'much higher than average'. Having a high relative grade prevents graduates from falling down to lower level jobs and increases the chances of ending up in elite positions.

Figure 1.16



All effects significant at 0.01 level. Non-significant effects not shown.

Figure 1.16 displays the results with respect to the program characteristics. Not surprisingly, programs of which the content is familiar to employers are often the programs preparing for specialist positions, either elite specialists or mass specialists. More in general one can say that graduates from these programs are protected from falling down into lower level jobs. The reverse is true for the programs that have a broad focus or that have more freedom in composing your own program. Graduates from these programs less often end up in elite specialist jobs. A strong vocational orientation of the program is more associated with the mass specialist jobs. Graduates from programs with a high academic prestige have a higher chance of ending up in an elite specialist job and also the other elite and mass positions and are thus protected from falling down into lower level jobs. Finally, having followed a more demanding program has no significant effect on the allocation to certain positions.

Earnings tell a similar story but there are some differences

The former distinctions between elite versus mass and generalists versus specialists, point primarily to the occupational roles that graduates take up in society and their associated differences in esteem. It would be interesting to see whether the picture changes if we look at the economic rewards. In the following analyses we look at the gross monthly and hourly earnings as an indicator of the economic performance of the graduates on the labour market. Both earning variables are expressed in US dollars converted to purchasing power parities to take account of differences in purchasing power between countries.

Figure 1.17

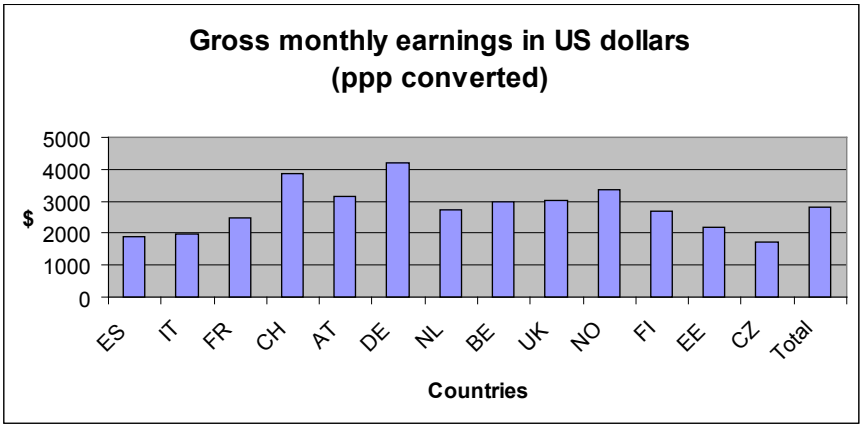
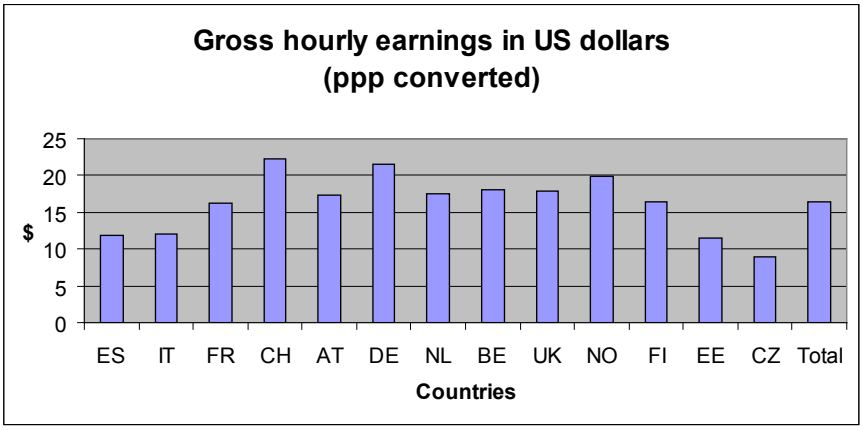


Figure 1.18

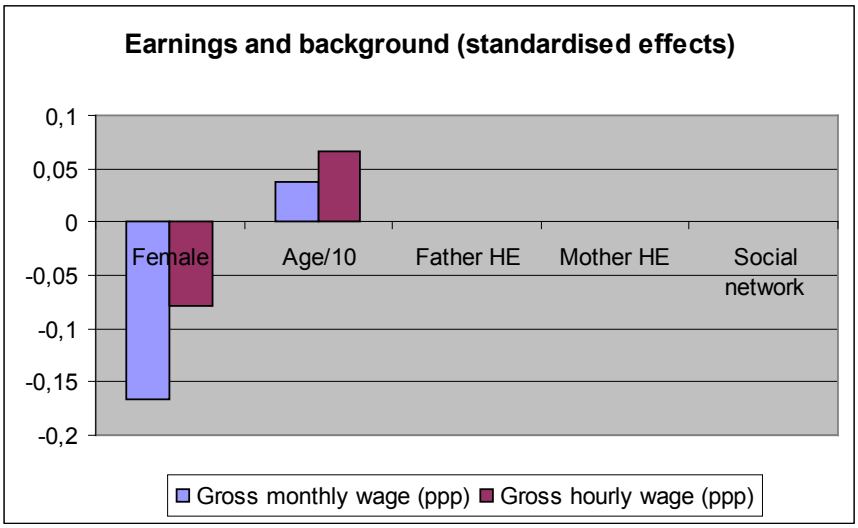


German and Swiss graduates earn some five years after leaving higher education almost twice as much as the graduates in Italy, Spain, Estonia or the Czech Republic. This holds for the monthly earning as well as the hourly earnings. The differences with the other countries are less pronounced when we look at hourly earnings instead of monthly earnings, indicating that a part of the difference between Germany and Switzerland and the other countries is due to differences in part-time work.

Figure 1.19 gives the main results pertaining to the relation between background characteristics and the logarithm of the gross monthly and hourly earnings.[12] The figures show the standardised estimates to allow for an easy comparison across the variables. In the text we shall sometimes refer to the unstandardised effects. All estimates are controlled for country dummies.

12. We take the logarithm of the earnings so that the effects can easily be interpreted as percentage increase or decrease.

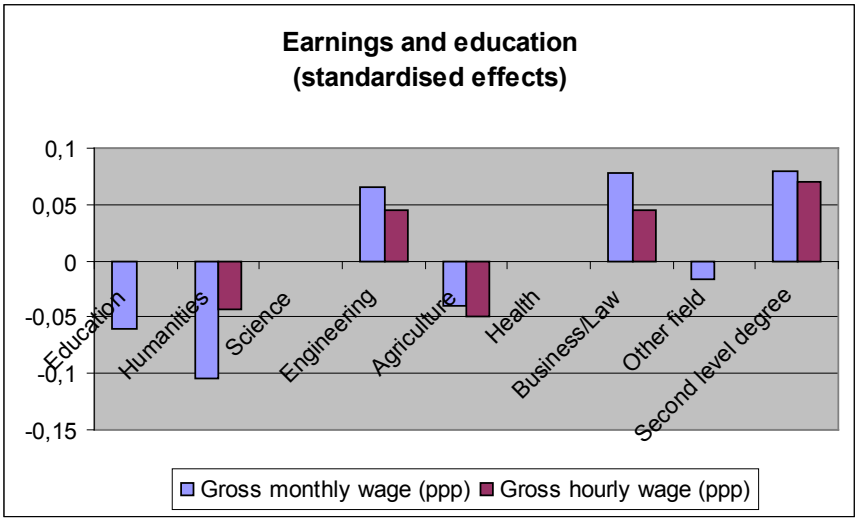
Figure 1.19



All effects significant at 0.01 level. Non-significant effects not shown.

Being a female has a strong negative impact on the earnings. Females earn 15% less than males if we look at gross monthly earning and 8% less if we look at hourly earnings (unstandardised effects). Age (an important indicator for experience) has a small positive effect: each additional year increases the earnings with some 4-7% (unstandardised effect). We find no effect of parent's education, neither of having a good social network.

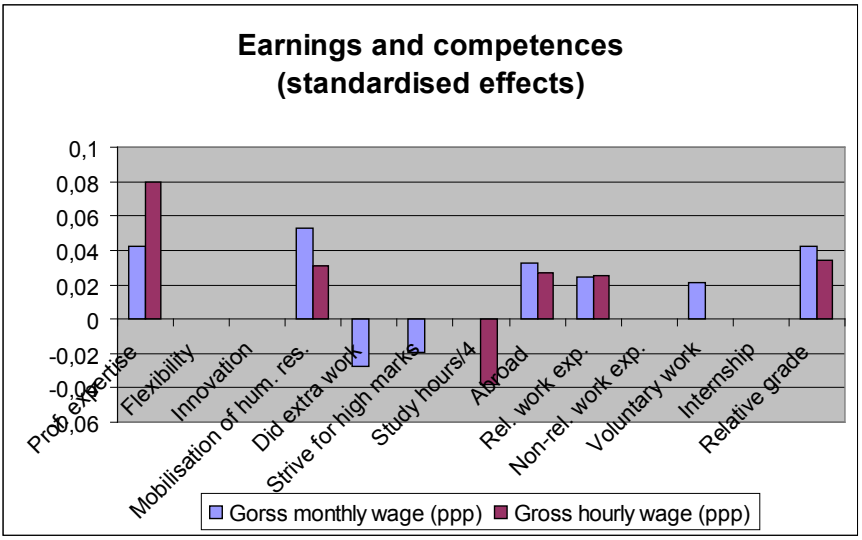
Figure 1.20



All effects significant at 0.01 level. Non-significant effects not shown. Reference category social science.

As one might expect, graduates holding the higher second level degree earn on average 7-8% more than the holders of the first level degrees (unstandardised effects). Compared to the reference group social sciences we can note that the graduates from business/law earn some 5-8% more (unstandardised effects). Also the graduates from engineering earn more than the graduates from social sciences, while the graduates from humanities and agriculture earn less.

Figure 1.21

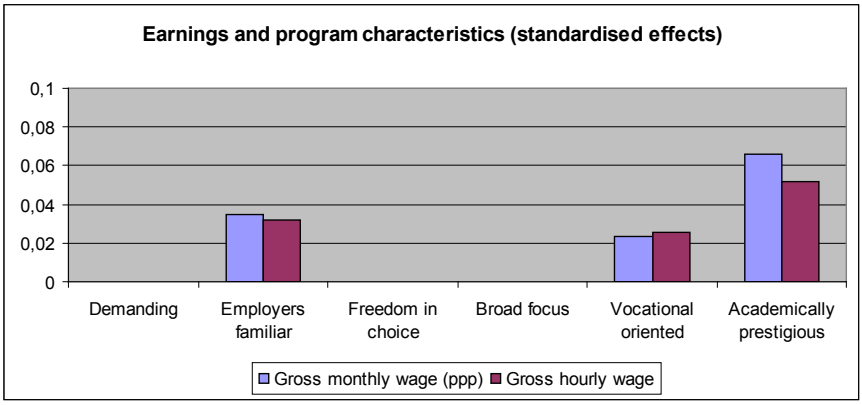


All effects significant at 0.01 level. Non-significant effects not shown.

Having high levels of professional expertise and mobilisation of human resources is associated with higher earnings.[13] This is consistent with the previous results. One standard deviation increase for each of these competences is associated with an earning premium of 3-8% (unstandardised effects). We find no effect of functional flexibility or of innovation and knowledge management on the earnings. Apparently, having a high level of skills in these areas is not associated with being in a well-paying job. We find some adverse effects of study behaviour on earnings. Contrary to the expectations we find a negative (!) effect of doing extra work or striving for the highest possible marks on monthly earnings and a negative effect of number of study hours on hourly earnings. It is not yet clear what causes these negative effects (maybe the hard working students went into the lower paid Ph.D. programs?). Consistent with the previous results, we find that having studied or worked abroad during higher education is associated with an earning premium of some 3% (unstandardised effect). Having had relevant work experience or a position in a voluntary organisation leads to an earning premium, but having had an internship has no significant effect. High relative grades increase both the monthly as the hourly earnings works and apparently works as a clear signal (Spence, 1973) to employers.

13. Again the effects of competences should not be interpreted in a causal direction.

Figure 1.22



All effects significant at 0.01 level. Non-significant effects not shown.

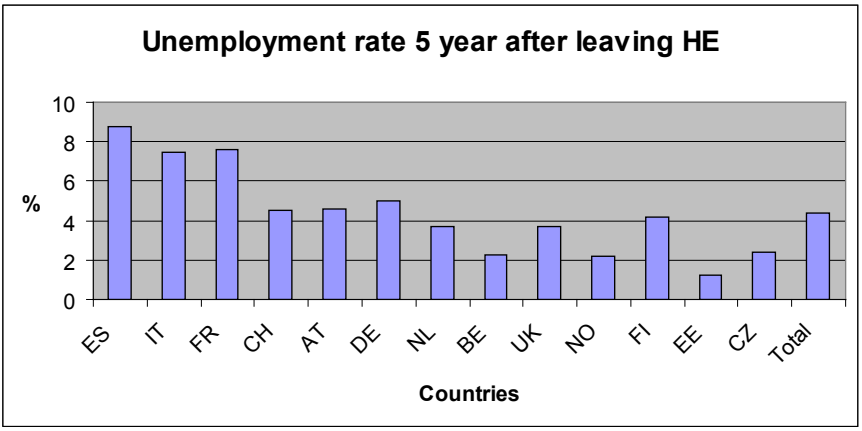
Having followed a prestigious program has the largest effect on the earnings: one standard deviation increase in this characteristic yields an earning increase of some 5-7%. Compared to this, having followed a demanding program does not pay off at all, which also confirms the earlier results on doing extra work or study hours: working hard during your study does not seem to have an impact on your future earnings. On the other hand, having followed a program that was familiar to employers or having followed a vocational program does result in earning premiums.

1.5 Utilisation of the human capital produced in higher education

The produced human capital must be used

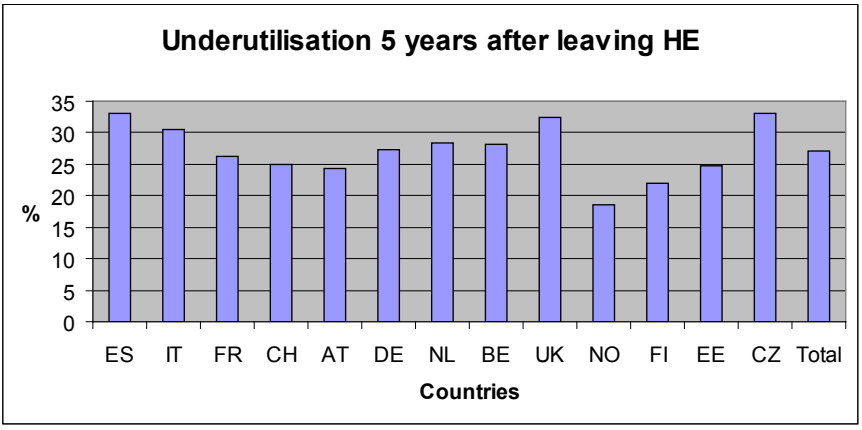
A well functioning system of higher education is a necessary, but not sufficient, condition that must be met in order for the Lisbon goals to be achieved. The competences acquired in higher education are only useful as resources to the extent that they are put to productive use after graduation, particularly in the labour market. This means that at least two conditions have to be fulfilled: graduates need to have a paid job and they need to have work in which they can fully utilise their competences. Figures 23 and 24 give an overview of the percentage of graduates who are unemployed five years after graduation and the percentage of graduates indicating that their skills and knowledge are not being used to a large or very large extent.

Figure 1.23



The unemployment rates differ quite substantially between the different countries. It is extremely low in Belgium, Norway, Estonia and the Czech Republic (only 2% of the graduates on the labour market is unemployed) and quite high in the Southern-European countries (unemployment rate 7-9%). In the other countries the unemployment rate is around 4-5%.

Figure 1.24



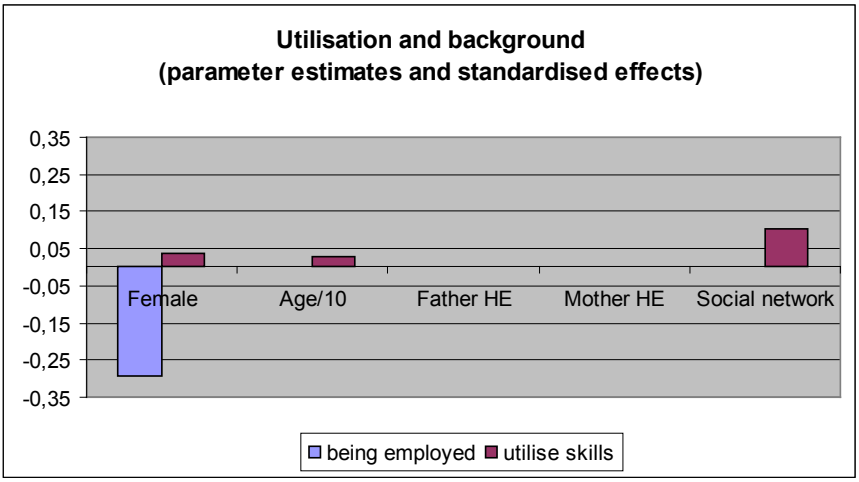
The picture is slightly different when we look at the utilisation of skills when graduates have work. Respondents were asked to indicate to what extent their knowledge and skills are being utilised in their current work on a scale from 1 'not at all' to 5 'to a very high extent'. Figure 1.24 presents the percentage of workers indicating 1-3 on this scale. Over 25% of the graduates indicate that their competences are not fully utilised. This percentage is much lower in Norway and Finland (around 20%) and much higher in Spain, Italy, the United Kingdom and the Czech Republic. The

latter two present a typical case as the unemployment rates among graduates in these countries is quite normal or – in the case of the Czech Republic – even low, while a lot of graduates end up in jobs in which their skills are not fully utilised. For the UK, this result mirrors the earlier finding that a lot of UK graduates end up in lower level jobs. However for Czech graduates this is not the case: apparently they are working in jobs for which a higher education diploma is required, but this does not automatically imply that their skills are fully used. This underlines the importance of making a distinction between formal overeducation and actual underutilisation of skills as Allen and Van der Velden (2001) have indicated.

Determinants of utilisation

In Figures 1.25-1.28 we show the main results of some multivariate analyses on the odds of being employed and the extent to which knowledge and skills are being used in the current job. Full results can be found in the statistical appendix. Note that the estimates for utilisation are the standardised effects and are thus usually much smaller than the parameter estimates for the odds of becoming employed. All estimates are controlled for country dummies.

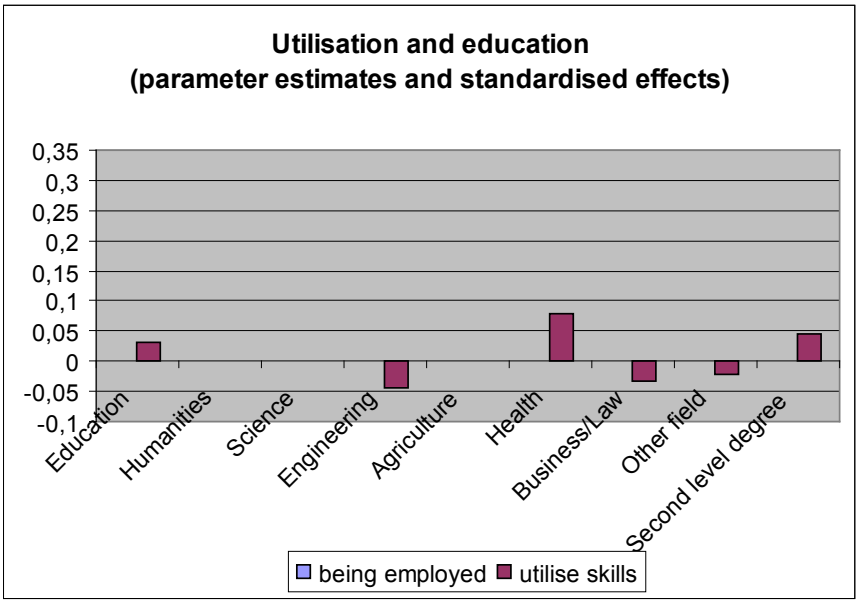
Figure 1.25



All effects significant at 0.01 level. Non-significant effects not shown.

Females have lower odds of being employed (against being unemployed) than males. There is a small effect of gender and age on getting a job in which you can fully utilise your skills: females and older graduates have a slight advantage compared to males and younger graduates. There is no effect of parent's education. Having a good social network has no effect on the odds of becoming employed, but once employed it has a marked effect on finding a job in which you can fully utilise your skills (although this may not necessarily be a better paying one as we have seen before)

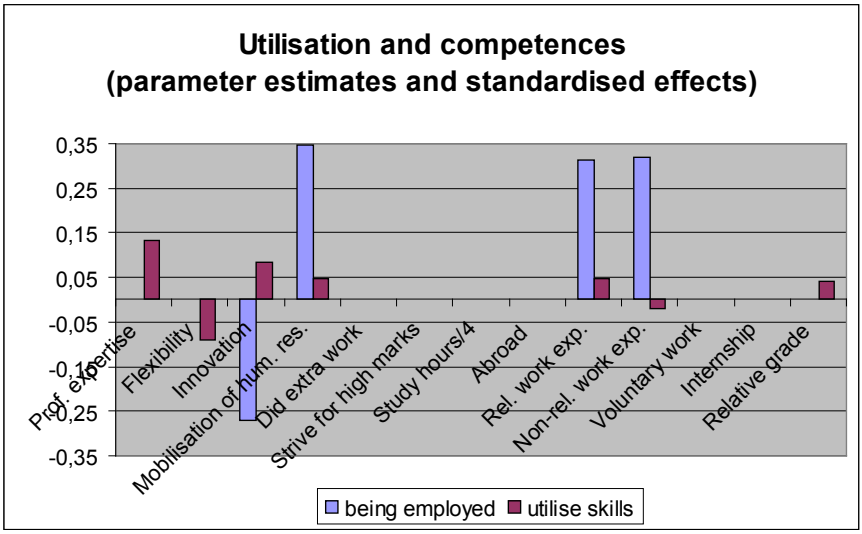
Figure 1.26



All effects significant at 0.01 level. Non-significant effects not shown. Reference category social science.

Once controlled for country dummies, personal characteristics and competences, and program characteristics there are no significant effects of having a second level degree on the odds of becoming employed, neither are there are any significant differences between the fields of study, compared to the reference category social science. Having a second level degree does have a positive effect on ending up in a job in which the knowledge and skills are fully utilised and there are also small differences between the different fields of study. Graduates from health and – to a lesser extent – education are less underutilised, while graduates from engineering and business/law more often experience some underutilisation in their job, compared to the graduates from social sciences.

Figure 1.27

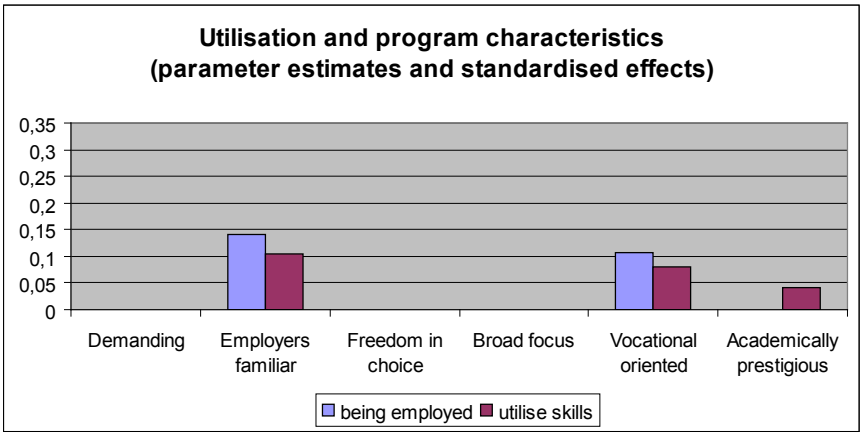


All effects significant at 0.01 level. Non-significant effects not shown.

In the definition of mobilisation of human resources we argued that it relates to mobilising your own competences as well as those of others. The best way of mobilising your own competences is of course to find a job in the first place and indeed we find that graduates who have a high level of expertise in this area are more often employed. The reverse is true for graduates having high levels of expertise in innovation and knowledge management. These skills are apparently not so much in demand on the labour market. Both relevant and non-relevant work experience before or during higher education increases the chance to become employed afterwards.

The utilisation of skills in the job is clearly associated with the level of professional expertise, innovation and knowledge management and mobilisation of human resources. Graduates having a high level of expertise in these areas are more often found in jobs in which they can fully utilise their knowledge and skills (or mould the job in such a way that it fits the job-holder). On the other hand, having a high level of functional flexibility is associated with a lower chance of being in a job in which you can utilise your competences. Or put alternatively, being very flexible involves the danger of knowing a little bit about many things, with the risk of finding a job in which only a small part of this knowledge and skills can be put to use. Relevant work experience increases the chance to find a job in which you can fully utilise your skills. Finally, having a high relative grade increases the chance to find a job in which you can utilise your competences.

Figure 1.28



All effects significant at 0.01 level. Non-significant effects not shown.

Figure 1.28 displays the results for the program characteristics. Having followed a program with which employers are familiar or having followed a vocational oriented program has a clear positive effect on the allocation process. It increases the chance of being employed and it increases the chance of finding work in which your knowledge and skills are being utilised. Having followed a prestigious program doesn't increase the chance of being employed, but if employed it has impact on the chance of having work that utilises your knowledge and skills.

1.6 Conclusions

It is time to take stock of the main results. We started our analysis with the identification of three trends (the growing importance of human capital, growing importance of flexibility and globalisation) resulting in five demands on higher education graduates. In our view higher education graduates are expected to be more or less competent in at least the following five areas: professional expertise, functional flexibility, innovation and knowledge management, mobilisation of human resources and international orientation. In the survey, we found evidence that indeed the demands in these areas (at least in the four that we have measured) are more or less universal. In each of the thirteen countries for which we presented data, we can note that the required level in the area of professional expertise, functional flexibility, innovation and knowledge management, and mobilisation of human resources is relatively high with little difference between the different areas of competence, although there are some differences between the countries. That is not to say that the supply of competences in these areas is universal as well. Some 10% of the graduates indicate that their own competence level is lower than what is required of them n the job. Although this percentage may

seem very low, we should note that even this may have some serious consequences: these shortages may seriously hinder the graduates to adequately perform their job. Moreover, there are differences between countries. Italy, France and Estonia present countries where a relatively large share of the graduates experiences some serious shortages in their competences. In France we also note a relatively larger share of graduates experiencing a surplus in their competences, indicating that in France in particular graduates are ill-allocated to jobs.

When we look at labour market outcomes the overall impression is that graduates from the European higher education systems fare well on the labour market. Although only a small proportion of graduates end up in an elite position, the majority assumes a role in jobs that require a generalist or specialist training in higher education. Moreover we have some good indications that the produced human capital is used on the labour market. The unemployment rate is rather low, and most graduates indicate that their knowledge and skills are sufficiently used. That being said, there is still some room for improvement as more than one out of four working graduates indicate that their competences are insufficiently used. Moreover, there are countries and fields of study where graduates find it more difficult to find a good position. Apart from the 'usual suspects' (humanities, Southern-European countries), the UK stands out as a country where graduates find it difficult to find a job that matches their education. Although the unemployment rate of the UK graduates is average, their share of holding a lower level job or a job in which they cannot fully utilize their knowledge and skills is much higher than in most of the other countries. This might have to do with the weaker link between higher education programs and specific areas of employment in the UK compared to for example the German-speaking countries.

Does the study program in higher education provide a good basis to enter the labour market? In the analysis we distinguished between a short term goal, i.e. providing a basis to start working on the labour market and to perform well in their first jobs as well as a long-term goal, i.e. to provide a basis to further develop their skills and to develop their future career. Only 50 to 60% of the graduates indicated that their study program succeeded to reach both goals, while 15-20% clearly indicated that their study program did not reach these goals. This is particularly worrying as providing a good basis to start working and to develop your career may be considered as key goals of higher education. Moreover, there are large differences between the countries. In the UK, Germany and Italy, these percentages are generally lower, while the Norwegian higher education system stands out according to the graduates as the system providing the best basis for their students. Interestingly we also noted that graduates were most satisfied where it concerned providing a good basis for personal development (average of 70%), while only 20% indicated that their higher education program provided a good basis for developing entrepreneurial skills. Clearly, developing entrepreneurial skills is one of the weak points of the higher education system all over Europe.

Developing professional expertise is among the 'relative' strong points of the European higher system. 30% or more of the HE graduates consider mastery of your own field and analytical thinking as the strong points of their education and relatively few graduates indicate that these are weak points. The same applies for the ability to rapidly acquire new knowledge. We deliberately use the term 'relative' here as one should expect beforehand these three competences to rate very high. Ability to write and speak in a foreign language, ability to assert your authority, ability to negotiate effectively or to present products, ideas or reports to a wider audience are most often considered as one of the weak points of the study program.

Although the way we measured competences (namely at the moment of the survey) does not permit us to draw any conclusion about the direction of causality, we do find some interesting associations with labour market outcomes. Having a high level of professional expertise is related with positive labour market outcomes, especially with earnings and the utilization of skills. This underlines the importance of professional expertise for higher education graduates. A basic rationale for higher education is to impart professional expertise, and given the relatively low percentage of graduates indicating that this is a strong point of their study program, there is reason to develop this further. The second core competence that is related with labour market success is mobilisation of human resources. Having a high level of competence is related with employment chances (which is incidentally the best way to mobilize one's own competences), the utilization of skills in the job and the earnings. Functional flexibility on the other hand is negatively related with most outcomes. It seems that competences related to this area are not directly rewarded on the labour market and merely seem to play a role in protecting graduates when coping with flexibility rather than being rewarded in themselves.[14] Being very flexible can even hamper the possibility to fully utilise all of one's skills as – by definition – only a part of these skills will be put to use in any job. Finally, graduates having a high level of innovation and knowledge management are less often found in lower level jobs, and are more often found in jobs where they can fully utilize their knowledge and skills. We find no relation between the level of competence in this area and the earnings and a negative relation with employment chances. Therefore there does not seem to be a strong relation with the economic rewards for this competence.

What can higher education do to give their students a better start on the labour market? What are the characteristics of the programs that are successful in this respect? In analyzing this we can distinguish between two different functions of education: the skills production function (the role of education in imparting their students with the relevant competences) and the allocation function (the role of education in allocating graduates to the labour market). Although both goals are clearly connected, they are by no means the same, nor are the characteristics that make programs efficient in achieving either of these two goals. Graduates may have a high level of competence

14. This is true notwithstanding the fact that the 'ability to negotiate effectively' was one of the items in the scale.

and still find it difficult to find a job in which they can fully utilize these competences. Moreover, some characteristics of the program may help graduates in finding relevant work, although they do not in themselves have an effect on the acquisition of skills.

First, we have looked at differences by field of study and level of degree. There are differences between graduates of the different fields of study and the different levels of degree in their evaluation of the study program as well as in their allocation to the labour market. Graduates from humanities think their study program did not provide a good basis to start working, but they are rather positive with respect to the program providing a good basis for personal development. More or less the opposite is true for graduates from science, engineering and business/law. As expected the graduates of the last field of study also more often indicate that their study program provided a good basis for developing entrepreneurial skills. There are also some strong differences in the allocation: graduates from health and engineering more often end up in the elite positions, while the graduates from business/law and – again – engineering more often earn higher wages. Graduates from the second level degree programs (the programs giving access to a Ph.D. program) think their program provided a better basis to start working and to develop their career. They also end up much more often in the elite positions and earn higher wages.

Then we looked at characteristics of the study program and found some interesting differences between the development of competences and the allocation to the labour market. As one would expect, the competences in all four areas are best developed in programs that are very demanding. Apart from this, we found positive effects of having followed a program that is academically prestigious and some effects of having freedom in composing your own program. Following a program with a strong vocational orientation or a program with which employers are familiar mainly affects the acquisition of professional expertise, but – surprisingly – not as strong as the effect of having followed a demanding program.

The picture changes however if we look at the evaluation of the program in terms of providing a good basis for entering the labour market and developing the future career. Here the most successful programs are characterised by having a strong vocational orientation, strong familiarity to employers, strong academic prestige and – to a lesser extent being demanding. Moreover, when we look at the outcomes on the labour market, having followed a demanding program has no effect anymore, but we do find strong effects of having followed academically prestigious programs or programs that employers are familiar with on entering elite positions and on earnings. Having followed a program that is familiar to employers and that is strongly vocational oriented has a strong positive effect on employment chances and the chance to work in a job where you can fully utilise your skills.

It is clear that following a demanding program is good for developing competences, but not necessarily leads to a strong position on the labour market. Following a program

with which employers are familiar mainly has a strong effect on the allocation, but only a weak effect on the development of professional expertise and no effect on the development of competences in the other areas. This means that these programs do not necessarily produce better graduates, but they are by far the best in supporting them to find a good job on the labour market. The effect of following academically prestigious programs is related to both functions: they produce better graduates, but they also serve as a signal to future employers, thus helping to have a smooth transition and enter elite positions. Vocational oriented programs are good in developing professional expertise and are very strong in providing a good basis to enter the labour market and develop the career (specifically in the mass specialist positions).

This seems to suggest that the two main orientations in higher education, i.e. the more vocational orientation or the more academic orientation each have their own distinct value in preparing graduates for the labour market. In fact, the stronger study programs in higher education are in either one of these orientations, the more successful they are.

Characteristics of the curricula and modes of teaching and learning also play a role. The level of competence in all areas is most strongly related with stressing theories and paradigms. Written assignments and oral presentations are also related to higher levels of competence in all four areas. Group work and participation in research is related to somewhat higher levels of competence in all areas except professional expertise, while project and problem based learning is related to a higher level of innovation and knowledge management. Most of these characteristics also affect the evaluation of the program. Stressing facts and practical knowledge, stressing theories, internships, giving lectures all help to prepare students for the working life, mainly because they provide an important means to acquire professional expertise.

We saw that student-centred methods like project and problem based learning have no clear relation with having high levels of competence in most areas (except the area of innovation and knowledge management), but it does have a positive effect on providing graduates with a good basis to enter the labour market, their further career and – interestingly – they seem to be the modes of teaching most associated with developing entrepreneurial skills.

Some modes of teaching seem only relevant for personal development and the development of entrepreneurial skills: this applies to group assignments, participation in research and oral presentations. Finally we found some negative effects of using multiple choice exams as a dominant way of assessing students.

Our preliminary conclusion is that new methods may work, but old methods should not be forgotten. There is a tendency in education to think that knowledge in itself is not important anymore, as technological developments seem to render knowledge and skills obsolete soon after graduates have left higher education. However, theories,

facts and practical knowledge are essential components to develop expertise in any area, and it is this professional expertise that is most clearly associated with labour market success.

Moreover, the design of the curriculum and the modes of teaching are not the only ways to affect learning. As educational research makes clear, assessment drives learning as well. In this respect, using written assignments or oral presentations are a better way to develop competences and provide a good basis for entering the labour market and developing a professional career, than using multiple choice exams.

Apart from experiences in higher education, other learning experiences are just as relevant. Time spent on relevant work experience has a positive effect on the competence development and all labour market outcomes. However time spent on non-relevant work experience has no effect at all, except from increasing the chance to find a job. It is clear that from a macro point of view spending time on non-relevant work should be discouraged. It distracts students from paying attention to their study and has no benefit at all in the long run. Of course from an individual point of view this may be different if non-relevant work is used to pay for the costs of living while being a student. The policy implication is that student loans should be such that students can pay enough time to their study. Doing voluntary work also has a positive effect: it has a strong effect on the development of competences in all areas, and also affects the allocation to certain positions and is associated with some wage premium. Experience abroad has a positive effect on the earnings. Having followed an internship or work placement has some effect on providing a good basis for entering the labour market, but does in itself not affect the development of competences. This seems to indicate that its role is mainly in providing a smooth allocation to jobs, rather than to develop professional expertise.

Finally there are some effects of personal characteristics as well. Gender and age have some effect on the labour market outcomes, females more often entering mass specialist positions and earning lower wages, while age has a positive effect on entering elite generalist positions and the earnings. We find no indication of an effect of parental background, once we control for other characteristics. This means that the graduate's social background exercises its influence mainly indirect by entering higher education in the first place and by choosing particular fields of study, level of degrees or academically prestigious programs. Having a good social network seems to protect graduates from falling down to lower level jobs.
Having a high relative grade has a pronounced effect on helping people to get into the better jobs, and serves as a clear signal to future employers. Surprisingly, indicators of study behaviour (like working hard and study hours) hardly affect these outcomes or sometimes even have an adverse effect. This is in line with the effects we found earlier on following a demanding program. Although working hard is probably one of the best ways to develop your competences, we see no direct reward on the labour market. Not working hard is rewarded, but signalling this in the form of grades is rewarded.

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Chapter 2
The Professional Work of Graduates

Harald Schomburg

2.1 What makes a profession?

Are graduates from institutions of higher education in Europe working as „professionals“? Are the graduates adequately prepared by their course of study to the required level of professional expertise? These are some of the key research research questions of the REFLEX study.

It is obvious that we use the term „professional“ in a different way from everyday live, where the term „professional“ is often used to differentiate between work done by „amateurs“ or „professionals“. „Professionals“ are payed for the work and are supposed to be able to do their work with high quality. Underlying this differentiation between „amateurs“ and „professionals“ regarding the quality of the work is also a difference in the competences of „amateurs“ and „professionals“. The latter have certain individual characteristics and/or followed special training to perform on a „professional“ level.

In our understanding it is also not sufficient to follow the anglo-saxon tradition and to classifiy all occupations which require typically a higher education degree as „professional“. This concept was used in the International Standard Classification of Occupation (ISCO), where for the second major group the term „professions“ was introduced. How difficult it is to translate the term „profession“ to another language is shown in the German case. In the German translation of the ISCO 88 major group 2, the „professions“ were translated as „Wissenschaftler“ („scientists“) which is not in accordance with the understanding of teachers, engineers etc. in Germany. A similar problem shows the translation to French: „professions intellectuelles et scientifiques“.

On the other side especially sociologists have developped theories and taxonomies to define very restrictive which occupations can be seen as „professions“. Mainly the „classical“ medical doctors and lawyers and their development in anglo-saxon countries were used to develop the model of a „profession“ and to analyse other occupations whether they reach the status of these classical professions („professionalisation“). Professionalization was analysed with the escalator model: first a school is established, then an association, then examinations, then licensing, then an ethics

code, and finaly the occupation arrives at its destination--a full profession. (Goode 1969; Wilensky 1964)

In recent years this puristic view of the "professions" has been very much critized and a broader view becomes dominant in the context of the diagnosis of the rise of the "knowledge society". This was also the basic concept of the REFLEX project.

The label 'professional' is associated with: autonomy (Friedson 1994), expertise (Schön 1983), a body of knowledge (Etzioni 1969). The "autonomy" is here not the work autonomy of individuals but the autonomy of the group of professionals to set up rules and and regulations for their work. These characteristics are related to concepts of status and cultural capital (Bourdieu and Passeron 1977). The label constitutes in the view of Foucault (1977) a rhetorical resource, and source of power.

Since the early trait models are not any more acceptable it was proposed by Watson (2002) to abandon the use of the term 'professional' in an analytic sense, since its usage is slippery and ambiguous. But his proposal to use a term which only refers to the work content (like 'expert occupation' or 'knowledge-based occupation') create also new problems because such a funcionalist term ignores the bulk of research literature which describe the system of professions like: a code of ethics, standardized education and criteria for certification, a strong professional association, monopolization of a particular labour market through the regulation of entry etc . (see Alvesson 2001).

Morrell (2004) gives a perspective of the necessary beyond the naive functionalistic approach to integrate three perspectives:

- the way in which professional knowledge is constructed as an element of a discursive practice;
- the way in which professional roles are negotiated and constructed within and across organizational boundaries;
- the role the professions play in creating and maintaining systems of value and power.

The concepts of knowledge, organisation and power will be further elaborated in this chapter.

The professions play a key role in Harold Perkins (1996) concept of the dramatic changes in modern history as a "revolution of the professionals" or "the rise of a professional society". Perkin follows Robert Reich's view of the key role of the "symbolic analyst" in the future society/economy. "Such knowledge-based services are the province of professional experts, without whom they would not exists. And professional knowledge is based on human capital, created by advanced education and experience on the job, and itself the scarce resource that enables the professionals to command high 'rents' and rewards in kind." (Perkin, p 6)

In his view the "classical professions" are not the key players in the rise of a professional society. Besides the "professional experts" he points out the role of the "managers": "And among the professionals most responsible, the key players are the professional managers of the great corporations and their counterparts in government, controlling the economy and administrating its policies and, increasingly, distributing the income and arranging its social relations". (Perkin, p 6)

This outline of the new elites in the professional society will be confronted with the empirical findings of the REFLEX study. Do we really see an outstanding situation of the "managers"? Is this true for all countries?

We will start with the development of a typology of occupations which should allow to differentiate between broad areas of work of higher education graduates. This typology of professions will be used in the whole chapter when we look at the professional role and identity of graduates, the professional expertise and the aspects of power like income and exclusivity. From the REFLEX study we can get some empirical based answers to the question to what extent things like knowledge monopolies, regulated access, peer control, etc. actually characterize different classes of professions in different countries.

2.2 Who is working as a "professional"?

2.2.1 The occupation

We first look to the *kind of occupation* of the graduates, which were coded by the national teams of the REFLEX study according the ISCO88-COM classification on four different levels of aggregation. This gives a rough indication about the relationship between study and work. To what extent are graduates working on the "professional" level? The highest level (major group) of the used classification of occupations has 10 different categories from which the first two can be treated as occupations on the "professional" level. 77 % of the graduates of the year 2000 are working as "professionals" (67%) or "managers" (10%) and 19% as "technicians and associate professionals". Only 6% of the graduates are working on lower level jobs as clerks or skilled workers. The dominating relevance of "professional" occupations seems to be rather stable when we compare the results with the CHEERS study, in which almost the same amount of graduates from institutions of higher education in Europe were working as professionals or managers.

Figure 2.1 shows some differences by country: France, Austria, Germany, Norway and Estonia are the only countries with 80 % or more "professionals", while in UK only 61 % of the graduates were working at this level.

Figure 2.1
Graduates Working as "Professionals" or "Managers" 2005 by Country (per cent)

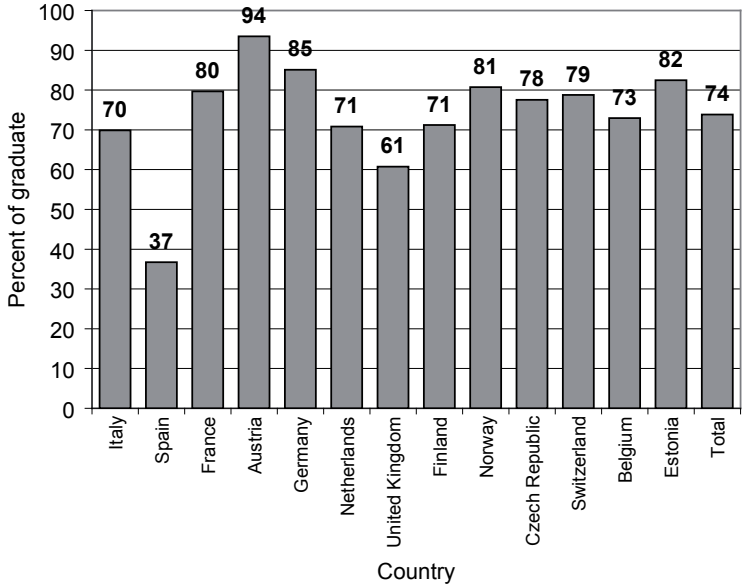


Table 2.1
Occupational Level by Type of Degree (percent)

Current job: International Standard Classification of Occupations 1988, major group	Level of degree		Total
	Second	First	
Legislators, senior officials and managers	9	11	10
Professionals	73	54	64
Technicians and associate professionals	13	26	19
Clerks	4	5	4
Other	2	4	3
Total	100	100	100
Count (n)	(12025)	(10380)	(22405)

As Table 2.1 shows, the kind of occupation depends to a great extent on the type of degree[1] the graduates had gained. First level programmes (like Bachelor) are often leading to a "non-professional" position like "associate professionals" just below the level of "professionals". While only 13% of graduates from second level programmes are working as "associate professionals" this is the case for 26% of graduates from first level programmes.

1. We use the label "first level" for graduates who have 3–4 years of higher education (equivalent to bachelors in some countries) *not providing direct access to doctorate*. We use the term "second level" for graduates with 4 years or more higher education *providing direct access to doctorate*.

Table 2.2
Occupational Level by Country and Type of Degree (percent)

Country	Current job: International Standard Classification of Occupations 1988, major group									
	Legislators, senior officials and managers		Professionals		Technicians and associate professionals		Clerks		Other	
	Level of degree		Level of degree		Level of degree		Level of degree		Level of degree	
	Second	First	Second	First	Second	First	Second	First	Second	First
Italy	3	4	68	51	19	36	8	7	1	1
Spain	7	5	45	11	23	59	19	19	6	7
France	20	5	67	68	10	21	2	2	1	4
Austria	6	11	88	78	5	10	1	0	0	1
Germany	5	10	82	71	9	15	3	3	1	1
Netherlands	11	8	67	60	18	23	3	4	1	5
United Kingdom	15	10	61	50	11	24	9	10	4	6
Finland	11	7	81	40	6	40	1	6	2	6
Norway	6	7	90	67	2	23	0	1	1	2
Czech Republic	6	7	76	53	17	36	0	1	1	2
Switzerland	13	18	66	60	16	14	2	1	3	5
Belgium	10	10	69	49	18	36	1	3	1	2
Estonia	20	23	75	57	5	17	0	1	0	1
Total	9	11	73	54	13	26	4	5	2	4
Count (n)	(1033)	(1102)	(8757)	(5648)	(1607)	(2738)	(441)	(504)	(187)	(387)

In Austria, Germany, Netherlands and Switzerland (see Table 2.2) rather small differences exists regarding the relevance of the type of study programme for the occupational level of the graduates, while in Finland the graduates from first level study programmes (AMK) are much more likely to work on lower level positions. It should be noted that the AMK's are young institutions of higher education in Finland (established during the nineties of the last century), which had their roots in former higher vocational training schools. Taking the history of the AMK's into consideration it seems to be remarkable that almost 50 % of their graduates are working as "professionals" or "managers". All other countries show rather big differences regarding the kind or level of degree. For instance in France are 20% of the second level degree holders working as "managers" compared to only 5% of the first level degree holders. In Norway 90% of the second level degree holders are working as "professionals" compared to 67% of the first degree holders and in Spain the respective percentages are 45% and 11%.

There are also important differences by field of study and these differences are also influenced by the type of study programme (see Table 2.3). The highest proportion of "professionals" can be found among graduates from education (76%; probably teachers), while the lowest proportion of "professionals" are found in the group of the social scientists. The latter have the highest proportion of managers (15%) and also the proportion of associate professionals is high.

Table 2.3
Level of Occupation by Field of Study (percent)

	Edu	Hum	Soc	Law	Nat	Mat	Eng	Med	Total
Legislators, senior officials and managers	5	7	15	6	7	9	11	2	9
Professionals	76	65	53	72	68	71	68	71	64
Technicians and associate professionals	15	18	22	14	17	17	18	25	19
Clerks	2	7	7	6	3	2	1	0	4
Other	2	4	3	2	5	1	2	1	3
Total	100	100	100	100	100	100	100	100	100
Count (n)	(2091)	(2587)	(7041)	(1449)	(1327)	(889)	(4392)	(2556)	(22332)

	Legislators, senior officials and managers		Professionals		Technicians and associate professionals		Clerks		Other	
	Level of degree		Level of degree		Level of degree		Level of degree		Level of degree	
	Second	First	Second	First	Second	First	Second	First	Second	First
Edu	5	5	84	69	9	20	1	3	1	4
Hum	6	7	69	59	16	22	6	7	3	5
Soc	14	16	60	46	18	25	6	9	2	4
Law	5	11	76	56	13	19	5	9	1	4
Nat	7	8	72	59	15	21	2	5	3	7
Mat	6	12	79	62	12	22	1	2	1	2
Eng	10	12	78	57	10	26	1	2	1	3
Med	3	2	90	52	7	44	0	0	0	2
Total	9	11	73	54	13	26	4	5	2	4
Count (n)	(1020)	(1097)	(8707)	(5609)	(1593)	(2710)	(441)	(503)	(187)	(380)

Especially social scientists (and law graduates) from first level programmes are rather seldom employed as "professionals" (45% compared to 61% from second level programmes in social siences; 46% compared to 74% in law). The highest proportions of second level graduates employed in "professional occupations" are in:

- Medicine (90%, compared to 52% from first level study programs);
- Education (84%, compared to 69% from first level study programs);
- Engineering (78%, compared to 57% from first level study programs);
- Mathematics (79%, compared to 62% from first level study programs).

Remarkable is also the rather high amount of graduates from second level study programs in humanities working as professionals: 69%, compared to 59% from first level study programs.

2.2.2 Typology of professions

A typology of professions was developed based on the coding of occupations. From the research literature on the professsions we followed the tradition to differentiate between "classical professions", the "technical experts", and the "managers". It was proposed by sociologists to analyse some occupations as "semi-professions" (Etzioni, 1969), e.g. nursing, teaching, librarianship and social work. The semi-professions differ from the full professions in that their members are bureaucratically employed, often lack lifetime careers (majority are female), and do not use exclusive knowledge as that of law or medicine.We followed this proposal in our typology of professions. Finally we added two other groups: the business and social science experts and the non-professionals to get a complete picture of all occupations. As "business and social science experts" we classified for instance "business professionals", "accountants", "personnel and careers professionals", and other "business professionals", but also "economists", "psychologists", "authors, journalists and other writers" and "administrative secretaries and related associate professionals". As "non-professionals" occupations like clerks were classified. Besides the classification of occupations according ISCO additionally the rating of the appropriatness of the occupation to the level of education was used. All graduates working on jobs where a higher education degree is not required were classified as "non-professionals" regardless of the coding of the occupation (see Appendix 2 for a full overview).
In this way we differentiated six types of professions:

1. The non-professionals (e.g. clerks) 13%;
2. The business and social science experts (e.g. psychologists, business professionals) 29%;
3. The science and technology experts (e.g. engineers) 20%;
4. The semi-professions (e.g. teachers and nurses) 20%;
5. The classical professions (e.g. medical doctors) 9%;
6. The managers 8%.

It is interesting to note that only 9 % of all graduates belong to the "classical professions". The classical professions are educated mainly at universities in second level study programmes. Only three percent of the graduates from first level study programmes are working in this group of "classical professions" compared to 15% from second level study programmes (see Table 2.4).

The three biggest groups are built by business and social science experts (29%), the semi-professions (22%) and the science and technology experts (19%). The semi-professions were more often trained in first level study programmes: 26 % of the graduates from these programmes are working in the semi-professions compared to 19% from second level programmes. The semi-professions are female dominated (women: 76%; see Figure 2.2), while the science and technology experts are male dominated (men: 69%). Nine percent of the graduates are working as "managers", male graduates more often (12%) than female graduates (7%). The group of graduates who work as non-professionals as clerks, etc. is rather small (12%); female graduates (13%) are can be

found a little bit more often in this group than male graduates (11%). Figures 2.3 and 2.4 show that working as a science and technology expert is cleary a domain of male graduates in all European countries, but especially in Finland, Czech Republic and Germany where about 40% of the male graduates are working in this area compared to only about 13% of the female graduates from these countries.

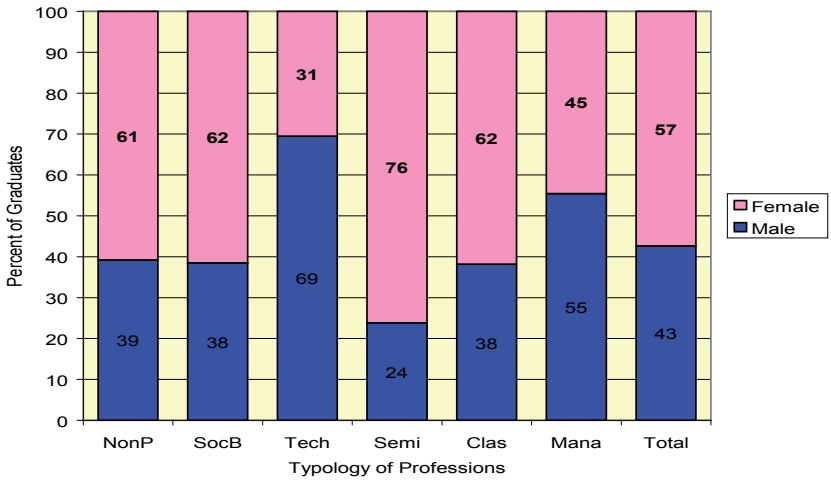
Most of the graduates are working in the private profit sector, but the majority of classical professions (51%) and especially the semi-professionals (81%) are working in the public sector.

Table 2.4
Type of Profession by Type of Degree and Gender (percent)

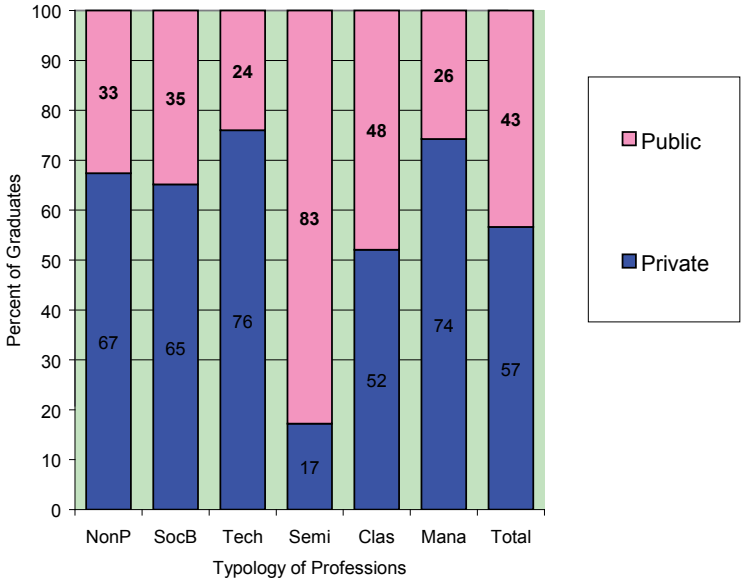
Type of Profession	Level of degree		Gender		Total
	First	Second	M	F	
Non-professionals	10	14	11	13	12
Business and social science experts	32	27	26	31	29
Science and technology experts	20	18	31	10	19
Semi-professions	26	19	12	29	22
Classical professions	3	15	8	10	9
Managers	10	8	12	7	9
Total	100	100	100	100	100
	9675	11041	8680	11661	20342

Figure 2.2
Gender and Economic Sector by Type of Profession by (percent)

a) Gender



a) Economic sector



Explanation of the abbrebivations used for the typology of professions:

NonP	Non-professionals;
SocB	Business and social science experts;
Tech	Science and technology experts;
Semi	Semi-professions;
Clas	Classical professions;
Mana	Managers.

Figure 2.3
Graduates Working as Science and Technology Experts by Country and Gender (percent)

Science and technology experts

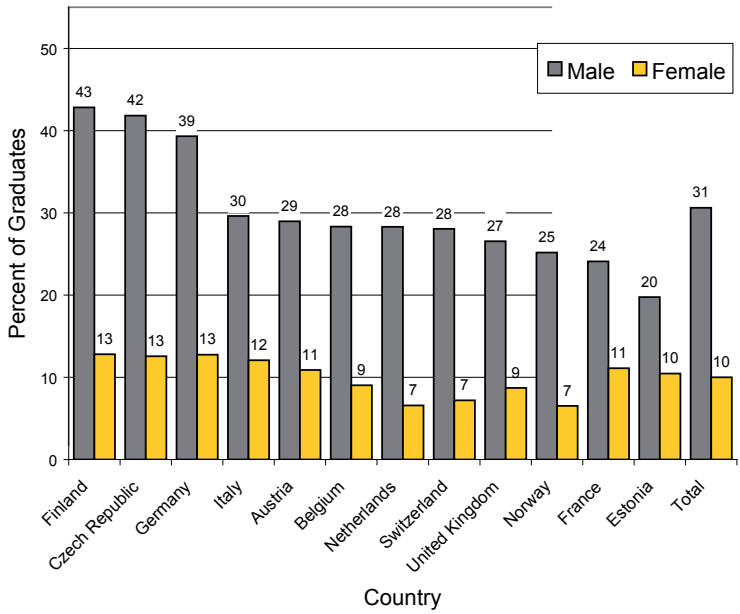
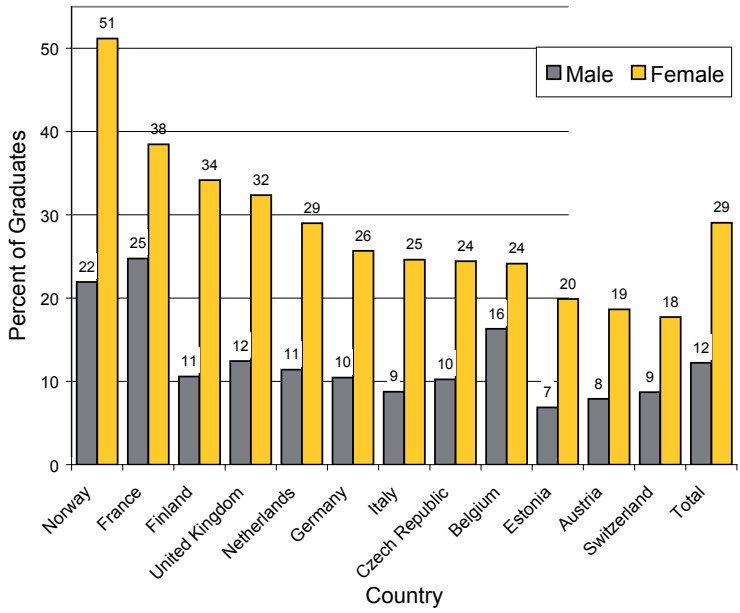


Figure 2.4
Graduates Working as Semi-Professionals by Country and Gender (percent)

Semi-Professionals



2.2.3 Employment conditions

Table 2.5 provides an overview about selected employment conditions of the six types of professions. The vast majority of graduates are employed about 5 years after graduation with unlimited term contracts (80%), but a remarkable lower proportion with this type of contract can be found among the classical professions (60%). This might be explained mainly by the fact that medical doctors are often still in their training phase on a temporary contract and about one of five of the classical professions are self-employed. Self-employment among graduates is, besides the classical professions, relatively rare (on average 11%). Full-time is the dominating working time pattern of the graduates, with the exception of the semi-professions. From the latter only 62 % are working full-time, compared to 81 % on average.

Table 2.5
Selected Aspects of Employment and Work by Type of Profession (percent)

	Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers	Total
Full-time employed in first job (35+)	78	86	93	63	88	94	82
Full-time employed in 2005 (35+)	79	85	91	62	89	92	81
Unlimited term contract in first job	55	60	66	41	33	74	55
Unlimited term contract in 2005	81	86	86	69	60	93	80
Self-employment	9	9	10	7	24	11	11

On average, the graduates are working 42 hours per week (sum of regular/contract working hours per week, overtime and other paid work, if applicable). The longest *working time* were reported by graduates working as managers or in the classical professions (47 hours), while the semi-professionals reported only 38 hours. This general pattern of difference in the working time by type of profession holds true for all countries, but country differences are also important. The longest working time were reported from the Austrian graduates (47 hours per week). On average, the working time of male graduates (45 hours) is about 5 hours longer per week compared to female graduates (40 hours).

Some of the professions are concentrated in a few *economic sectors* like the semi-professions from which 64% are employed in the education sector and additional 27% in the health and social work sector (see Table 2.6). The most important sector for the classical professions is the health sector (46%) where almost half of them are employed. The "business and social science experts" as well as the "science and technology experts" do not have a similar concentration.

Table 2.6
Economic Sector by Type of Profession (percent)

International Standard Industrial Classification (revision 3.1), section	Type of profession						Total
	Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers	
A - Agriculture, hunting and forestry	3	1	2	0	0	1	1
B - Fishing	0	0	0	0	0	0	0
C - Mining and quarrying	0	0	1	0	0	1	0
D - Manufacturing	12	14	25	1	1	21	13
E - Electricity, gas and water supply	1	1	2	0	0	1	1
F - Construction	2	1	7	0	0	4	2
G - Wholesale and retailtrade; repair of motor vehicles, motorcycles and personal and household goods	10	6	2	1	7	11	5
H - Hotels and restaurants	2	1	0	0	0	2	1
I - Transport, storage and communications	8	4	6	0	1	7	4
J - Financial intermediation	11	11	3	0	3	8	5
K - Real estate, renting and business activities	13	21	36	2	23	16	19
L - Public administration and defence; compulsory social security	14	14	6	2	12	10	9
M - Education	7	5	6	64	3	5	19
N - Health and social work	10	13	3	27	46	7	17
O - Other community, social and personal service activities	7	8	2	3	4	6	5
Q - Extraterritorial organizations and bodies	0	0	0	0	0	0	0
Total	100	100	100	100	100	100	100

2.3 The role of professional knowledge

2.3.1 Required field of study and level of education

The question of the horizontal match of study and work tries to analyse to what extent graduates are working closely related to their field of study. In the REFLEX study the graduates were asked "What field of study for you feel is most appropriate for this work?" and the following answers were given (in parenthesis the frequencies):

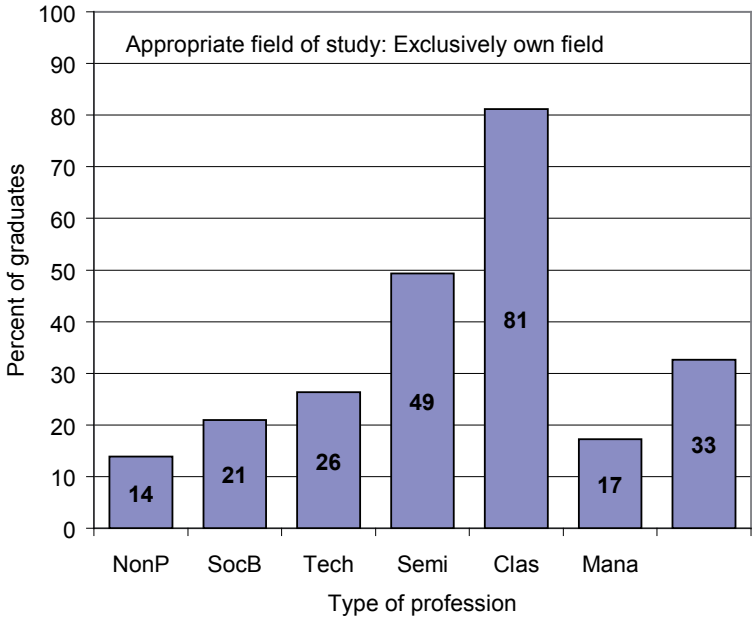
- Own or a related field (85%);
- Different field or no field (15%).

More or less these findings are in according with the findings about the occupational position. The vast majority of graduates (85%) are working "field related". Again, this is an indicator of the relevance of knowledge and skills provided by the institutions of higher education. But which occupations are clear domains of graduates from a specific field of study? We can try to get answers to this question in looking to the rating of the horizontal match by the graduates from the different occupations.

The semi-professions (49%) and especially the classical professions (81%) are working often in areas where "exclusively their own field" is most appropriate while this is seldom the case among managers (17%) (see Figure 2.5). About 20 % of managers stated that "a completely different field" or "no particular field" fits best to their work. Only the "non-professional" graduates have a higher proportion of loose relationship with field of study (45%).

Figure 2.5

Appropriate Field of Study by Type of Profession (percent)



Regarding the *appropriateness of the level of education* there are only small differences between the occupational groups visible (see table 2.7). On average, the vast majority of graduates are working appropriate to their level of education (88%).

"Blurring boundaries" describes the situation for the majority of graduates - clear claims are rather seldom. In this sense the expansion of higher education in Europe was not accompanied by an expansion of the monopolies of the "classic professionals".

In contrary, the majority of graduates feels that graduates with a "related field" could also do their job. In this sense the graduates have to be "flexible professionals".

Table 2.7
Appropriate Field of Study and Appropriate Level of Education, by Type of Profession (percent)

	Type of profession						
	Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers	Total
Appropriate field of education							
Exclusively own field	14	21	26	49	81	17	33
Own or a related field	42	63	64	45	17	66	53
A completely different field	17	7	6	2	1	9	7
No particular field	27	9	3	3	1	8	8
Appropriate level of education							
Higher level	0	15	17	18	25	18	15
Same level	0	85	83	82	75	82	73
Lower level of tertiary education	46	0	0	0	0	0	6
Below tertiary level	54	0	0	0	0	0	6

2.3.2 Higher education and professional training - how long does it take to become an expert?

Higher education does not prepare exactly for the specific work tasks which graduates are performing. Even if the education is directed toward the preparation for specific occupations like engineering, the work assignments can be trained in advance only to some extent. Graduates are always generalists in the sense that they might have broader knowledge and skills than the requirements in their actual work tasks. On the other side graduates are not trained enough to perform like an expert in their job. Training on the job is needed in any occupation. But how long it takes to become an expert is an open question. One would expect that the vocational oriented study programmes should result in shorter later training.

In the REFLEX study the graduates were asked "How much time would it take for an average graduate with the relevant educational background to become an expert in this kind of work?". We assume that the answers indicate the general necessary training period according the experiences of the graduates.

- A short training phase of a maximum of six months was reported by 11% of the graduates.
- 15% reported an initial training phase of 7 to 12 months;
- The majority of graduates reported a training phase with a duration of more than one year and a maximum of five years (61%).

- A very long time to become an expert (6 years and more) was reported by 13% of the graduates.

On average, it takes 3.3 years according to the graduates to become an expert, for first level study programmes as well as for second level programmes.[2] But there are rather big differences by country and by type of degree within some countries: graduates from first level study progranmes from Italy, Austria and Germany reported the shortest training period (less than 3.1 years), while graduates from Estonia, France, the Netherlands, United Kingdom reported the longest training period (more than 3.7 years). Similar differences by country exists for second level study programmes: graduates from Germany (2,3) and Austria (2.5) reported the shortest training period while the longest training period were reported by graduates from Norway (4.5), France and United Kingdom (3.5).

The training period after graduation is in all countries besides Norway shorter for first level (no access to doctorate study) programmes. According field of study the longest training periods were reported by graduates from education (teacher training) and the health and welfare area. Besides these fields of study which usually lead to the semi-professions and the classical professions the differences between the other fields of study are rather small.

More relevant seems to be the type of profession: the classical professions have by far the longest training period after graduation (4.6 years) followed by the semi-professions (3.8 years).

2. The classified answers were transferred to a new metric variable:

6 months or less:	3 months
7 to 12 months:	9 months
1 to 2 years:	18 months
3 to 5 years:	48 months
6 to 10 years:	96 months
More than 10 years:	144 months

Figure 2.6
Time to Become an Expert in years, by Country and Type of Study Programme (arithmetic mean)

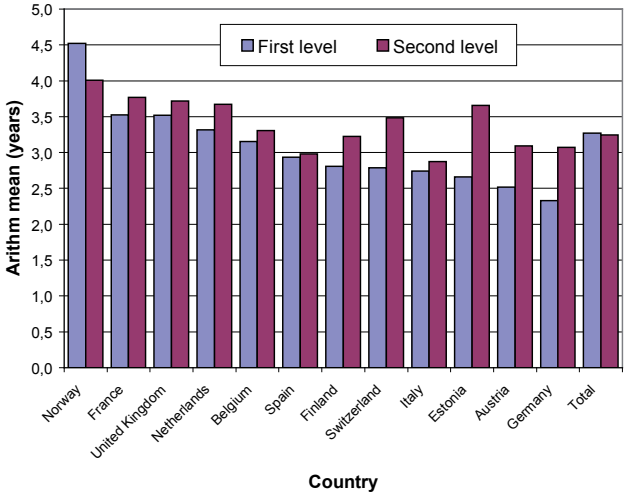


Figure 2.7
Time to Become an Expert in years, by Type of Profession (arithmetic mean)

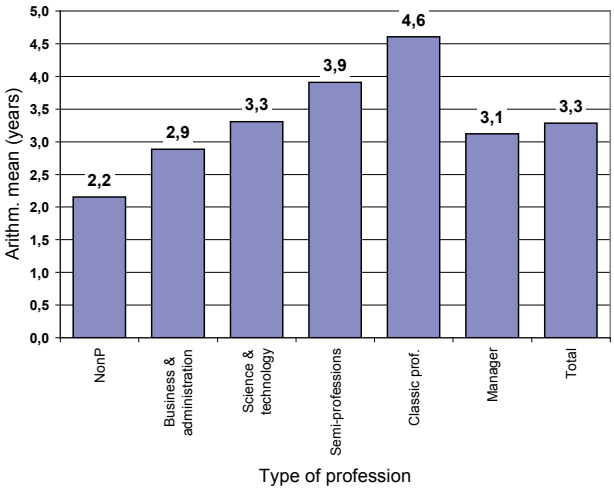
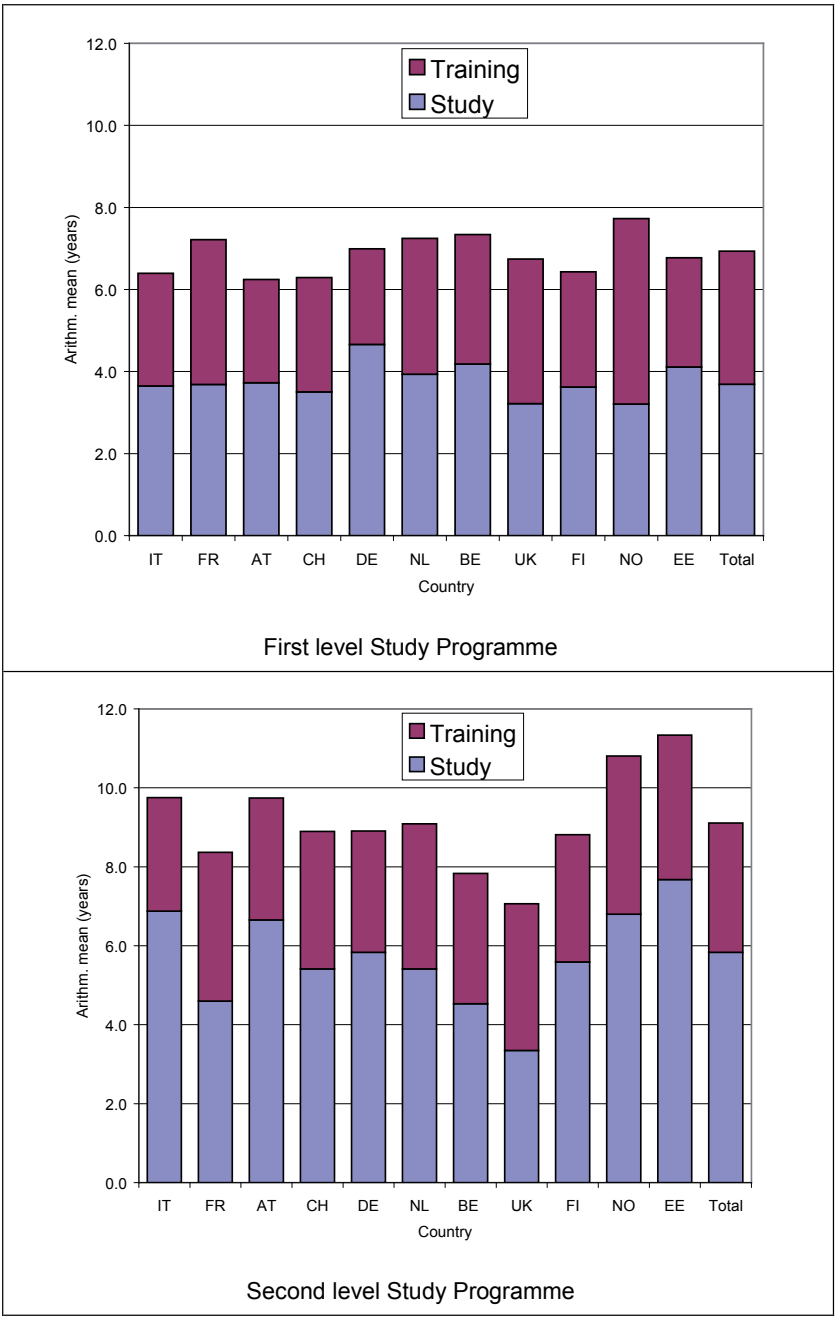


Figure 2.8
Duration of Study and Training after Graduation in years by Type of Study Programme, Country and Field of Study (arithmetic mean)



A combination of the study duration and the estimated time to become an expert gives some hints about the total time of education and training. On average this total education and training time is 8.1 years; for first level programmes longer (9.1 years) than for second level programmes (7.0 years). Some of the big differences by country regarding the study duration or the training phase are not any more visible when we look to the sum of study duration and training. For instance graduates from UK have a first level study duration of 3.2 years (Bachelors) compared to Germany (FH) with 4.7 years but their training period after graduation is much longer (UK 3.5 years; DE 2.3 years) which results in an overall similar total duration of about seven years.

2.3.3 Additional training

The demand for further training seems to be still high according to the graduates. About two third undertook work-related course/training in the past 12 months (see Table 2.8), with the highest participation rate of the classical professions (78%). The main reasons for further training were "to update my knowledge for my present work" (70%) and "to enhance my career" (21%). Only very few were motivated by the preparation to work in another field (5%) or for self-employment (1%).

Table 2.8
Work-Related Course/Training in the Past 12 Months by Type of Profession (percent)

	Type of profession						
	non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
Work-related course/training in the past 12 months							
Yes	51	62	60	66	78	64	63
No	49	38	40	34	22	36	37
Total	100	100	100	100	100	100	100
Reasons for training							
To update my knowledge for my present work	62	68	71	75	73	64	70
To enhance my career	23	23	20	17	16	28	21
To prepare myself for working in another field	8	4	5	4	3	4	5
To prepare myself for self-employment	1	1	1	0	3	1	1
Other	5	3	3	4	5	3	4
Total	100	100	100	100	100	100	100

The innovativeness (according the rating of the graduates) and the scope of operations (local, regional, national, international) of the employment organisation are explaining only to a rather small extent the level of additional training. This underscores the general need of work-related training for graduates about four to five years after graduation. B&A professionals and managers in innovative organisations participated more in training than in non-innovative organisations regardless of the scope

of operations of the organisation. S&T professionals in non-innovative organisations with non-international scope of operations have a rather low rate of participation in training.

2.3.4 Professional expertise

Higher education produces knowledge and skills which are required in the employment system – this is very often stated when the expansion of higher education is authorized. But do the experiences of recent higher education graduates support this view? Are there indicators of a growing demand of professional expertise? And how is professional expertise related to other dimensions of professional competence?

In the REFLEX study the graduates were asked to rate their own level of competence on a scale ranging from 1 = 'not at all' to 7 = 'very high' for a list of 19 competence items. Graduates were also asked to rate the level at which the same competences were required in their current work. In Chapter 1 16 of the 19 competence items were used to create index variables for four key demands that higher education graduates are particularly exposed to. The four demands were professional expertise, functional flexibility, innovation and knowledge management, and mobilization of human resources. The following three items were treated as indicators of the level of professional expertise (see Chapter 1 for the operationalization of the other three demands):

- Mastery of your own field or discipline;
- Analytical thinking;
- Ability to assert your authority.

Table 2.9 shows the mean percentage of graduates who report a moderate to high own c.q. required level of competence (answers 5 through 7 on the seven-point scale) on the items associated with the four demands.

In general it is not professional expertise that is most often possessed and/or required at a moderate to high level by professionals, but rather the competences associated with mobilization of human resources, and in terms of own level also those associated with innovation and knowledge management. However, closer inspection of the table reveals that the latter demands also apply to a large majority of non-professionals. It is professional expertise that most strongly differentiates between non-professionals and all groups of professionals. This applies particularly to the required level: less than half of the non-professionals report a moderate to high required level of professional expertise, compared to around three quarters of the professionals.

Table 2.9
Own and Required Competences by Type of Profession (percent; responses 5,6,7)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
Professional expertise							
Competences	72	79	79	80	77	88	79
Requirements	49	73	75	77	78	85	73
Functional flexibility							
Competences	74	80	74	75	73	88	77
Requirements	46	65	61	54	62	76	60
Innovation and knowledge management							
Competences	86	91	93	85	82	95	89
Requirements	57	78	82	72	65	85	74
Mobilisation of human resources							
Competences	86	91	87	89	89	94	89
Requirements	70	84	82	85	84	92	83

Table 2.9 also reveals interesting differences between the various groups of professionals. The managers show the highest own and required levels of all competences, including professional expertise. The business and social science experts are also expected to be competent in most areas, but especially in terms of mobilizing human resources. In the case of science and technology experts the main emphasis is on innovation and knowledge management, while the semi-professionals and classical professions are expected to be competent in the areas om mobilization of human resources and to a lesser extent professional expertise.

A final conclusion that can be drawn from Table 2.9 is that the level of competence of professional expertise of graduates from institutions of higher education in Europe largely matches the level required of them. In the group of the classical professions the required level is even higher than the actual competence level. This is in accordance with the reported finding that the time to become an expert is the longest in this group. For the other demands the match between own and required level is less optimal: a higher proportion of professionals possess the underlying competences at a moderate to high level than is required to possess these competences at that level.

2.4 Professional role and professional identity

2.4.1 Aspects of the professional role

The REFLEX study allows to highlight some elements of the professional role of the graduates from institutions of higher education. Are the graduates mainly oriented

towards their individual career in bureaucratic organisations or are they oriented towards the rules and regulations of their profession? To what extent are professional ethics - a central aspect for the classical professionals - relevant to the different professional types? Are the graduates working in an environment where they give advice to their professional colleagues and inform them about new development in their field of work? Do they establish professional contacts with experts outside the organization?

Table 2.10 displays the percentages of graduates indicating that the characteristic in question applied to their work situation (scores 4 and 5 on a scale from 1 "not at all" to 5 "to a very high extent").

Table 2.10
Professional Role by Type of Profession (percent; responses 4 and 5)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
a. Professional ethics							
Taking account of professional ethics is part of my work	57	72	56	76	84	71	69
b. Professional contacts							
Professional colleagues rely on me as an authoritative source of advice	48	62	61	49	55	77	58
I keep my professional colleagues informed about new developments in my field of work	38	51	51	45	46	65	49
I take the initiative in establishing professional contacts with experts outside the organization	24	38	35	32	32	53	35
c. Work autonomy							
Deciding how you do your own job?	71	84	83	87	74	92	83
Setting goals for your own work?	60	78	74	84	71	91	77
d. Responsibility							
Setting goals for the organization?	18	23	19	23	24	50	24
Deciding work strategies for the organization?	18	23	21	23	24	51	24
e. Interdependency							
Results of your work dependent on the performance of others in the organization?	49	51	53	42	41	74	50
Results of the work of others in the organization dependent on your performance?	46	49	57	40	45	70	50
Responsible for assessing the quality of the work of others in the organization?	21	28	31	19	23	64	29
f. Possibility of objective assessment of individual performance by others (high)	59	67	66	56	68	66	63
g. Intensity of monitoring performance by own supervisor (high)	41	41	37	33	45	39	39

The results of the REFLEX study suggests the relevance of professional orientations amongst most of the graduates in Europe. To take into account professional ethics seems to be a key element of the work of most of the graduates (68%) and many play

a role as an authoritative source of advice for their professional colleagues (58%), or keep them informed about new developments (48%). But the professional contacts seems to be limited by the boundaries of the organisation: only 34% take the initiative in establishing professional contacts with experts outside the organization. The graduates reported a high work autonomy. 83% are able to decide how they do your own job and 73% are responsible for setting of goals for their own work. Only a very few graduates are in a position where they have a high responsibility for key decisions regarding the whole organisation. About a quarter each are responsible for "setting goals for the organization" or "deciding work strategies for the organization".

The type of the profession is very relevant for the professional role: taking account of professional ethics is most prominent for the classical professions (84%), while this is rather seldom for science and engineering professionals (55%). Managers see their role much more often in supporting their colleagues (76%) and contacting experts outside the organisation (51%) than the other professions especially the classical professions (54% and 32%). Managers are of course more responsible for strategic decisions of the organisation (about 50%) than the other types of professions.
Table 2.10 contains also information about the interdependency of professionals in the organisation and the control dimension. Higher education graduates typical work in organisations where "the results of their work are dependent on the performance of others in the organization" (50%) or where the "results of the work of others in the organization are dependent on their performance" (49%). This is especially true for managers (73% and 69%), while the interdependency of the semi-professions and the traditional professions is relatively low. Only a minority of graduates are "responsible for assessing the quality of the work of others in the organization" (29%), but many of the managers have these kinds of work tasks (63%). The "possibility of objective assessment of individual performance by others" is quite common (63%), but the "intensity of monitoring performance by own supervisor" is rather seldom (39%).

The results suggests that young graduates in Europe are working in an environment where key attributes of the "classical professions" are not existent. The typical situation is not characterised by the individual client-professional relationships which is out of the control of others. The graduates are working mainly in big organisations where they are in an interdependent context with other colleagues. Even the work of many of the young "classical professionals" are controlled by their supervisors (45%).

2.4.2 Work orientations

In the survey, respondents were asked to rate the importance of several work orientations on a scale from 1 "not at all" to 5 "very important". They were also asked to indicate to what extent this characteristic applied to their situation (on a scale from 1 "not at all" to 5 "to a very high extent"). Table 2.11 displays the percentages of graduates rating 4 or 5.

At the top of the work orientations of the graduates are:

- Opportunity to learn new things (92%);
- Work autonomy (85%);
- Job security (81%);
- New challenges (81%);
- Enough time for leisure activities (77%) (see Table 2.11).

Table 2.11
Work Orientations and Situation by Type of Profession (percent; responses 4 and 5)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
Opportunity to learn new things							
Motivation	89	93	92	91	91	93	92
Situation	43	68	68	68	72	70	66
Work autonomy							
Motivation	81	85	83	85	88	86	85
Situation	63	77	77	78	74	79	75
Job security							
Motivation	81	77	79	87	81	71	80
Situation	59	65	61	68	64	65	64
New challenges							
Motivation	76	84	81	77	79	89	81
Situation	38	58	61	60	61	70	58
Enough time for leisure activities							
Motivation	78	76	75	79	76	70	76
Situation	52	49	43	51	35	39	47
Good chance to combine work with family tasks							
Motivation	71	69	65	78	73	62	70
Situation	48	46	40	57	35	36	46
Good career prospects							
Motivation	61	69	67	54	65	76	65
Situation	22	38	36	26	39	49	34
High earnings							
Motivation	58	65	66	55	67	76	63
Situation	18	32	30	20	36	43	29
Chance of doing something useful for society							
Motivation	59	57	48	77	69	51	61
Situation	37	43	33	76	65	38	49
Social status							
Motivation	37	44	39	43	46	50	43
Situation	23	42	37	35	61	52	40

These orientations are comprising intrinsic (new challenges) and extrinsic (job security) work orientations as well, and the differences by type of profession are rather

small. Less important are "good career prospects" (65%) and "high earnings" (63%), especially for the semi-professionals (55%). Income and career are more important for managers than for the other types of profession. With respect to the althruistic orientation ("chance of doing something useful for society") we can observe rather large differences by type of profession. This orientation is much more important for the semi-professionals (77%) and the classical professionals (69%) than for the S&T experts and the managers (52% each).

In many aspects of the occupation there are big differences between what the graduates want and what they have achieved. Only with respect to social status and work autonomy the differences are small.

We also asked the graduates whether they were satisfied with their current work. In general, the level of job satisfaction among graduates is high (69% "satisfied") with a rather big homogenity regarding the type of profession (see Table 2.12). Only the group of the non-professionals show a lower job satisfaction, almost a quarter are reporting to be "unsatisfied".

Table 2.12
Satisfaction With Current Work by Type of Profession (percent; arithmetic mean)

	Type of profession						
	Non prof.	Business & soc.	Science & soc.	Semi prof.	Class. prof.	Manager	Total
Satisfaction with current work							
1 Very dissatisfied	10	2	1	1	1	1	2
2	17	7	8	5	6	6	8
3	28	21	22	17	17	18	21
4	29	44	44	41	40	44	41
5 Very satisfied	16	27	25	35	35	30	28
Total	100	100	100	100	100	100	100
Recoded values							
1,2	27	9	9	6	8	7	10
3	28	21	22	17	17	18	21
4,5	45	70	69	76	75	75	69
Total	100	100	100	100	100	100	100
Arithmetic mean	3.2	3.9	3.8	4.0	4.0	4.0	3.8

But what makes a job satisfying? Do the graduates who are working in the different professions have the same idea of a satisfying job? Multiple regression analysis with job satisfaction as the dependent variable and characteristics of the job were done separately for the 6 types of professions. Additionally the analysis was also done for the different countries. Table 2.13 shows that three factors are most relevant for job satisfaction in every type of profession:

- Work autonomy;

- Professional expertise (usage of knowledge and skills in current work; F11), and
- Status/career (e.g. high income).

Additionally working conditions which allow to have time for leisure activities or family are also important for job satisfaction as well as aspects of the professional role (professional ethics and contacts).

The general pattern of the relevance of work autonomy, professional expertise and status/career for job satisfaction holds true when we look to the results of the multiple regression analysis for the countries (see Table 2.14). Some specifics of the countries should be noticed. E.g. job satisfaction of graduates from the Netherlands and Norway seems to be less influenced by aspects of status/career. On the other side for graduates from Germany the status/career aspects are more important for job satisfaction than work autonomy and professional expertise. Aspects of leisure time/family seems to be more relevant in Spain and France than in the other countries.

Summarising the findings we can note that among the young European graduates from higher education institutions a work orientation is widespread which can be described as "modern professional". The classical professionals do not differ very much in their work orientation from the other types of profession and the job satisfaction of the graduates is mainly influenced by the three factors work autonomy, professional expertise and status/career.

Specifics of the different types of professions as well as cultural factors are also relevant but they do not change the general picture.

Table 2.13
Job Satisfaction and Characteristics of Work by Type of Profession (standardized coefficients, beta; OLS regression)

	Type of profession					
	Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers
Work autonomy (index, J1B)	.301	.274	.265	.228	.192	.285
Professional expertise (usage of knowledge and skills in current work; F11)	.259	.243	.205	.216	.263	.181
Status/career (index,J1B)	.174	.169	.223	.149	.196	.195
Leisure time/familiy (index,J1B)	.052	.056	.055	.134	.104	.086
Professional role (index, G17)	ns	.072	.045	.044	.094	.054
Explained variance (R2)	0.37	0.28	0.27	0.22	0.25	0.26

ns = not significant at the 5% level

Table 2.14
Job Satisfaction and Characteristics of Work by Country (standardized coefficients, beta; OLS regression)

	Country												
	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	CZ	EE
Work autonomy (index, J1B)	.209	.188	.224	.240	.264	.273	.341	.282	.273	.302	.318	.198	.169
Professional expertise (usage of knowledge and skills in current work; F11)	.306	.210	.281	.298	.311	.208	.295	.287	.283	.328	.232	.217	.219
Status/career (index,J1B)	.201	.175	.259	.183	.186	.282	.094	.146	.167	.082	.156	.212	.271
Leisure time/familiy (index,J1B)	.125	ns	.133	.086	.118	.091	.049	.070	.087	.079	.091	ns	.093
Professional role (index, G17)	.061	.090	ns	.091	ns	.073	ns	ns	.055	.047	.063	.102	ns
Explained variance (R2)	0.39	0.21	0.36	0.32	0.36	0.34	0.36	0.29	0.37	0.36	0.33	0.24	0.26

ns = not significant at the 5% level

2.5 Professions and power

In this section we describe different aspects of the professional types in terms of dimensions that characterize their (market) power: income, selectivity of HE programme; HE programme characteristics, self-employment, exclusively own field strength and type of competition and damage potential.

2.5.1 Income

The *income* of graduates can indicate to some extent the demand of the society according to the human capital theory. But from the theory of the professions we have also learned that power and strategies of market closure might also explain the possibilities to earn a high income. Indeed the data of the REFLEX study indicate big differences between the different professions and also between female and male graduates regardless of the profession.

The winners in terms of income are clearly the "managers" and the "classical professions": the overall income of managers is about 3,100 Euro per month compared to 3,200 Euro of the classical professions, 2,900 Euro of S&T experts, 2,600 Euro of business experts. The income of semi-professionals is similiar (2,300 Euro) to that of the non-professionals (2,200 Euro). In all professions the income of female graduates is 20-30 percent lower. When we adjust the income to the national level (mean centered), the difference between male and female graduates is about 650 Euro plus for men. The income advantage of classical professions and managers is especially prominent for men: their monthly income is 3500.-3600 Euro on average.

Table 2.15
Monthly Income by Type of Profession and Gender (corrected for country average: arithmetic mean; only fulltime employed graduates)

		Type of profession						Total
		Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers	
Gender	Male	2693	3110	3071	2656	3627	3495	3101
	Female	2018	2303	2346	2162	2918	2611	2335
Total		2313	2617	2855	2287	3193	3114	2685

The organisational context explains the income differences to a great extent: relevant is the economic sector (public/private) and the size of organisation. But the relationships are not linear. The "business and administrative experts", the "science and technology experts" and "managers" have a higher income when they are employed in the private profit sector, while the "semi-professions" and the "classical professions" employed in the public sector have a higher income than their colleagues in the private profit sector. In general the size of the organisation is positive correlated with the income: the bigger the organisation the higher the income of the graduates. But for "business and administrative experts", the "science and technology experts", the semi-professionals, and the classical professionals in the public sector the relationship seems to be not linear. A clear advantage of working in a big organisation is especially visible for graduates in the private profit sector who are employed by companies with 1000 or more employees. Young managers in big private companies have an average income of almost 4,000 Euro, which is the highest income when we look to economic sector, size of the organisation and type of profession.

Table 2.16
Income by Economic Sector, Type of Profession and Size of Organisation (corrected for country average: arithmetic mean; only fulltime employed graduates)

Public or private sector		Type of profession						Total
		Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers	
Public sector	1-49	1936	2310	2388	1799	3194	2309	2190
	50-999	2086	2263	2146	2307	3205	2234	2352
	1000+	2336	2503	2788	2471	3461	2871	2670
Private profit sector	1-49	2151	2346	2595	2473	2863	2698	2509
	50-999	2244	2487	2885	2011	3645	3253	2716
	1000+	2744	3304	3343	2707	3215	3960	3325

This seems to be already a justification of Harold Perkins statement about the managers of the great corporations and the big government organisation as the "key players" of the "professional society". But we have to add that especially the male managers are

in an outstanding position to be able to earn a much higher income than the other graduates.

2.5.2 Exclusivity of own field

A key aspect of "professionalisation" has been seen in the establishment of the exclusivity of professional expertise gained through higher education learning. Figure 2.5 shows that while the vast majority are working "field related" only every third graduate stated the exclusivity of his field. It is not a surprise that the classical professionals are outstanding in this respect: 81% indicate that exclusively their own field is most appropriate for their work. Close to them are the semi-professionals with 49% "exclusivity" and the other side are the business professionals (21%) the managers (17%) and the non-professionals (14%).

2.5.3 Selectivity of higher education and he programmes?

Are the pathways to the different types of professions influenced by types of HE or HE programme characteristics? Parental educational background and the kind of highest qualification before entering higher education are also interesting to take into account.

First we have to note that there is a more clear pathway to the traditional professions than to other types of profession; 61 % are from families where at least one (mother or father) has a higher education degree (compared to 49% in general); 91 % followed the highest track of general secondary education (like "Abitur" in Germany) compared to 75 % in general (see Table 2.17).

Second it should be noted that semi-professionals and classical professionals continued much more often with PhD programmes or other post-graduate qualifications. This resulted in big differences regarding the attained level of higher education between the traditional professionals and the other types. 9% of the classical professionals have already attained a PhD or specialist type of degree (ISCED 5A specialist degree (med., dent., vet.) or ISCED 6), 79% reached the second level degree (programme providing direct access to doctorate level) and only 12 % the first level degree (programme not providing direct access to doctorate level).

The selectivity of HE programmes seems to be less clear (see Table 2.18). There are rather small differences regarding the different selection criteria for entry to the study programme.
But the used selection criteria depend to a great extent on the country: e.g. in Finland, Estonia, and Czech Republic the use of special entry exams as selection criteria is

widespread, while in countries like the Netherlands, Germany, United Kingdom an Norway these selection criteria are rare regardless the type of profession.

The higher education programme characteristics described by the graduates are quite different with respect to the type of profession (see Table 2.19). For instance the classical professionals most often studied in "demanding programmes" (79%; compared to 56% in general) and also very often consider their study programme as " academically prestigious " (66%; compared to 37% in general) while the semi-professionals on opposite rather seldom consider their study programme as academically prestigious (28%). These differences between the classical professionals and the semi-professionals are existing in all countries.

Table 2.17
Parents with Academic Background and Highest Qualification Before Entering Higher Education and Further Study by Type of Profession (percent)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
Parents with academic background							
Yes	45	48	46	47	61	56	49
Gender							
Male	39	38	69	24	38	55	43
Female	61	62	31	76	62	45	57
Sublevel of highest secondary qualification							
General secondary education highest track	69	69	66	77	91	73	73
Highest educational sublevel currently attained							
ISCED 5A specialist degree (med., dent., vet.) or ISCED 6 le	1	2	4	5	10	2	4
ISCED 5A long programme providing direct access to doctorate	62	54	52	47	78	51	55
ISCED 5A long programme not providing direct access to docto	37	44	44	49	12	47	41

Table 2.18
Selection Criteria for Entry to the Study Programme by Type of Profession (percent; multiple responses)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
Diploma in secondary education	72	74	76	72	80	72	74
Grades achieved in secondary education	33	34	40	38	32	37	36
Prior qualification in higher education	12	10	9	13	5	13	11
Grades achieved in prior higher education	6	7	5	8	3	8	6
Results of special entry exams	24	35	32	33	27	39	32
Work experience	1	1	1	1	0	1	1
Other selection	8	9	6	9	8	12	9

Table 2.19
HE Programme Characteristics by Type of Profession (percent; response 4 or 5 on a scale from 1 "not at all " to 5 " to a very high extent)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
The programme was generally regarded as demanding	51	48	64	52	79	52	55
The programme was academically prestigious	29	36	38	29	67	38	37
The programme was vocationally orientated	31	36	41	48	40	37	39
Employers are familiar with the content of the programme	24	34	42	46	62	38	40
There was freedom in composing your own programme	29	31	25	26	14	30	27
The programme had a broad focus	56	62	59	50	47	63	57

2.5.4 Self-employment

Only a minority of 10% of the graduates are self-employed (see Table 2.20). Relatively high is the proportion of self-employed graduates among the traditional professionals (24%), but they are also in this group a minority. Self-employment is more common in Italy (23%), Austria, Czech Republic and Germany (14 % each) and rather rare in Switzerland, Norway and United Kingdom (5-6%).

Table 2.20
Self-Employment by Type of Profession (percent; responses 4 and 5)

	Type of profession						
	Non prof.	Business & soc.	Science & techn.	Semi prof.	Class. prof.	Manager	Total
Self-employed	9	9	10	7	24	11	11
Type of self-employment							
Mainly one client	18	18	17	15	9	10	15
Several clients	82	82	83	85	91	90	85

2.5.5 Competition and damage potential

From the perspective of the classical professionals one would expect a working environment with low competition. But this seems to be true only for the majority of the semi-professions (52%) (see Table 2.21). The majority of *all* graduates are working in an economic area where the competiton is high (55%). This competition is mainly oriented towards the quality (41%) and not towards the price (9%). Especially the technical professions (71%) and the managers (69%) are reporting most often a high competition. The strength of competition depends to a great extent on the economic sectors to which the organisation belongs.

The strength of competition in the *public sector* and also in the private non-profit sector is much lower than in the private profit sector. In the later sector between 75% and 89% of the graduates in the different countries reported a high competition compared to 8% to 44% of the graduates employed in the public sector. The lowest level of competion were reported from graduates from Norway and France, mainly because the level of competence in the public sector is much lower than in the other countries, while the level of competence in the private profit sector is not different from other countries.

The damage potential of own's work could be another indicator of why work is delegated to professionals. The graduates were asked: "How damaging would it be for the organization if you made major mistakes or omissions in the performance of your work? Scale of answers from 1 = 'hardly damaging' to 5 = 'extremely damaging'." The

results underscore a high professional relevance of most of the graduates. 62% reported a "high" damage potential of their work, with 77% of the classical professionals and 73% of the managers. Although the non-professionals and the semi-professionals scored lower, also the majority of these types of profession reported a high damage potential.

Table 2.21
Strength and Kind of Competition, and Damage Potential by Type of Profession (percent)[3]

	Type of profession						Total
	Non-professionals	Business and social science experts	Science and technology experts	Semi-professions	Classical professions	Managers	
Strength of Competition							
Low 1,2	27	28	16	52	33	19	30
3	15	13	13	19	16	12	15
High 4,5	58	58	71	29	51	69	55
Competition by price or by quality							
Mainly price 1,2	13	10	13	3	6	13	9
3	48	47	43	61	52	42	49
Mainly quality 4,5	39	43	43	36	43	46	41
Damage for the organization if one made major mistakes							
Hardly 1,2	19	15	17	19	11	11	16
3	23	23	22	25	12	16	22
Very 4,5	58	62	62	56	77	73	62

2. 6 Discussion of results

Young graduates from institutions of higher education in Europe are working mainly in close relation to their field of study and also in accordance with their level of education. About 80 % are working as managers or professionals according the ISCO classification of their job title. This result is similar to the result of the CHEERS study from 1999 which indicates a rather high stability of the labour market for graduates in Europe. The data do not suggests notions of a growing uncertainity in the context of globalisation. The dominant employment pattern five years after graduation in all European countries is that of fulltime employment with unlimited term contracts. Again, the comparisoin with the CHEERS study do not indicate substantial change.

3. This is based on the following questions: *How strong is the competition in the market in which your organization operates? Scale of answers from 1 = 'very weak' to 5 = 'very strong', Does your organization compete mainly by price or by quality? Scale of answers from 1 = 'mainly price' to 5 = 'mainly quality'. (including not applicable)* and *How damaging would it be for the organization if you made major mistakes or omissions in the performance of your work? Scale of answers from 1 = 'hardly damaging' to 5 = 'extremely damaging'*

But the results suggests that young graduates in Europe are working in an environment where key attributes of the "classical professions" are not existent. The typical situation is not characterised by the individual client-professional relationships which is out of the control of others. The graduates are working mainly in organisations where they are in an interdependent context with other colleagues. This context seems to be also a context of competition between fields of study. The vast majority of graduates (85%) are working "field related" but only every third graduate stated the exclusivity of his field. Exclusivity of their own field of study describes only the situation of the vast majority of the "classical professions" (80%). But even the work of many of the young "classical professionals" are controlled by their supervisors (45%). Self-employment is still rare among graduates five years after graduation (10%), and also in the group of the "classical professions" the self-employed are a minority (24%).

The majority of graduates in Europe are female, but a few professions like the S&T experts and the mangers are still male dominated. On the other side are the semi-professions (e.g. teacher and nurses) a domain of the female graduates (76%).

The reported results of the employment conditions underline already the relevance of higher education. But are the higher education graduates sufficiently prepared for their work tasks? The results of the REFLEX study suggests that a rather long training period after graduation is needed to be able to perform on an "expert level". On average it takes three years of training. The differences by country are remarkable small when we take into account the difference in the study duration by country. But we can see also the relevance of the vocational orientation of the study programme when the graduates from a country like the UK with a rather short study duration of about 3 years who have a rather long period of training on the job are compared with graduates from German Fachhochschulen with a strong vocational orientation who reported a much shorter training period after graduation. It is obvious that higher education does not prepare exactly for the specific work tasks which graduates are performing. Graduates even from vocational orientated study programmes are generalists in the sense that they might have broader knowledge and skills than the requirements in their actual work tasks. But at the same time the graduates are not trained enough to perform on an "expert level" in their actual job. The "classical professions" have by far the longest training period after graduation (4.6 years) followed by the semi-professions (3.8 years).

Graduates are not only oriented towards their individual career in bureaucratic organisations. They are also oriented towards the rules and regulations of their profession. For instance professional ethics - a central aspect for the classical professionals - are relevant to all the different professional types, but most prominent for the classical professions (84%), and rather seldom for science and engineering professionals (55%). Graduates are working in an environment where they give advice to their professional colleagues and inform them about new development in their field of work. But only a minority of 34% establish professional contacts with experts outside the organization.

The graduates reported a high work autonomy: 83% are able to decide how they do your own job and 73% are responsible for setting of goals for their own work, but only a very few graduates are in a position where they have a high responsibility for key decisions regarding the whole organisation.

Their work orientations are characterised by high intrinsic and extrinsic elements as well. The job satisfaction is rather high (69% satisfied) and is mainly influenced by the three factors work autonomy, professional expertise and status/career. In this sense this finding confirms our analytic concept for the analysis of the professions from the viewpoint of knowledge, organisation and power. The classical professionals do not differ very much in their work orientations from the other types of profession. One might call the work orientations as "modern professional" reflecting that the classical intrinsic and altruistic elements are combined with status/career and leisure time/familiy aspects. Identification with the "profession" is important, but the area of work is not any more the only focus of identity. Specifics of the different types of professions as well as cultural factors are also relevant but they do not change the general picture.

When we look to income as an indicator of power, we see big differences between countries and the type of professions. Our results confirm to some extent Harold Perkin's argument about the outstanding role of the managers in big companies. Already five years after graduation they can get by far the highest income, especially when they are male. In general the income of the female graduates is 20-30% lower than that of male graduates. But we should also notice that the managers reported the longest working hours per week, and the highest level of work requirements regarding professional expertise as well as functional flexibility, innovation and mobilisation of human resources.

The pathways to the different types of professions are to some extent influenced by gender, social origin, selectivity of higher education and programme characteristics as well as field of study with the strongest effect of gender to end up in the semi-professions and medicine as the field of study which was considered to be exclusive. But the other aspects are not so dominating, leaving room for the fexibility. "Blurring boundaries" describes the situation for the majority of graduates - clear claims are rather seldom. In this sense the expansion of higher education in Europe was not accompanied by an expansion of the monopolies of the "classic professionals".

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Chapter 3
"Being Flexible": Graduates Facing Changes in Their Work Environment

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In the '90s, greater emphasis was placed on flexibility in the graduate labour market, from two different perspectives. On one hand, it was observed that fewer graduates could expect to experience a smooth and rapid transition from higher education to "regular" or "standard" employment with full-time and unlimited-term contracts. More and more graduates were expected to become petit entrepreneurs, finding multiple niches where they could sell their competences on the basis of part-time, short-term or multiple contracts, or to get involved in semi-entrepreneurial activities. This view stressed the increasing precariousness of graduate employment, the loss of job security, and the weakening of graduates' bargaining position.
On the other hand, the growing importance of flexibility was also seen as an indication of an expanded set of graduates' opportunities. According to this view, graduates are not just victims of a changing set of circumstances, but can take advantage of the new situation by developing a willingness, and ability to deal with changes in a positive way, to see changes as windows of opportunities rather than as threats, to learn and to try new things, to use their work as a tool for acquiring new competences through experience, and to be constantly alert to new work opportunities in the external labour market. In this chapter we take both perspectives into account in describing what "being flexible" means not only in the European graduates' labour market but also in their work environment at large in the early 21st century.

3.1 The changing work environment of European graduates

In Europe, both firms and states are facing – and have faced in the last decades – substantial changes in their environment. As a result of several processes – the industrialisation and the economic growth of developing and less developed countries, the increasing openness of the economies, the extension of trades, the deepening of competition, the growth of personal and family incomes, the more refined and diversified taste of consumers – markets have become more segmented and unstable. Social processes such as the aging of the population or the growth of migrants fluxes, and budget constraints set both at the domestic and the European levels, produced

the restructuring of welfare states, and affect the supply of public services. Further, technological and organisational innovations have had and have an impact on both firms', states' and professions' operations. The production of new scientific knowledge, and its application to the production of goods and services plays a special role, (see the discussion on Knowledge economy and Knowledge societies in next chapter), enhancing the role of highly qualified labour force in the economy. The ongoing production of new knowledge and its introduction in the economy through technical and organisational innovations expand the occupational division of labour fostering the creation of new occupations, and the establishment of new professions, especially in the field of knowledge-driven services. Further, directly or indirectly, new knowledge and innovations cause the transformation of existing occupations and professions, and bring to the rapid obsolescence of existing knowledge calling for retraining, higher education attainments, and lifelong learning. In Europe, the growing importance of information and communication technologies has especially been considered as a factor calling for a radical reform of the education system (European Council, 2000).

In order to adapt to a changing, more complex and often highly uncertain environment, resorting to flexibility – that is to the rapid readjustment of productive factors or resources in order to seize opportunities provided by technological innovation and increasingly segmented and unstable markets (Trigilia, 2002) – is a way out. Organisations – both economic and non economic (or economically relevant) – can deal with a rapidly changing environment making a flexible use of their resources, especially of human resources.

From the employers' side, the flexible use of human resources (or labour forces) entails different possibilities: 1) to adjust the volume and the composition of the labour force to environmental changes; 2) to shift workers from one job to another within existing organisations and to change the content of job tasks; 3) to reward labour differently according to real or supposed differences in labour productivity, and to the business cycle. These possibilities refer to three different dimensions of flexibility: external (or numeric) flexibility; internal (or functional) flexibility; and wage flexibility (Reyneri, 2002). In this chapter we will focus only on the first two forms of flexibility.

External flexibility implies the transformation of both self-employment and employment relations. On the one hand, the assignment of phases or functions of productive processes to others (outsourcing) fosters not only the extension of a network of relations with other organisations but also with self-employed workers and professionals. The search for more external flexibility can produce an increase of job insecurity and casual work, but can also trigger or accelerate the process of professionalisation of work: besides regulated professions, new kind of professions can be established. Further, the search for external flexibility can contribute to blur the distinction between employment and self-employment, and can sustain the growth of micro firms making the field of self-employment more complex. A higher demand of flex-

ibility by the economic system may produce an increase in the proportion of specific types of self-employed workers.

On the other hand, normative and contractual constraints regulating hiring and firing are modified, and non standard employment relations (i. e. different from full-time and permanent employment within a single organisation) increase. The need to readjust the volume and the composition of the labour force may imply the shift from one employer (and thereby sometimes one occupation and/or economic sector) to another, the shift from employment to unemployment, a higher resort to part-time or fixed-term contracts, geographical mobility of workers, workers having two or more jobs at the same time.

Functional flexibility refers to the drive to flexibility within single organisations entailing changes in the workplace. It relies on two different sets of conditions. First, "negative" conditions, that is the absence of constraints to shift workers from one job to another and to change the content of job tasks. Second, "positive" conditions, that is workers possessing multiple competences and skills, workers' willingness to upgrade their skills, and to participate in re-training processes or activities, and to adapt to frequent changes in work conditions. Among positive conditions, knowledge and competences possessed or acquired by workers and their value orientations play a major role.

Functional flexibility is considered extremely important because it relates to individuals – and, especially, to graduates – at all stages of their working life. As a consequence, graduates need to develop the ability to cope with changes, to take up challenges not directly related to their own field of expertise, and to quickly acquire new knowledge and new skills (Allen and Van der Velden, 2005; Schmid, 2000).

It is clear that the exposure of graduates to these two forms of flexibility, requires some major adaptive skill. Yet, graduate workers don't only adapt or react to changes in their working environment but can also change it. This happens at least in two ways. On the one side, graduates can actively contribute to change their working environment acting as bearers or promoters of innovation within their workplace (this issue will be discussed in the next chapter). On the other side, graduates can simply change job or change their employment condition as a means to acquire new knowledge, new competences, new experiences in order to find a (more) satisfactory job or working activity. This is especially the case for young people for whom obtaining a higher education final degree is a major step in the transition to adulthood, and it is often also the starting point of a period of exploration of the world of work through mobility and changes (this issue will be discussed in this chapter).

3.2 Outline of the chapter

The chapter is divided into two parts. The first part focuses on external flexibility, that is on graduates experiencing changes in the labour market during the first five or six years after graduation. The second part of the chapter deals with functional flexibility, that is with graduates experiencing changes within their workplace.

First, an overview of the changes in graduate labour market is provided. Second, two different aspects of external flexibility are discussed. On the one side, employment mobility – that is, graduates shifting from one employer to another – is considered as one of the most important kind of change graduates experience in their early career. Consequently, the relationship between employment mobility and external flexibility is discussed, and the impact of employment mobility on graduates' condition five or six years after graduation is analysed. On the other side, temporary work is considered as one of the most important aspects of external flexibility, and the determinants of graduate temporary work at the time of the survey are investigated.

Next, in order to assess the importance of functional flexibility in graduate employment and work, the drivers of graduate functional flexibility in both the private and the public sectors are analysed. Further, the issue of competences related to functional flexibility, and of the possible contribution higher education gives in equipping graduates to face changes in their workplaces are discussed.

Finally, we shall draw some conclusions on the different existing ways of "being a flexible graduate", on the consequences of graduate flexibility, and on the contribution higher education gives or might give to graduates in facing and adapting to a changing environment.

3.3 Changes in the labour market

As they enter the labour market, and in the following years, graduates can experience at least three types of changes which are related to different dimensions of flexibility: changes in the employment condition, in the occupation and the economic sector, and in employment relations. As far as the employment condition is concerned, graduate self-employment may rise or fall, graduates can shift from one employer to another being mobile through the labour market, and they may also shift from employment to unemployment. Further, it is possible that they change their occupation – moving vertically or horizontally within the occupational system – and/or the economic sector they work in. Finally, graduates can experience changes in their employment relations as they can change the type of contract they have.

Table 3.1 provides an overview on the changes in graduate labour market during the first five or six years after graduation.

Table 3.1
Changes in the graduate labour market during first 5-6 years after graduation

	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	EE	CZ	Total
Type of employment first and current job														
Fixed-term/temporary contract (1st job)	83	64	49	34	44	49	66	48	34	45	54	14	32	47
Fixed-term/temporary contract (current work)	37	28	15	23	21	24	19	20	16	13	23	13	13	20
Self-employed (1st job)	6	12	5	3	10	8	5	11	3	2	3	5	12	7
Self-employed (current job)	9	23	9	5	14	13	7	13	5	6	7	11	14	10
Employment mobility														
One employer since graduation	25	39	46	35	35	46	37	39	31	35	42	33	55	38
Two employers since graduation	24	29	26	35	34	31	32	31	30	35	29	34	29	31
Three or more employers since graduation	50	31	28	30	32	23	31	30	39	30	29	33	16	31
Unemployment spells														
Never unemployed	44	69	66	71	65	66	76	66	69	80	67	78	62	68
One unemployment spell	26	18	22	22	24	24	18	22	20	15	19	18	30	21
Two or more unemployment spells	31	13	13	7	11	10	7	12	10	5	13	5	8	11
Changes in occupation and economic sector														
Changed occupational code between 1st and current work (ISCO Minor groups)	39	25	26	32	29	26	37	34	43	61	36	54	29	37
Changed occupation between 1st and current work (subjective assessment)	n. a.	44	39	n. a.	56	44	57	54	64	49	59	n. a.	n. a.	52
Changed economic sector code between 1st and current work (ISIC Sections)	41	20	9	34	27	17	25	26	32	17	22	37	31	26
Changed economic sector between 1st and current work (subjective assessment)	n.a.	34	17	n.a.	38	29	35	37	47	32	31	n.a.	n.a.	33

On the one side, shifts occurring at the aggregate level between first job and current work at the time of the survey in graduates' self-employment, and in graduates' temporary work are documented. As we can expect that a growing amount of self-employed positions, and/or of fixed-term contracts increases the likelihood of being flexible in terms of changing employers or clients, of changing occupation and/or economic sector, and in terms of experiencing unemployment, these shifts show graduates' increasing, or decreasing, likelihood of being flexible after graduation.

On the other side, data on changes that have indeed taken place during the first five or six years after graduation in graduates' working experience show how much they have actually been flexible.

As it is shown in the first part of Table 3.1, self-employment grows over time but it involves a rather small group of graduates. Few graduates start out as self-employed, and this proportion increases only a little in the first years after graduation. Moreover,

taking into account the occupational groups composing graduate self-employment,[1] and the fact that 85% of self-employed graduates at the time of the survey depends on several clients, these graduates can be considered as real self-employed professionals and not as atypical workers. Consequently, it can be said that graduate self-employment gives a very limited contribution to flexibility. Italy has the highest percentage of self-employed graduates at the time of the survey, followed at a distance by Austria, the Czech Republic, Germany, and Flanders. Very likely, this is due to the greater development in Italy of some well established professions. Indeed, in this country architects and engineers (19%), and legal professionals (25%), represent a larger share of graduate self-employment than average.

Further, during the first five or six years after graduation, temporary work decreases as 47% of employed graduates had a fixed-term or temporary contract at first job, and only 20% reports to have one at the time of the interview. So, a lot of European graduates start out in a temporary job but most move on to permanent work sometimes later. More precisely, 31% of all graduates moved towards stability as they had a temporary contract in their first job but a permanent one in their current work, while 5% of employed graduates experienced a change in the opposite direction moving towards flexibility as they had a permanent contract in their first job and a temporary one at the time of the survey. 49% of employed graduates had a permanent contract both in first job and in current work. Very likely, these graduates didn't experience any change in employment relations enjoying a rather stable condition. On the opposite side, 15% of graduates had a temporary contract both in their first job and in their current work. Very likely, these are the graduates most exposed to external flexibility. At graduates' first job, temporary work is highest in Spain, and it is higher than average in the Netherlands, in Italy, Finland, France, Germany, and Flanders. At graduates' current work – although to a lower extent – temporary work is still much more higher than average in Spain and Italy, and slightly higher than average in Germany, Finland, Switzerland, and Austria. As graduates' career develops, countries grow more similar: in most cases, the strongest moves towards stability are in those countries that started out as more flexible.

The second part of Table 3.1 refers to changes actually taking place in the considered period. A very relevant change concerns employment mobility, as more than 60% of all graduates changed employer reporting that they had two or more employers since graduation. More precisely, 31% of European graduates reports that they have had three or more employers, 31% says that they have had two employers, while 38% says

1. Graduate self-employment consists of the following main occupational groups: managers and entrepreneurs (10%), architects, engineers and related professionals (12%), computing professionals (3%), life science and health professionals, except nursing (12%) with health associate professionals, except nursing (4%), teaching professionals (9%), business professionals (7%) with finance and sales associate professionals (3%), legal professionals (11%), social science and related professionals (6%), and writers and creative or performing artists (6%). These groups make up 83% of all graduate self-employment, and include members of the "liberal" or traditional professions, and of other regulated professions, semi-professionals, members of new professions, artists, and entrepreneurs.

that they have had just one employer. Graduate employment mobility is highest in Spain, and it is higher than average in the United Kingdom, in Estonia, Switzerland, Austria, Norway, and the Netherlands.

Employment mobility – as a form of flexibility in terms of changing employers – may imply that graduates are exposed to unemployment, but this is not necessarily the case. Indeed, while European graduates are highly mobile through the labour market, unemployment – especially repeated experiences of unemployment – is relatively rare, as data on unemployment spells show. Spanish graduates are far more exposed to unemployment – especially to repeated episodes of unemployment – than their colleagues of other countries. Multiple unemployment spells are slightly more frequent than average in Italy, France, Finland, and in Flanders. Finally, in order to assess more correctly graduate unemployment, it must be noted that 77% of European graduates who report at least one unemployment spell since graduation also report having searched for first job after graduation at least one month. This means that, as graduates very likely experienced unemployment before entering their first job, part of graduate unemployment cannot be considered as a consequence of external flexibility, but as a consequence of the more or less smooth functioning of the labour market for fresh-graduates.

Shifting from employment to unemployment, or from one employer to another, aren't the only possible changes graduates experience during the first five or six years after graduation. Graduates can also change occupation and/or economic sector. In order to assess occupational mobility, the REFLEX survey displays two different measures. One results from the process of coding of graduates' occupations, and one – which is available only for some countries – from the direct statement of respondents. Referring to the rather small groups of the International Standard Classification of Occupations (ISCO 1988, Minor groups), 37% of European graduates result having changed occupation between first job and current work at the time of the survey. Occupational mobility is highest in Norway, and it is higher than average in Estonia, the United Kingdom, and Spain. According to the direct statement of respondents, occupational mobility is higher, as 52% of graduates report that their current occupation at the time of the survey is different from the one they had in their first job. The gap between the two measures is possibly due to the fact that according to graduates' self-perception they changed occupation – for instance, because they changed employer, or they've been assigned to a higher position – but the new occupation has been coded in the same group to which the occupation in first job belonged to. Nevertheless, among countries for which information is available, occupational mobility is highest in the United Kingdom, and it is higher than average in Finland, the Netherlands, Austria, and Flanders.

Also in assessing sector mobility we can rely on two measures. Referring to the rather small groups of the International Standard Industrial Classification (ISIC, revision 3.1, Groups), 31% of the European graduates changed economic sector between first

job and current work. Sector mobility is highest in Estonia, and it is higher than average in Spain, Switzerland, the United Kingdom, Flanders, and Austria. According to the information directly provided by graduates, sector mobility is slightly higher, as 33% of the graduates indicates that a change has taken place. Among the countries for which this information is available, economic sector mobility is highest in the United Kingdom, and it is higher than average in Austria, in Flanders, in the Netherlands, and in Italy.

Taken into account the limits of the mentioned measures of occupational and sector mobility, we interpret these findings as a confirm of the high level of graduate employment mobility during first years after graduation.
All in all, as far as the part of graduates' work environment covered by the labour market is concerned, REFLEX data point out two main evidences. First, the majority of European graduates report that they have had two or more employers in their early career. This means that they have been mobile within the labour market as they shifted from one employer to another, one or more times. Second, almost half of the European graduates started out in a temporary job, but during the first years after graduation a consistent group of graduates changed type of contract moving from temporary to permanent work. As employment mobility and temporary work are both related to what being a flexible graduate means in today working environment, we shall discuss these two matters more deeply.

3.4 Employment mobility in graduates' early career

As far as employment mobility in early career is concerned, European graduates can be divided into three groups. As it has been shown (see Table 3.1), a first group reports having had just one employer. These are non mobile graduates. A second group says that it has had two employers, and a third one three or more employers. These are mobile and very mobile graduates. Spain and the United Kingdom show percentages of very mobile graduates consistently higher than average, while the Czech Republic and Germany show percentages consistently lower than average.
Females graduates are slightly more "very mobile" than men. Students graduating in humanities and arts, and in health and welfare, are much more very mobile than others, while students graduating in engineering, manufacturing and construction are less very mobile than others (see Table 3.2 and Table 3.3).

Table 3.2
Employment mobility by gender (% of graduates)

	Males	Females
Non mobile	41	37
Mobile	32	30
Very mobile	28	33

Table 3.3
Employment mobility by field of study (% of graduates)

	Education	Humanities and Arts	Social sciences, Business and Law	Science, Mathematics and Computing	Engineering, Manufacturing and Construction	Agriculture and Veterinary	Health and Welfare	Services
Non mobile	42	32	36	40	45	37	35	41
Mobile	29	27	33	32	32	32	28	30
Very mobile	28	41	31	27	23	31	37	30

Sometimes, shifting from one employer to another entails shifting from one occupation to another or from one economic sector to another.[2] Indeed, the more graduates are mobile the more they experience a change in their occupation, and in their economic sector, between first job and current job at the time the survey was carried out (see Table 3.4).

Table 3.4
Changes in occupation and economic sector and unemployment spells by employment mobility (% of graduates)

	Non mobile	Mobile	Very mobile	Total
Changed occupational code between 1st job and current work	20	44	51	37
Changed economic sector code between 1st job and current work	5	42	52	32
At least one unemployment spell since graduation	16	32	52	32

Note: the Czech Republic is not included in the data on economic sector changes.

Graduate employment mobility has at least two different connections with what being a flexible graduate means. As it has been said in the introductory paragraphs, on the one side, employment mobility can result from a flexible use of human resources by employers. In fact, as employers search to adjust the volume and the composition of the labour force to environmental changes, this can imply that graduates need to shift from one employer to another, because of firing, induced resignation, ending of a fixed-term contract which is not replaced by a new one, and the like. On the other side, graduates may change voluntarily their employers as a means to acquire new knowledge, new competences, new experiences, and in order to find a satisfactory job, or a more satisfactory job.

Looking at the worst consequence of external flexibility, namely unemployment, it is possible to gain some insights on the relationship between being mobile and being flexible. If we consider the proportion of graduates reporting at least one unemployment spell since graduation in the three groups of non mobile, mobile, and very mobile graduates (see Table 3.4), it is possible to come to the following conclusions: 1) The more graduates are mobile the more they are exposed to unemployment; 2) Yet,

2. Changing occupation without changing employer – for instance because of promotions – is also possible. To a lesser extent, changing economic sector without changing employer – because of mergers or spin-offs – may also occur.

the proportion of mobile graduates reporting no unemployment spells is very high; even in the case of very mobile graduates – that is, people who have had three or more employers since graduation – almost half of them was never unemployed.

These data show that employment mobility is related to different faces of external flexibility. The hard face of it, that is the situation in which graduates change employer, or are forced to change employer, and they are exposed to unemployment. The soft face of it, that is the situation in which graduates are forced to change employer – or they voluntarily change employer for different reasons: acquiring new competences, finding a better job and the like – without experiencing unemployment. Among mobile and very mobile graduates, 42% of graduates are exposed to the hard face of external flexibility (that is 26% of the whole sample) while 58% of them are exposed to the soft face of it (that is 36% of the whole sample).

Employment mobility may have an impact on important aspects of graduates' condition some years after graduation. Two are worth mentioning: the level of the competences graduates possess, and the kind of working position they've reached.

3.5 The impact of employment mobility on graduates' competences

Employment mobility can have at least two different consequences on graduates' competences. As we have already said, on the one side, having several employers can be conceived as a way – promoted or not by graduates – to enhance existing competences, to acquire new competences and new knowledge especially through learning-by-doing, practice, and the like. On the other side, these changes might also turn out to be a way of depleting or wasting competences. So, we would like to know if employment mobility does make a difference – either favouring or disadvantaging flexible graduates – as far as the level of competences possessed some years after graduation is concerned, and if it does foster or hinder the same competences possessed by non mobile graduates.

In order to find out what are the effects of employment mobility – that is of changing employers – on the level of competence possessed by European graduates five or six years after graduation, a set of multiple linear regressions has been run. Each regression has as dependent variable one of the nineteen competences investigated in the REFLEX survey, and as independent variable employment mobility expressed by two regression indicators: a dummy variable opposing mobile graduates to non mobile graduates, and a dummy variable opposing very mobile graduates to non mobiles ones.

The effects of changing employers on the level of possessed competences are controlled by a set of factors that have or may have an impact both on the level of competence acquired at the time of the interview, and on employment mobility. These factors are:

gender, the country within which respondents graduated, graduates' type of education [3], the field of study of the degree earned in the reference year (mainly the year 2000), the extent to which graduates' reference study programme has been a good basis for further learning on the job, having had a continuative work experience before graduation expressed in terms of continuing after graduation for more than six months the work already had during study, having had a period of formal or informal initial training, the number of months of employment since graduation, and graduates' occupational group.

Apart from educational and work related factors, it is especially important to control the relationship between employment mobility and level of competences by the duration of work experience after graduation because the time spent working after graduation influences both the number of employers a graduate can have and his or her ability to learn new things, and enhance his or her competences [4].

As the results of these regressions show (Table 3.5), in most cases – that is thirteen competences out of nineteen – employment mobility doesn't have any significant impact on the level of competence possessed by graduates. This means that in these cases, there is no effect of being non mobile, mobile or very mobile, on the level of competence possessed by graduates five or six years after graduation. Yet, there are six cases in which employment mobility does have an impact – albeit a small one – on competences.

Changing employers instead of working for the same has a small negative effect – but growing as graduates are more mobile – on the mastery graduates have of their own field of study, or their discipline, five or six years after graduation. On the contrary, employment mobility slightly increases (sometimes to a larger extent as graduates are more mobile) the knowledge of other fields or disciplines, the ability of rapidly acquiring new knowledge, the alertness to new opportunities, the ability to present products, ideas or reports to an audience, the ability to write and speak in a foreign languages.

On the one hand, employment mobility is slightly eroding the main outcome of higher education studies, namely the mastery of a discipline. On the other hand, it seems to enhance and to valorise other abilities possibly linked with higher education studies, or to provide graduates with new abilities hardly related with studies.

3. This is defined by the type of degree or of degrees graduates have gained, including additional education if relevant. More precisely, the first type of education results in holding only a ISCED 5A degree not giving access to PhD courses and other ISCED 6 study programmes. The second type of path results in holding only a ISCED 5A degree giving access to these advanced courses. The third type of path consists of a combination of a degree not giving access to advanced courses and additional education certified by a further qualification. The fourth type of path consists of a combination of a degree giving access to PhD or other advanced courses and additional education completed earning a relevant qualification.
4. As the variable on the duration of work experience (Number of months employed since graduation) had more than 1,500 missing values, we decided to assign to missing values of each country the average duration of work experience in the country expressed in months.

All in all, it is possible to conclude that being a "flexible graduate" – that is being mobile or very mobile – doesn't represent a disadvantage. In most cases, working for the same employer or having two or more employers during the first five or six years after graduation doesn't make a big difference as far as possessed competences are concerned. Only in one case, flexible or mobile graduates are slightly penalized while in few other cases they are slightly favoured.

Table 3.5
The impact of employment mobility on graduates' competences (standardized regression coefficients)

	Mobile graduates	Very mobile graduates
mastery of your own field or discipline	**-0.027**	**-0.055**
knowledge of other fields or disciplines	0.021	**0.041**
analytical thinking	0.008	0.003
ability to rapidly acquire new knowledge	**0.028**	**0.030**
ability to negotiate effectively	0.008	**0.027**
ability to perform well under pressure	0.002	-0.011
alertness to new opportunities	**0.034**	**0.043**
ability to coordinate activities	0.019	0.015
ability to use time efficiently	0.004	0.000
ability to work productively with others	0.013	0.014
ability to mobilize the capacities of others	0.005	0.006
ability to make your meaning clear to others	0.008	0.013
ability to assert your authority	-0.007	-0.007
ability to use computers and the internet	0.004	0.017
ability to come up with new ideas and solutions	0.014	0.015
willingness to question your own and others' ideas	0.011	0.015
ability to present products, ideas or reports to an audience	**0.024**	**0.025**
ability to write reports, memos or documents	0.014	0.009
ability to write and speak in a foreign language	**0.038**	**0.061**

Significant effects (1% level) in bold

3.6 Employment mobility as a way to get a good job

The second issue to be discussed on employment mobility refers to its consequences on the chance of having a good job five or six years after graduation. Also in this case, we face two possibilities. On the one side, employment mobility can be considered as a means to achieve a satisfactory working position within five or six years from graduation profiting from ones' own competences. On the other side, employment mobility can be considered as a sign of the difficulty to do so. Thus, as it was for competences, also for job satisfaction employment mobility within the labour market can lead to very different outcomes.

To find out what happened to European graduates, we refer to job satisfaction as an indicator of how successful graduates have been in getting a good job. As it is shown in Table 3.6, five or six years after graduation, on average, mobile graduates – that is flexible graduates – report almost the same level of job satisfaction of their non mobile – or non flexible – colleagues, and in the three mentioned groups the percentage of graduates satisfied or very satisfied with their jobs is almost the same. Also in this case, we can conclude that mobile, or flexible, graduates don't suffer a damage compared to their non mobile, or non flexible, colleagues. Non mobile, mobile, and very mobile graduates display quite different labour market experiences, still five or six years after graduation they have been equally successful in getting a good job.

Table 3.6
Graduates' job satisfaction by employment mobility (mean values and % of graduates)

	Non mobile	Mobile	Very mobile
Mean values	3.83	3.86	3.81
Percentage (very) satisfied (4 or 5 points)	69	69	68

Note: satisfaction measured on a 5-point scale with 1 = very dissatisfied and 5 = very satisfied

Does the level of competences acquired by flexible or non flexible graduates have an impact on the satisfaction with their job? If achieving a satisfactory working position some years after graduation can be considered as a measure of graduates' success in early career, are there specific competences which influence flexible graduates' job satisfaction as opposed to non flexible graduates?

Table 3.7 provides information on the impact of different competences on job satisfaction among three groups of graduates: non mobile, mobile, and very mobile graduates. It summarizes the results of a set of multiple linear regressions each having as dependent variable the degree of job satisfaction, and as independent variables the nineteen competences investigated in the REFLEX survey. The effects of the level of the competences on job satisfaction are controlled for the same set of variables included in the previous analysis which are assumed to have an impact both on graduates' job satisfaction and on the level of competences possessed at the time of the survey.

Four main conclusions can be drawn looking at this table. First, in most cases – other things being equal – the level of acquired competence doesn't have any impact on the degree of job satisfaction either among mobile or non mobile graduates. Second, significant net effects are quite small. Third, shifting from non mobile to very mobile graduates, the number of competences having a significant effect decreases. This means that as graduates become more mobile the importance of competences in influencing

job satisfaction decreases.[5] Fourth, as far as the competences having an impact on job satisfaction are concerned, the two groups of flexible graduates appear to be quite different. Among very mobile graduates, only three competences slightly increase the degree of job satisfaction. The first is the mastery of ones' own field or discipline, which has just the same effect also among mobile and non mobile graduates. The second is the alertness to new opportunity, which has a similar positive effect only among mobile graduates. The third is the ability to work productively with others, which has a similar effect only among non mobile graduates.

Table 3.7
Effects of competences on job satisfaction, by employment mobility (standardized regression coefficients)

	Non mobile graduates	Mobile graduates	Very mobile graduates
mastery of your own field or discipline	**0.072**	**0.054**	**0.072**
knowledge of other fields or disciplines	**-0.037**	-0.021	**-0.038**
analytical thinking	0.011	-0.028	-0.025
ability to rapidly acquire new knowledge	0.014	-0.009	0.018
ability to negotiate effectively	-0.010	-0.001	0.032
ability to perform well under pressure	**0.065**	**0.087**	0.029
alertness to new opportunities	0.029	**0.038**	**0.046**
ability to coordinate activities	-0.008	-0.019	0.015
ability to use time efficiently	0.008	**0.038**	0.000
ability to work productively with others	**0.059**	0.008	**0.035**
ability to mobilize the capacities of others	-0.009	-0.018	-0.005
ability to make your meaning clear to others	**0.031**	0.007	0.009
ability to assert your authority	0.050	**0.066**	0.006
ability to use computers and the internet	**-0.035**	0.010	-0.003
ability to come up with new ideas and solutions	**0.041**	0.005	0.017
willingness to question your own and others' ideas	**-0.050**	-0.014	-0.013
ability to present products, ideas or reports to an audience	0.017	**0.046**	-0.013
ability to write reports, memos or documents	-0.018	-0.022	-0.006
ability to write and speak in a foreign language	-0.023	-0.031	-0.001

Significant effects (5% level) in bold.

5. If the level of competence has a very small impact on job satisfaction, it might be asked what is in fact determining it. Looking at the controlling variables of our model, which are not shown in Table 3.6, some interesting evidences can be found. There are two factors which are playing an independent significant role in determining job satisfaction in all the three groups of graduates. The first is the quality of the reference study course. The degree to which the study programme has been a good basis for further learning on the job significantly increase the level of job satisfaction, especially among mobile and very mobile graduates. The second is the rank of graduates' occupation: as they move up the occupational ladder, graduates – especially very mobile ones – are more satisfied. Differences between mobile and non mobile graduates can also be reported. One factor has a small positive effect on job satisfaction only among mobile and very mobile graduates. This is having had a period of formal or informal training in first job. Two factors have a small positive effect on job satisfaction only among very mobile graduates: working experience (months of employment since graduation), and having earned a PhD or a specialist degree after graduation.

All in all, it can be said that the three groups of graduates share a common basis of their success few years after graduation. This is the mastery of ones' own field or discipline, which can be considered the main component of professional expertise. On the other side, not surprisingly, in being a flexible graduate moving from one employer to another during early career, the key competence to success for both mobile and very mobile graduates is the alertness to new opportunities, one of the crucial characteristic of entrepreneurship (Swedberg, 2000).

3.7 Graduates facing temporary work

One of the main changes European graduates experience during their early career concerns employment relations as the proportion of graduates having a temporary contract diminishes consistently over time. Still, five or six years after graduation, 20% of graduates work with a fixed-term contract. As fixed-term contracts are one of the means employers have to adjust the volume and the composition of the labour force to environmental changes, it can be said that some years after graduation one graduate out of five is exposed to an aspect of external flexibility.

As it has been already shown (see Table 3.1), at the time of the survey temporary work is much more widespread than average in Spain and Italy, and slightly higher than average in Germany, Finland, Switzerland, and Austria.

It is worth investigating which are the main determinants of temporary work five or six years after graduation, and if having a fixed-term contract at first job has an impact on the chance of having the same type of contract at the time the REFLEX survey was carried out.

It can be expected that three broad groups of factors may have an impact on temporary work. First, there are some personal characteristics of graduates such as gender, age, the social networks they are embedded in, and the amount of working experience they have cumulated after graduation. As it is apparent from the opening paragraph on changes, it is very likely that this last factor plays a crucial role in determining graduates' employment relations because as time goes on, as it is spent working, as working experience is cumulated, fixed-term contracts diminish and unlimited-term contracts grow. Second, there are some characteristics of graduates' higher education: the type of educational path graduates had followed in terms of the type of degree they've earned, the field of their study, and some traits of their study programmes. Third, there are some structural features of National economies such as the division of labour at the level of economic sectors and occupational groups, and some specific features of the organisations graduates' are working for: their belonging to the private or to the public sectors, their scope of operations, and their size.

In order to assess the impact of these factors on employment relations, a multivariate model is set up. The model has as dependent variable a dummy opposing graduates having a fixed-term contract at the time of the survey to graduates having an unlimited-term contract. The following variables are included as indicators of the mentioned explicative factors.

Apart from gender – which has males as the reference category in a dummy variable – a variable based on age is dividing the whole sample into two generations of graduates: those who are 36 years old or less, and those who are more than 36 years old, with the later as reference category. A single dummy variable summarizes the information on two types of social networks, those through which graduates can have access to information on job opportunities, and those through which they can get a help in directly obtaining work.[6]. Months of employment since graduation are used as a proxy of accumulated working experience after graduation, as we did analysing the impact of employment mobility on graduates' competences (see note 4).

We then consider four different types of respondents' educational paths based on the highest qualification achieved at the time of the survey, and on the presence or absence in graduates' educational careers of additional education after the degree earned in the reference year (see note 3). Each type is included in the model as a dummy variable except the second type which is used as reference category. A set of dummy variables account for the field of study of graduates' reference programme following a grouping slightly different from the one presented in the original variable: education, humanities, law, business administration, computing (computer science), other (natural / hard) sciences, engineering & architecture, agriculture & veterinary, health, and services. Social sciences are serving as reference category. Finally, two other dummy variables account for specific characteristics of graduates' study programmes: whether they are vocationally oriented and/or academically prestigious.

The National economies' structural characteristics are expressed by a set of dummy variables for economic sectors (Manufacturing and other productive activities; Trade, transport and other traditional services; Business and financial services, and communication; Education; Health and social work) with Public administration as reference sector, and by a set of dummy variables for occupational groups (Professionals; Technicians and associate professionals; Clerks, workers and others) with Managers, legislators, and senior officials as reference group. Finally, employers specific characteristics are considered through the following regression indicators: the public sector, opposed to the non public one as reference category; local, regional, and international scope of organisation's operations, with the national scope as reference category; small, and big organisational size with medium size as reference category.

6. This variable on social capital is slightly different from the one used in Chapter 7, which also includes networks that may help graduates in setting up their own business.

As the relationship between those explanatory factors and temporary work may vary across countries, a set of dummy variables of the countries where respondents graduated is used as a proxy of the general features of the National higher education and economic systems, with France as the reference country.

Table 3.8 shows the results of two binomial logistic regressions. In order to assess the impact of having a fixed-term contract at first job on the probability of having the same type of contract at the time of the survey, one regression is not controlling, and one is controlling, for the type of contract at first job.

Other things being equal, having a fixed-term contract at first job does increase the probability of having a temporary work five or six years after graduation. So it can be said that temporary work at first job strongly predict having a fixed-term contract later on. Yet, this is not the whole story. Most of the factors having a significant effect on the probability of having a fixed-term contract five or six years after graduation while not controlling for the type of contract at first job, are still significant – and have the same sign – once type of contract at first job is included in the model.

Some are worth mentioning. Every additional month of working experience after graduation decreases the probability – net of all other effects, including having a fixed-term contract at first job – of having a fixed-term contract five or six years after graduation. On the contrary, belonging to the generation of younger graduates – all other things being equal, including working experience – increases this probability.

Graduates holding only a degree from ISCED 5A study programmes not giving access to PhD courses are less exposed to temporary work five or six years after graduation than their colleagues who are holding only a degree from a ISCED 5A study programme giving access to the doctorate, while graduates holding this type of degree but having also gained an additional qualification – mainly a PhD or a specialist degree – are more exposed to temporary work than the reference group.

Table 3.8
Determinants of temporary work 5-6 years after graduation (unstandardized logistic regression coefficients)

	Not controlling for type of contract at 1st job	Controlling for type of contract at 1st job
Fixed-term/temporary contract in first job		1.514
*Gender: female	-0.108	-0.151
*Age: 36 years old or less	0.742	**0.448**
*Very useful social networks	**0.238**	**0.267**
*Months employed since graduation	**-0.034**	**-0.032**
Qualification (ref. Second level degree, no additional qualification)		
First level degree, no additional qualification	**-0.385**	**-0.285**
First level degree plus additional qualification	-0.034	-0.010
Second level degree plus additional qualification	**0.293**	**0.251**
Field of study (ref: Social Sciences)		
Education	**-0.469**	**-0.474**
Humanities	-0.130	-0.166

	Not controlling for type of contract at 1st job	Controlling for type of contract at 1st job
Law	-0.127	-0.265
Business administration	-0.178	-0.091
Computer science	**-0.516**	-0.357
Other hard sciences	**0.325**	0.263
Engineering & architecture	-0.207	-0.167
Agriculture & veterinary	0.196	-0.006
Health & social work	**0.338**	0.228
Services	-0.254	-0.248
*Vocationally oriented study programme	**-0.198**	-0.152
Academically prestigious study programme	0.113	0.097
Economic sector (ref: Public Administration)		
Manufacturing and other productive activities	-0.464	**-0.429**
Trade, transport and other traditional services	0.153	0.177
Business and financial services, and communication	-0.145	-0.084
Education	**0.966**	**0.846**
Health and social work	**0.606**	**0.559**
Occupation (ref: Managers, legislators, and senior officials)		
Professionals	**0.765**	**0.657**
Technicians and associate professionals	0.585	**0.422**
Clerks, workers and others	**0.699**	**0.522**
Public sector	**1.226**	**1.179**
Scope of operations (ref: national):		
Local	**-0.612**	**-0.607**
Regional	**-0.255**	**-0.272**
International	**0.230**	**0.241**
Organization size (ref: medium)		
Small	**0.295**	**0.309**
Big	-0.056	-0.013
Country of graduation (ref: France)		
Italy	**0.673**	0.340
Spain	**1.333**	**0.859**
Austria	0.012	0.015
Germany	0.347	0.223
The Netherlands	0.313	-0.018
United Kingdom	-0.127	-0.003
Finland	0.362	0.056
Norway	-0.151	-0.296
Czech Republic	**-0.589**	**-0.540**
Switzerland	-0.280	-0.136
Belgium (Flanders)	-0.063	-0.158
Estonia	-0.005	0.417

Significant effects (1% level) in bold.

Working in the public sector increases the probability of having a fixed-term contract. This finding is also consistent with the net effects of economic sector: working five or six years after graduation in the manufacturing sector or in other productive activities – which are mainly private – decreases – compare with working in the public administration – the probability of working on a temporary basis while working in education and the health sector – which are mainly public – increases it.

It is interesting to note that the effect on temporary work of some fields of study is no more significant when the type of contract at first job is included in the analysis. Before controlling for type of contract at first job, graduating from the reference study

programme in computer science was decreasing the probability of having a fixed-term contract five or six years after graduation while graduating in other hard sciences, and in health disciplines or social work was increasing it. This means that in these cases the effect on temporary work is mainly due to the less frequent, or more frequent, resort to fixed-term contracts in working areas to which these degrees give access, and not to some specific trait of these fields of study.

A special case concerns education as a field of study. Holding a degree in education decreases the probability of having a fixed-term contract – even controlling for the type of contract at first job – while working in the educational sector is increasing it. We interpret this apparent inconsistency referring to the fact that a degree in education gives access only to a segment of the educational sector while many other graduates – holding different degrees – enter this sector.
Finally, it has to be noted that after controlling for the type of contract at first job the effect on temporary work of graduating (and, in mot cases, of working) in Italy is no more significant, which means that the effect depends on a wider diffusion of fixed-term contracts in this country and not on other characteristics of it. On the contrary, the country effect is still significant in two other cases. Everything else being equal, graduating and working in Spain increases the probability of having a fixed-term contract while graduating and working in the Czech Republic decreases it.
All in all, it can be said that the previous analysis provide a coherent picture of graduate temporary work some years after graduation. In Europe, also controlling for country differences, external flexibility in the form of temporary jobs mostly concerns graduates with less working experience – that is, people at the beginning of their career – and younger graduates. Consequently, external flexibility can be understood as a temporary experience shaping the early career of graduates.

The high proportion of graduates having a fixed-term contract at first job, and the fact that temporary work diminishes as graduates gain working experience indicates that having a fixed-term contract or a sequence of fixed-term contracts in very early career – what has been called an "external career" – can be understood as a device used by graduates to explore the labour market, to collect information on both jobs and employers. Correspondingly, fixed-terms contracts (at first job or in graduates' very early career) can be seen as a screening device used by employers to select or to test graduates, their knowledge and skills, and their reliability, as they enter the labour market.

Yet, later on – five or six years after graduation – temporary work appear to be related mainly to the public sector – and not to the private – and, especially, to the education and health sectors[7]. Further, graduates more likely to be exposed to temporary work are those who have followed long studies gaining advanced degrees. These findings

7. The high presence of women in the public sector, in education, health, and social work, possibly explains why the gender variable doesn't have any significant effect on the probability of having a temporary contract five or six years after graduation.

indicate that, at that point in time, graduate temporary work mainly depends on the regulations of the public sector and/or of specific professions, and that graduates having temporary contracts at several years from graduation do so because they are in the early stages of their career coming from long studies, and/or are entering professions requiring a long preparation, and possibly resorting to temporary contracts as access paths to them.

3.8 Functional flexibility in graduate employment and work

Five or six years after graduation, a large proportion of European graduates – though not the majority, as it is for employment mobility – has already experienced a major change in work tasks since graduates started to work in their organisation or, if this is the case, since they started to work as self-employed. Consequently, one of the more important changes European graduates experience in their early career refers to changes in work tasks within their workplace.

Looking at changes in work tasks, we shift our attention from one part of graduates' working environment, the labour market, to another part, graduates' workplace. In the workplace, changing the contents of work tasks is a crucial aspect of functional (or internal) flexibility. As employers seek for a more flexible use of human resources, employees can be transferred to different activities within the organisation, and their work tasks can be modified. Something similar occurs also to self-employed, albeit in this case changes in work tasks are directly driven mainly by market forces and/or public regulations.

Table 3.9
Functional flexibility by country (% of flexible graduates)

United Kingdom	53
The Netherlands	49
Estonia	47
Belgium	43
Austria	43
Germany	41
Italy (="average country")	40
Spain	38
Czech Republic	35
Norway	35
Finland	35
Switzerland	34
France	29

In order to assess the importance of functional flexibility in graduate employment and work, we shall first investigate the drivers of functional flexibility. Next, we'll turn to the issue of competences related to functional flexibility, and of the contribution

higher education gives to help graduates deal with it. As changing the contents of work tasks is a crucial aspect of functional flexibility, we shall use it as an indicator of graduates' involvement in this second dimension of flexibility.

At the time of the survey, 40% of European graduates declared they've experienced a major change in their work tasks since they started to work in their organization, or since they started to work as self-employed [8]. Graduates working in the private sector are more exposed to functional flexibility (46%) than their colleagues working in the public sector (36%). Further, graduate functional flexibility varies across countries. Countries participating in the REFLEX survey can be divided into two groups with Italy playing the role of the average country (see Table 3.9). The first group includes the United Kingdom, the Netherlands, Estonia, Austria, Belgium (Flanders), and Germany; this group shows a proportion of graduates exposed to changes in their work tasks higher than average. The second group includes Spain, the Czech Republic, Norway, Finland, Switzerland, and France; this group shows a proportion of graduates exposed to changes in their work tasks lower than average.

Functional flexibility – that is major changes in graduates' work tasks – can have two main causes.
On the one side, changes in graduates' work tasks depend on the introduction of innovations within their workplaces. On the other side, also organisational changes can have an impact on graduates' workplace. There are three types of innovations which can affect both organisations and graduates' work: innovations of product or service, the introduction of new technologies, new tools or new instruments, and the innovation of knowledge or methods (see next chapter for a more detailed discussion on innovation). On their side, organisational changes are related to four situations that graduates can experience in their workplace: a reorganisation, a merger or a takeover by another firm, a large scale layoff of personnel, and a relocation to another region.

We can expect that functional flexibility applies both to the private and the public sector, as innovations and organisational changes are by no means restricted to the private sector but involve also organisations operating in the public sector. While functional flexibility applies both to the private and the public sector, it can be maintained that its determinants are different in the two sectors. In the private sector, innovations and organisational changes – the key factors explaining functional flexibility – depend on the strength of the competition graduates' firms are facing. Further, organisations' exposure to competition depends on how stable is the demand in the relevant market. In the public sector, innovations and organisational changes are mainly policy driven and do not depend on the strength of competition.

In order to test this explanation of the drivers of graduates' functional flexibility, two multivariate models have been designed, one for the private sector and one for

8. It is sound to remember that self-employment is not widespread among graduates, and that graduates' workplaces mainly consist of organisations, either private or public.

the public sector. Both models have as dependent variable a dichotomous variable opposing graduates who experienced a major change in their work tasks since they started working in the organisation where they were employed at the time of the survey to graduates who didn't experience changes. Both models have as independent variable the combination of innovation and organisational change graduates have experienced in their organisation, or in their work if they are self-employed and they do not run an organisation.

The relationship between functional flexibility and the combination of innovation and organisational change has been controlled by a set of other factors which are the same in the two models with two relevant exceptions. Graduates' seniority, economic sector, the size of the organisation, its scope of operations, and the country of employment of graduates are the controlling variables common to the two models. The strength of the competition graduates' organisations are facing, and the degree of stability of the demand in the market in which graduates' organisations operate, are factors included only in the private sector model.
Graduates' seniority, defined by the time spent by graduates working in the same organisation, is considered an important controlling factor as it is very likely that the longer graduates work within an organisation the more they can be exposed to functional flexibility.

Other factors may also have an impact on innovation and organisational change both in the private and in the public sectors, possibly in different ways. In the private sector, some economic sectors are more exposed to competition and globalisation, responding to them through innovative management and practices. Some sectors are more related to research & development activities, but as in many countries these activities are mainly public or publicly financed, both the private and the public sectors may be affected. The organisation's scope of operations might also be important as we can presume that in firms with an international scope of operations – being more exposed to competition – and in public organisations with a national scope, the intensity of innovation is greater, and thus functional flexibility is higher. The impact of the size of organisations on innovation and organisational change is more disputed (see also next chapter). Common sense argues that large organisations are more exposed to change, innovation and functional flexibility than small ones. Yet, in the private sectors, start-ups based on information and communication technologies could be very innovative. Further, SMEs could be more exposed to competition, so functional flexibility could be high. In the public sector, it might be that big organisations are more bureaucratic and less keen to innovation. Finally, country specific institutional settings and economic conditions can play a role both in the private and in the public sectors.

Table 3.10 shows the results of two binomial logistic regressions which have been run, one for each sector.9

Innovation and organisational changes can indeed be considered drivers of functional flexibility both in the private and in the public sectors. Compared to the situation in which in graduates' organisations there is no innovation and there aren't organisational changes, the three situations reported in the table increase the probability of major changes in graduates' work tasks. The first situation refers to the combination of both innovation and organisational changes. In these case, graduates are exposed to at least one type of innovation (that is innovation of product or service, the introduction of new technologies, new tools or new instruments, and the innovation of knowledge or methods) and – at the same time – they experience at least one major organisational change: a reorganisation, a merger or a takeover by another firm, a large scale layoff of personnel, and finally a relocation to another region. The second situation refers to the case in which graduates' face just innovation but no organisational changes, and the third situation refers to the case in which graduates face just organisational changes but no innovation.

It is important to note that the effects shown in the table are net effects as they are controlled by graduates' seniority, economic sector, scope of operations of the organisation graduates work for, and its size, country differences, in both the private sector and the public sector, and are controlled by the strength of competition and the stability of demand in the private sector.

Among these variables, some are having a net effect on work tasks changes everything else being equal. Two effects are worth mentioning. As it is not surprising, both in the private and in the public sectors every additional month spent working for the same organisation (or as self-employed, if it is the case) increases the probability to be confronted with major tasks' changes in the workplace. This means that – other things being equal – graduates' seniority is also having an impact on functional flexibility. In the private sector, as competition gets stronger the probability of major changes in work tasks increases. This means that competition is playing an independent role in promoting graduates' functional flexibility.

9. We've also run the regressions without the country of employment variable. In the private sector, including country of employment as controlling variable doesn't change the results of the analysis. Factors having a significant effect remain the same and the sign of the effects don't change. This means that the relationship between innovation, organisational changes and functional flexibility has a wide validity across countries even if the institutional setting and the economic conditions of some countries have a further independent impact on it. Adding country of employment to the public sector model leaves effects unchanged with two exceptions. The impact of the size of organisations becomes significant in that big public organisations are less keen to changes in graduates' work tasks than middle size organisations. On the contrary, the positive impact of working in the business and financial service sector, and in communications vanishes which means that the country where the firms of this sector are located makes the difference.

Table 3.10
The drivers of functional flexibility (unstandardized logistic regression coefficients)

	Private sector	Public sector
Innovation and organisational changes (ref: no innovation or changes)		
Both innovation & changes	1.007	1.178
Just innovation, no changes	0.413	0.478
No innovation, just changes	0.736	0.849
Current job tenure (months)	0.013	0.008
Economic sector		
Manufacturing and other productive activities	-0.163	0.434
Trade, transport and other traditional services (ref. category for private sector)	n.a.	0.398
Business and financial services, and communication	-0.112	0.177
Public administration	-0.023	**0.385**
Education	-0.223	**-0.168**
Health and social work (ref. category for public sector)	-0.212	n.a.
Organization size (ref: medium)		
Small	0.088	-0.064
Big	-0.015	**-0.164**
Scope of operations (ref: national)		
Local	**-0.317**	-0.119
Regional	0.030	**-0.182**
International	0.095	-0.143
Country of employment		
Italy (ref. category for private sector)	n.a.	-0.050
Spain	-0.065	**0.327**
France	-0.233	-0.359
Austria	-0.020	0.197
Germany	-0.089	**0.472**
The Netherlands	0.277	0.716
United Kingdom	0.299	1.089
Finland	**-0.236**	-0.027
Norway (ref. category for public sector)	-0.315	n.a.
Czech Republic	**-0.231**	-0.187
Switzerland	-0.120	-0.145
Belgium (Flanders)	0.423	0.432
Estonia	0.120	**0.490**
Other countries	0.000	0.386
Highly unstable demand	0.002	n.a.
Strong competition	0.176	n.a.

Significant effects (5% level) in bold.

Summing up the analysis on the driving forces of graduates' functional flexibility, it is possible to come to the following conclusions:

1. Five or six years after graduation, 40% of European graduates (43% in the private sector, 36% in the public sector) have already experienced major changes in their work tasks, and can be considered as "flexible professionals";
2. It is more likely that European graduates working both in the private and in the public sectors need to cope with functional flexibility as innovations are introduced in their organisations, and as organisational changes occur; further, it is more likely that graduates face major changes in their work tasks as their career goes on; finally, it is more likely that graduates working in the private sector experience functional flexibility as competition grows.
3. As we can expect that innovations and organisational changes in European knowledge societies will not stop in the future, as we can expect that the chances of major changes in work tasks will increase as graduates' career proceeds, and as we can expect that competition in the private sector will deepen in the future, we can conclude that functional flexibility will remain part of the work experience of a large – and possibly growing – proportion of European graduates. Thus we can consider functional flexibility as one of the most important – if not the most important – dimensions of flexibility in graduate employment and work.

3.9 Functional flexibility, competences, and higher education

Given the importance of functional flexibility, it is useful to know what kind of competences are required to flexible graduates.

According to the self-perception of respondents, the level of competence required to flexible graduates – that is people who experienced major changes in their work tasks – is always slightly higher than the level required to non flexible graduates (see Table 3.11). Among the nineteen competences surveyed by the REFLEX Project, nine competences show a difference between what is required to flexible graduates and what is required to non flexible graduates higher than average, while – not surprisingly – the mastery of one's own field or discipline is equally required to both flexible and non flexible graduates.

The nine competences that can be considered the most required competences to flexible graduates are: the ability to negotiate effectively, to mobilize the capacities of others, the alertness to new opportunities, the ability to coordinate activities, to assert your authority, to perform well under pressure, to come up with new ideas and solutions, to work productively with others, and to use computers and the internet. Some of these competences are possibly related to higher education studies – such as the ability to use computers and the internet, and to work productively with others – while others are more likely to be acquired working or performing other associated activities, such as the ability to negotiate effectively, to mobilize the capacities of others, and to assert your authority.

Table 3.11
Mean required level of competences, by functional flexibity

	Flexible graduates	Non flexible graduates	Difference
ability to negotiate effectively	4.93	4.49	0.44
ability to mobilize the capacities of others	5.07	4.68	0.39
alertness to new opportunities	5.01	4.62	0.39
ability to coordinate activities	5.55	5.23	0.33
ability to assert your authority	4.88	4.56	0.31
ability to perform well under pressure	5.79	5.5	0.30
ability to come up with new ideas and solutions	5.31	5.04	0.27
ability to work productively with others	5.62	5.35	0.26
ability to use computers and the internet	5.55	5.29	0.26
ability to present products, ideas or reports to an audience	4.85	4.60	0.25
knowledge of other fields or disciplines	4.32	4.09	0.24
willingness to question your own and others' ideas	5.04	4.81	0.22
ability to write reports, memos or documents	5.22	5.02	0.20
analytical thinking	5.22	5.02	0.20
ability to use time efficiently	5.73	5.54	0.19
ability to write and speak in a foreign language	3.99	3.81	0.18
ability to rapidly acquire new knowledge	5.45	5.28	0.17
ability to make your meaning clear to others	5.51	5.34	0.17
mastery of your own field or discipline	5.43	5.42	0.01

Note: required competences measured on a 7-point scale with 1 = very low level, 7 = very high level
Largest differences in bold.

Do flexible graduates consider themselves able to answer properly to the demands and the expectations of their employers? If we look to the nine competences which are making a wider difference between flexible and non flexible graduates – that is, which correspond to areas of competences where flexible graduates are possibly more vulnerable than their non flexible colleagues – we can see that in all the cases the majority of flexible graduates is at least good enough to meet employers' requirements (see Table 3.12). Yet, in some cases a consistent proportion of flexible graduates – one third or a bit more – perceives a deficit in its own abilities as the level of competence required by employers exceed the level of competence possessed by them. This is so for competences pertaining to the realm of power relations, namely the ability to negotiate effectively, the ability to assert one's authority, the ability to mobilize others' capacities, and the ability to perform well under pressure.

All in all, it is possible to conclude that functionally flexible graduates are enough well prepared to meet employers' demands but also that a consistent proportion of them – approximately between one fourth and one third – reports shortages on eight out of nine of the most required competences to flexible graduates.

Table 3.12
Differences between possessed and required competences (% of flexible graduates; only competences mostly required to functionally flexible graduates)

	Deficit	Balance	Surplus
Ability to negotiate effectively	37	36	27
Ability to assert your authority	37	34	29
Ability to mobilize the capacities of others	33	38	29
Ability to perform well under pressure	33	45	22
Alertness to new opportunities	29	38	33
Ability to come up with new ideas and solutions	29	39	32
Ability to coordinate activities	27	45	28
Ability to work productively with others	24	49	27
Ability to use computers and the internet	15	50	35

Notes
Deficit: level of competence required by employers exceeds the level of competence possessed by graduates.
Surplus: level of competence possessed by graduates exceeds the level of competence required by employers. Balance: levels of required and possessed competences are the same.

Interviewing graduates five or six years after graduation, it is not easy to find out if their study helped them to acquire relevant competences, especially those most required by employers to flexible graduates. Still, the REFLEX survey offers two possible insights on the contribution higher education gives to graduates in order to perform their work tasks in a changing working environment.

On the one side, the questionnaire asked graduates to name a maximum of three competences that they regard as strong points, and a maximum of three competencies that they regard as weak points, of their study programme, selecting them from the list of the nineteen surveyed competences.

Although it is necessary to take into account that these questions don't allow to collect the full assessment of graduates on all the listed competences because graduates can take into consideration only six competences, some interesting findings are summarised in Table 3.13. The first column of the table shows how many graduates selected the corresponding competence in their assessment exercise, that is how many graduates considered the competence as an aspect of their study programme worth being evaluated. Only three competences, namely the ability to write and speak in a foreign language, analytical thinking, and the mastery of a field or discipline, were selected by more than 40% of the graduates. The other columns show how many graduates regard the selected competences as strong points or as weak points of their study programme.

Data shows that competences can be divided into three groups. First, there are the competences which are considered by graduates much more as strong points of their

study programme than as weak points: analytical thinking, the mastery of graduates' own field or discipline, the ability to write reports, memos or documents, the ability to rapidly acquire new knowledge, the ability to work productively with others, and the ability to perform well under pressure. In these areas – which include two abilities especially relevant to flexible graduates, namely the ability to work productively with others, and to perform well under pressure – higher education programmes seem to give a positive contribution in equipping graduates.

Table 3.13
Strong and weak points of graduates' study programmes (% of graduates)

	Graduates taking into consideration the listed competences	Graduates regarding selected competences as **strong** points of their study programme	Graduates regarding selected competences as **weak** points of their study programme
ability to write and speak in a foreign language	50	10	40
analytical thinking	46	38	8
mastery of your own field or discipline	45	40	5
ability to present products, ideas or reports to an audience	37	13	24
ability to use computers and the internet	35	16	19
ability to write reports, memos or documents	35	22	13
ability to rapidly acquire new knowledge	32	30	3
ability to assert your authority	32	3	29
ability to negotiate effectively	30	4	26
ability to work productively with others	30	21	9
knowledge of other fields of disciplines	28	10	18
ability to perform well under pressure	27	20	8
ability to use time efficiently	23	13	10
ability to come up with new ideas and solutions	23	12	12
ability to mobilize the capacities of others	20	4	16
willigness to question your own and others' ideas	18	9	9
ability to coordinate activities	18	10	8
alertness to new opportunities	16	5	11
ability to make your meaning clear to others	16	9	7

Competences especially required of functionally flexible graduates in bold.

Second, there are the competences for which the percentages of graduates regarding them as strong points or as weak points are very similar, so it can be said that graduates' evaluation is very balanced. These competences are: the ability to use computers and the internet, to use time efficiently, to come up with new ideas and solutions, the willingness to question your own and others' ideas, the ability to coordinate activities, and to make graduates' meaning clear to others. Three of them – the ability to use

computers and the internet, the ability to come up with new ideas and solutions, and the ability to coordinate activities – are among the most required to flexible graduates. In all these cases, it is not possible to say if higher education is clearly contributing or not to graduates' preparation.

Third, there are seven competences that are much more considered as weak points than as strong points: the ability to write and speak in a foreign language, to present products, ideas or reports to an audience, to assert authority, to negotiate effectively, to mobilize the capacities of others, the knowledge of other fields of disciplines, and the alertness to new opportunities. Four of these competences are among the ones most required to functionally flexible graduates: the ability to assert your authority, the ability to negotiate effectively, the ability to mobilize the capacities of others, and the alertness to new opportunities. In these cases, it can be said that higher education is giving a poor contribution in preparing graduates.

All in all, according to graduates' evaluation, higher education appears to give a positive contribution in equipping graduates with six out of nineteen relevant competences, it lacks to do so for seven other competences, while it is more difficult to assess its contribution regarding other six competences.

Comparing the results of the assessment exercise on study programmes' strong and weak points with flexible graduates' self-perception on competences' surpluses and shortages, leads in some cases to quite meaningful interpretations.

In fact, three of the four competences showing a higher proportion of flexible graduates reporting a deficit – the ability to assert your authority, the ability to negotiate effectively, and the ability to mobilize the capacities of others – are also among the competences that are regarded by all graduates more as weak points than as strong points of their study programmes.

We may say that these competences can hardly be acquired through formal higher education and are mainly gained through real-life experience and the hardships of both employment and self-employment. Very likely, five or six years after graduation, flexible graduates – that is graduates who have experienced major changes in their work tasks – are still in the process of building up these competences, and a consistent proportion of them feel that what is required to them in these areas still exceed what they can offer.

Further, one of the competences showing a very low proportion of flexible graduates reporting a deficit – the ability to work productively with others – is considered by all graduates more as a strong point than as a weak point. We may conclude that working together with others while studying in higher education – seemingly a quite widespread experience within European higher education institutions – helps successively flexible graduates on their job.

In other cases, interpretation is more doubtful and needs further investigations. For instance, while a consistent proportion of flexible graduates reports a shortage in the ability to perform well under pressure, this ability is much more regarded by all graduates as a strong point of their study programme than as a weak point. On the other side, while a consistent proportion of flexible graduates perceive a surplus in the alertness to new opportunities, this ability is much more considered a weak point than a strong point of study programmes.

Besides the assessment exercise on study programmes' strong and weak points, European graduates have been asked to what extent their study programme has been a good basis for performing their current work tasks. If we address this question to flexible graduates, that is to people who experienced major changes in their work tasks, we can get an insight of the contribution higher education is giving to cope with functional flexibility.

The following tables show the results of a set of linear multiple regressions having as dependent variable the extent to which study programme has been a good basis for performing graduates' current work tasks, measured on a five points scale with 1 = "not at all" and 5 = "to a very high extent".

Some aspects of study programmes are used as independent variables in order to find out which aspects are having a positive impact on the capacity of programmes to help graduates in performing their work tasks. First, some general characteristics of study programmes are considered. Second, some modes of teaching and learning which were emphasised in graduates' study programme are taken into consideration. Third, graduates' participation to work placements or internships which were part of their study programme is also included. The effect of these factors on work tasks performance is controlled by gender, country of graduation, the level of qualification achieved by graduates at the time of the survey, the field of study of the reference programmes, and seniority, that is months of employment with current employer, or of self-employment if relevant. Tables are comparing flexible and non flexible graduates' results.

Net of the effects of controlling variables, we notice few differences between flexible and non flexible graduates as far as the general characteristics of study programmes are concerned (see Table 3.14). All of them have a positive impact on the extent to which the programme has been a good basis for performing current work tasks both for flexible and non flexible graduates. Differences between the two groups are small but more consistent in three cases. On the one side, academically prestigious programmes, and programmes with a broader focus have a stronger positive effect among flexible graduates. On the other side, a better knowledge of the contents of study programmes by employers has a stronger effect on study programme usefulness among non flexible graduates.

Focusing on the extent to which the emphasis placed on some modes of teaching and learning in graduates' study programme help them to perform their current work tasks at the time of the survey, we can see that five modes out of eleven are having a significant positive impact both among flexible and non flexible graduates, one has a positive impact only among flexible graduates, one a positive impact only among non flexible graduates, and one a negative effect only among non flexible graduates. So, it seems that higher education is giving more or less the same contribution to both groups of graduates in helping them performing their work tasks. The emphasis on theories and paradigms is helping only flexible graduates, while the emphasis on written assignments is helping only the non flexible ones.

Finally, a sharper difference concerns taking part in one or more work placements or internships as part of study programme. According to graduates' retrospective evaluation, while the emphasis placed in study programmes on work placements and internships is considered having a positive impact on the ability to perform work tasks both by flexible and non flexible graduates, five or six years after graduation the fact of actually having participated in work placements or internships during study helps only non flexible graduates in performing their work tasks.

Table 3.14
The impact of different aspects of study programmes on the extent to which they have been a good basis for performing graduates' current work tasks (standardized regression coefficients)

	Flexible graduates	Non flexible graduates
Programme characteristics		
programme was generally regarded as demanding	0.063	0.068
employers are familiar with the content of programme	0.101	0.125
there was freedom in composing your own programme	0.029	0.039
programme had a broad focus	0.055	0.037
programme was vocationally orientated	0.190	0.196
programme was academically prestigious	0.108	0.080
Modes of teaching and learning		
lectures	0.048	0.036
group assignments	-0.008	0.000
participation in research projects	0.011	0.009
internships, work placement	0.051	0.089
facts and practical knowledge	0.115	0.103
theories and paradigms	**0.034**	-0.003
teacher as the main source of information	0.015	0.016
project and/or problem-based learning	0.087	0.067
written assignments	0.015	**0.031**
oral presentations by students	0.033	0.058
multiple choice exams	0.005	**-0.031**
Participated in work placement/internships	0.019	**0.047**

Significant effects (5% level) in bold.

All in all, we can conclude that higher education study programmes – their general characteristics, their prevailing modes of teaching and learning, their specific activities like work placements and internships – are giving a contribution to both flexible and non flexible graduates in performing their work tasks five or six years after graduation, even if some differences between the two groups can be detected.

3.10 Conclusions: two different ways of being flexible

In this chapter, we've focused on three major changes in two different areas of graduates' work environment, namely the graduate labour market, and graduates' workplace. During the first five or six years after graduation, 62% of European graduates changed employer one or more times. Further, 36% changed their work contract between first job and current work at the time of the survey. Finally, 40% experienced a major change in work tasks since they started to work in their organization, or since they started to work as self-employed. The first two changes are related to what is called external flexibility, while the third change is related to what is called functional flexibility.

Looking at changes of employers, we can say that the majority of European graduates has been flexible during their early career. Shifting from one employer to another implies that graduates are mobile through the labour market. While non mobile graduates (38%) never changed their employer, mobile graduates (31%) change it one time, and very mobile graduates (31%) changed it two or more times.

Graduates' employment mobility is related to two different faces of external flexibility. On the one side, graduates are confronted with the hard face of it as they change employer being exposed to unemployment. Among mobile and very mobile graduates, 42% are exposed to the hard face of external flexibility, which means 26% of the whole sample. On the other side, graduates are exposed to the soft face of it as they change employer without experiencing unemployment. Among mobile and very mobile graduates, 58% are exposed to the soft face of external flexibility, that is 36% of the whole sample.

Employment mobility in early career doesn't represent a disadvantage for European graduates. Working for the same employer or having two or more employers during the first five or six years after graduation doesn't make a big difference as far as possessed competences are concerned. Only in one case, flexible graduates are slightly penalized because employment mobility erodes the mastery graduates have of their own field of study, while in few other cases they are slightly favoured, because employment mobility valorises some other competences or provides graduates with some new ones. Moreover, five or six years after graduation, non mobile, mobile, and very mobile graduates have been equally successful in getting a good job. While this success is based on a common basis related to professional expertise, namely the mastery of

ones' own field or discipline, the key competence to success for mobile and very mobile graduates is related to an entrepreneurial skill, namely the alertness to new opportunities.

Looking at graduates' type of contracts, the picture drawn by REFLEX data is a bit more complicated. At first job, almost half of the European graduates (47%) has a fixed-term contract, which means that a very consistent proportion of graduates is exposed to external flexibility. Yet, later on 31% of all graduates experience a change moving towards stability (while 5% moves in the opposite direction towards flexibility) leading to a situation at the time of the survey where only 20% of the graduates has a fixed-term contract.

Findings from the analysis carried out in this chapter suggest that as far as temporary work is concerned European flexible graduates can be divided into two groups. The first group consists of graduates having one – or maybe more – fixed-term contracts in their very early career but moving more or less quickly to permanent work as they gain working experience, and they grow older. Very likely these graduates attended a vocationally oriented study programme, and are holding only a first degree not giving access to doctoral or other advanced studies. They work in the private sector, especially in manufacturing and other productive activities. We may refer to these graduates as the "first comers" to a rather stable working situation. The second group consists of graduates having a fixed-term contract five or six years after graduation. Very likely these graduates hold a degree giving access to advanced studies but also gained some additional qualification such as a doctorate or a specialist degree. At the time of the survey, they have less working experience. They work in the public sector, especially in education, health, and social work. It is very likely that these graduates are working on the basis of temporary contracts because they are still at the very beginning of a career requiring longer preparation and/or resorting to fixed-term contracts as a gateway. We have to consider them as flexible graduates but it is very likely that most of them will gain a more stable working situation in the future becoming the "late comers" to stability.

All in all, what we know about graduate external flexibility from REFLEX data can be summarized as follows. First, the majority of European graduates has been exposed to external flexibility in the form of employment mobility within the labour market. Yet, a rather small proportion of the total (26%) has been confronted with the hard face of external flexibility, that is has experienced the worst consequence of external flexibility, namely unemployment. Moreover, employment mobility is not harming European graduates neither as far as their competences are concerned nor as far as the their chances to get a good job are concerned. Second, fixed-term contracts appear to be more related to specific traits of graduates' early career and less a consequence of a flexible use of human resources by employers. On the one side, fixed-term contracts can be considered as a screening device used by employers to select or to test graduates, or as a device used by graduates to explore the world of work. On the other side,

fixed-term contracts likely depend on the regulations of the public sector, and/or of specific professions.

As the experience of external flexibility – both in the form of employment mobility and in the form of temporary work – appears to be mostly a temporary experience linked to the transition from study to work, to a phase of exploration of the world of work, to a period of trails and errors, or to the effort of realizing aspirations and professional projects, we propose to refer to this aspect of external flexibility as "transitional flexibility". Consequently, we come to a first understanding of graduate flexibility in Europe. "Being a flexible graduate" means being flexible in transition.

Looking at major changes in work tasks, we turn to functional flexibility within graduates' workplaces. Five or six years after graduation, 40% of European graduates (43% in the private sector, 36% in the public sector) have already experienced major changes in their work tasks, and can be considered as flexible graduates.
Both in the private and in the public sector, graduate functional flexibility depends on the introduction of innovations, and/or on organisational changes. Further, as graduates' seniority increases it is more likely that graduates need to cope with functional flexibility. Finally, in the private sector it is more likely that graduates experience functional flexibility as competition grows. Given the relationship between seniority and functional flexibility, and given the general characteristics of European knowledge societies, we can expect that functional flexibility will remain part of the work experience of a large – and possibly growing – proportion of European graduates. So, in this second understanding of graduate flexibility, "being a flexible graduate" means being confronted with major changes in work tasks, and being forced to cope with these changes.

How well are graduates equipped to do so? According to REFLEX data on the competences more required of functionally flexible graduates, flexible graduates are sufficiently well prepared to meet employers' demands, even if a consistent proportion of them – between a quarter and a third – report shortages on eight out of nine of the competences most required of flexible graduates.

Finally, as we turn to the contribution higher education gives to graduates in coping with changes both in the labour market and in the workplace, that is in "being flexible" in the two mentioned ways, we can draw the following conclusions.

At a more general level, it can be argued that European higher education systems are helping their graduates – part of whom has been or are exposed to different types of flexibility – to find their way in a more changing environment, and in a more flexible world of work. Five or six years after graduation, almost 70% of European graduates managed to reach a satisfactory or very satisfactory working position. European higher education appears to be quite successful in performing one of its major functions, namely the transmission of knowledge. Not only graduates rate very

high the mastery they have of their own field or discipline [10], but this key element of professional expertise, is giving a positive contribution to the increase of job satisfaction both among mobile and non mobile graduates. On the contrary, a key factor of success among mobile graduates, namely the alertness to new opportunities, seems to be more an outcome of graduates' employment mobility and less an outcome of higher education.

Further, according to graduates' evaluation of their study programmes' strong and weak points, higher education appears to give a positive contribution in equipping graduates withy six out of the nineteen surveyed competences (analytical thinking, mastery of own field or discipline, ability to write reports, memos or documents, ability to rapidly acquire new knowledge, ability to work productively with others, ability to perform under pressure) but it fails to do so for seven other competences (ability to write and speak in a foreign language, to present products, ideas or reports to an audience, to assert authority, to negotiate effectively, to mobilize the capacities of others, and alertness to new opportunities). Two strong points – the ability to work productively with others, and to perform well under pressure – and four weak points – the ability to assert authority, to negotiate effectively, to mobilize the capacities of others and the alertness to new opportunities – refer to competences especially relevant to flexible graduates.

As far as the contribution higher education gives to graduates' work tasks performance at the time of the survey, we have distinguished three aspects of it.

The general characteristics of study programmes have a positive impact on the extent to which the programme has been a good basis for performing current work tasks both for flexible and non flexible graduates. Differences between the two groups are small but more consistent in three cases. On the one side, academically prestigious programmes, and programmes with a broader focus have a stronger positive effect among flexible graduates. On the other side, a better knowledge of the contents of study programmes by employers has a stronger effect on study programme usefulness among non flexible graduates.
Five modes of teaching and learning out of eleven have a significant positive impact on work tasks performance both among flexible and non flexible graduates. They are: lectures, internships and work placements, facts and practical knowledge, project and/or problem-based learning, and oral presentations by students. On the contrary, the emphasis placed on theories and paradigms helps only flexible graduates, while the emphasis on written assignments helps only the non flexible ones.
Higher education institutions and teachers investing resources in promoting these modes of teaching and learning give a contribution to graduates' work performance, most of times to both flexible and non flexible graduates, sometimes only to one of the two groups.

10. On a 7 points scale, value assigned to this competence is 5.34, the average value of all competences being 5.20.

Finally, while the emphasis placed in study programmes on work placements and internships is considered having a positive impact on the ability to perform work tasks both by flexible and non flexible graduates, five or six years after graduation the fact of actually having participated in work placements or internships during study helps only non flexible graduates in performing their work tasks.

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Chapter 4
The Graduates in the Knowledge and Innovation Society

Jean-Jacques PAUL

4.1 Introduction

As the conceptual framework of the REFLEX project stated, the term *knowledge society* has been coined to indicate not only the expansion of participation in higher education or of knowledge-intensive or high-technology sectors of the economy, but rather a situation in which the characteristics of work organisations across the board change under influence of the increasing importance of knowledge. Some scholars consider, as Drucker (1959), that a new worker appeared, who represents the knowledge society. These knowledge workers would give the knowledge society its character, its leadership, its central challenges and its social profile. These workers differ fundamentally from others, according to different characteristics. The knowledge worker gains access to work, job and social position through education. Knowledge workers will, by definition, be specialized and work in teams. In that context, the performance of an individual in acquiring and applying knowledge will increasingly become the key competitive factor for career and earnings opportunities of individuals.

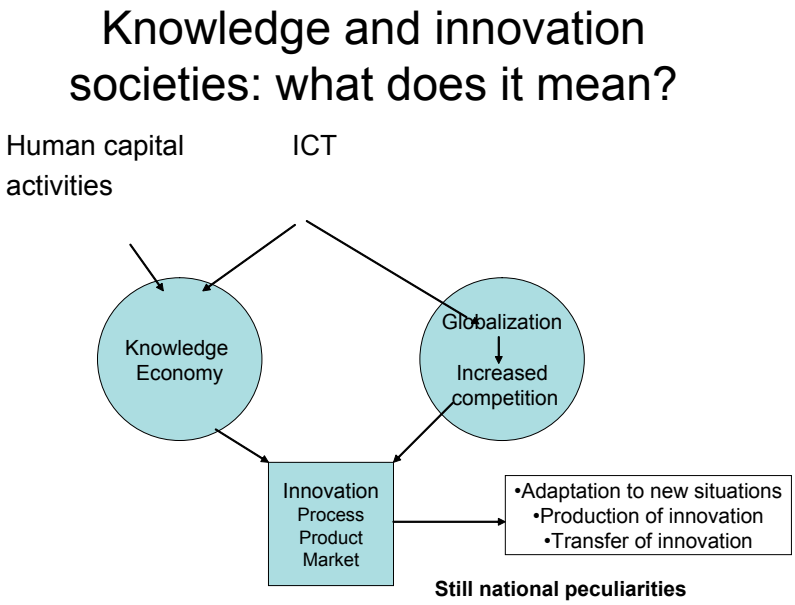
If Drucker (1959) does not give a more precise definition of what he calls the knowledge worker, Reich (1991) tried to be more explicit with the category of "symbolic analysts". The "symbolic analysts" exchange data, words, oral and visual representations. They belong to categories such as engineers, attorneys, scientists, professors, executives, journalists, consultants and other "mind occupations" engaged in processing information and symbols. They concern all the activities linked to problem solving, problem identifying and strategic brokering.

Since other scholars, such as Wolf (2003) in the UK or Duru-Bellat (2006) in France, cast some doubts about the extension of the knowledge and innovation society and about the changes it can impose on the labour market for graduates, it appears important to identify to what extent knowledge and innovation activities are disseminated among graduates and to what extent they determine their work environment.

In that respect, five main questions will be addressed: 1)What does innovation mean? 2)Which organisations are likely to be more innovative? 3) What role do HE graduates play regarding innovation? 4) Are they equipped to do develop innovation? 5)

Which are the occupations more related to innovation and are innovative activities rewarded?

4.2 Some conceptual elements about innovation



It can be considered, according to Foray (2000), that the knowledge economy is at the confluence of two main evolutions: the growing importance of human capital activities and the development of information and communication technologies. As argued by Castells (2000) a global economy is something different than a world economy, as taught by Fernand Braudel and Immanuel Wallerstein. It is an economy with the capacity to work as a unit in real time on a planetary scale. It is only in the late twentieth century that the world economy was able to become truly global on the basis of the new infrastructure provided by information and communication technologies.

Since globalization allows faster flows of ideas, of production factors, financial capitals and human resources and of products, competition became fiercer and more strategic. A way for answering such an increased competition is to elaborate new products, in order to take advantage of temporary monopolies, or to promote new processes in order to lower the production costs, or to gain new markets in order to increase the level of production and to promote economies of scale.

Innovation required by the strongest competition can be developed if organizations are prepared. That means if organizations, at the macro and at the micro levels, have really changed their ways of thinking and working, in adapting the rules of knowledge societies. Innovation appears to be necessary to respond to increased competition and to be possible thanks to the tools implemented by the knowledge society. As already stated, the increased innovation leads to new demands for higher education graduates to be able to adapt themselves in an innovative environment, to produce innovation and to transfer innovation.

At the present moment, at the beginning of the 21st century, countries develop different strategies for promoting knowledge societies, as the concepts of national or social systems of innovation illustrate. That is why it is probably better to propose a concept of knowledge and innovation societie**s** (KISS) instead of knowledge and innovation society.

It is not easy to capture the activities linked to KISS. Different manuals tried to propose methodologies to measure R&D and innovation activities. The first of them, the "Frascatti manual", deals with the measurement of human and financial resources devoted to Research and Experimental Development (R&D). The second one, the "Canberra manual", aims at measuring Human Resources in Science and Technology. And the third one, the "Oslo manual", offers guidelines collecting and interpreting technological innovation data.

R&D is defined by the Frascati manual as covering three activities: basic research, applied research, and experimental development. Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of the phenomena and observable facts, without any particular application or use in view. Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific aim or objective. Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience, that is directed to producing new materials, products or devices, to installing new processes, systems or services, or to improving substantially those already produced or installed. According to the manual, the basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned.

The first definition of innovation has been proposed by Schumpeter (1934), who distinguished five types of innovative activities:

- Introduction of a new product or a qualitative change in an existing product;
- Process innovation new to an industry;
- The opening of a new market;

- Development of new sources of supply for raw materials or other inputs;
- Changes in industrial organisation.

If we refer to the Oslo manual, technological product and process (TPP) innovations are defined as comprising implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation). TPP innovations involve a series of scientific, technological, organisational, financial and commercial activities. The TPP innovating organisation is one that has implemented technologically new or significantly technologically improved products or processes during the period under review.

In the manual, the term "product" is used to cover both goods and services. A technologically new product is a product whose technological characteristics or intended uses differ significantly from those of previously produced products. Such innovations can involve radically new technologies, can be based on combining existing technologies in new uses, or can be derived from the use of new knowledge.

A technology improved product is an existing product whose performance has been significantly enhanced or upgraded. A simple product may be improved (in terms of better performance or lower cost) through use of higher-performance components or materials, or a complex product which consists of a number of integrated technical sub-systems may be improved by partial changes to one of the sub-systems.

For the manual, technological process innovation is defined as the adoption of technologically new or significantly improved production methods, including methods of product delivery. These methods may involve changes in equipment, or production organisation, or a combination of these changes, and may be derived from the use of new knowledge. The methods may be intended to produce or to deliver technologically new or improved products, which cannot be produced or delivered using conventional production methods, or essentially to increase the production or delivery efficiency of existing products.

In the REFLEX survey, it was not possible to use a deeply defined concept of innovation, because of the limitations of a questionnaire filled-in by graduates. Three questions specifically regard innovation. The first one deals with the extent of the innovation in the organization where graduates are employed: *"How would you characterize the **extent of innovation** in your organization or your work, with respect to the following aspects?"* Graduates had to rate from 1 (very low) to 5 (very high) the intensity of the three following types of innovation (product/service, technology/tools/instruments, knowledge/methods). The second considers the role played by the graduates: *"Do you play a role in **introducing** these innovations in your organisation?"*. Respondents had to

answer *"yes"* or *"no"* or *"not applicable/no innovation"* for each one of the three types of innovation. The third one asks "*Is your organisation or - in case of self-employment – are you normally at the forefront when it comes to adopting innovations, new knowledge or new methods, or is it more a follower?"* . Graduates had to rate from 1 (more at the forefront) to 5 (more a follower).

In the absence of a precise definition of innovation, graduates had to interpret the concept by their own. That means that the results cannot be considered as precise as the ones from surveys, such as the Community Innovation Survey, which deeply study the place of innovation within European organisations.

On the other hand, they can provide a wide perception of the scope for innovation in the working life of recent graduates.

4.3 What organisations are likely to be more innovative?

As graduates have been asked to rate the extent of innovation of the organisation they were working in, such an indicator can be used to study the characteristics of the innovative organisations. In the first section, innovation will be related to the type of their market and other characteristics. According to the literature in the previous section, organisations more concerned with competition have to more frequently put stress on innovation. On the same ground, the degree of innovation is probably linked to the scope of the market where the company acts. These two assumptions can be tested first before taking the sector and the size into consideration.

Following the Lisbon Agenda, innovation would have to represent the main fuel of economic activities in European countries. This is why it may be interesting to study to what extent innovation is developed in the organisations employing young graduates in the different European countries.

4.3.1 Market, sector and size as factor influencing the innovation activities of organisations

On average, 50.0% of the graduates declares that the extent of innovation of product or service in their organisation is high or very high. But they are only 28.0% when they consider that their organisation faces a very weak competition, whereas they are 59.9% when they declare their organisation faces a very strong competition (see Table 4.1). The same correlation with the strength of competition regards the extent of innovation of process/tools/instruments and of knowledge/methods. Clearly, the stronger the competition, the more innovation is required.

Table 4.1
Proportion of graduates working in an organisation where the extent of innovation is high and very high, according to the strength of competition faced by the organisation.

Strength of competition	Extent of innovation product/ service (high and very high)		Extent of innovation process/tools/ instruments (high and very high)		Extent of innovation knowledge/ method (high and very high)	
	%	N	%	N	%	N
1. Very weak	**28.0**	1,199	**25.2**	1,186	**40.6**	1,216
2.	**37.6**	1,391	**34.1**	1,380	**46.8**	1,411
3.	**42.1**	3,238	**36.8**	3,217	**50.4**	3,272
4.	**51.7**	5,866	**44.7**	5,841	**53.6**	5,908
5. Very strong	**59.9**	6,191	**50.9**	6,158	**56.1**	6,206
Total	**50.0**	17,885	**43.3**	17,782	**52.4**	18,013

Table 4.2
Proportion of graduates working in an organisation where the extent of innovation is high and very high, according to the scope of operations of the organisation

Scope of operations	Extent of innovation product/service (high and very high)		Extent of innovation process/tools/ instruments (high and very high)		Extent of innovation knowledge/ method (high and very high)	
	%	N total	%	N total	%	N total
Local	33.9%	4,097	26.6%	4,069	45.7%	4,182
Regional	39.1%	4,733	33.5%	4,698	47.1%	4,776
National	45.6%	5,067	38.5%	5,054	47.9%	5,117
International	60.5%	7,702	55.5%	7,691	59.4%	7,750
Total	47.3%	21,599	41.2%	21,512	51.4%	21,825

The scope of operations clearly impacts the extent of innovation, especially the innovation of process, tools or instruments and the innovation of product or service (see Table 4.2). In the first case, as the extent of innovation can be considered high or very high for 26.6% of local organisations, this is true for 33.5% of regional organisations, 38.5% of national organisations and 55.5% of international organisations.

Table 4.3
Proportion of graduates working in an organisation where the extent of innovation is high and very high, according to the sector of activity

Sector of actvity (International Standard Industrial Classification	Innovation product or service	Innovation process /tools/instruments	Innovation knowledge method
Agriculture, hunting, forestry and fishing	43.5	45.3	42.5
Mining and quarrying	56.8	61.7	62.7
Manufacturing	63.5	56.6	52.3
Electricity, gas and water supply	38.2	44.7	51.5
Construction	38.5	44.2	45.0
Wholesale and retailtrade; repair of motor vehicles, motorcycles and personal and household goods	54.4	33.0	41.3
Hotels and restaurants	45.7	30.4	31.4
Transport, storage and communications	59.3	56.8	47.2
Financial intermediation	60.3	40.5	49.4
Real estate, renting and business activities	52.4	47.8	57.4
Public administration and defence; compulsory social security	33.2	32.3	40.7
Education	39.0	35.6	59.1
Health and social work	37.9	31.8	50.7
Other community, social and personal service activities	43.3	33.9	45.0
Activities of private households as employers and undifferentiated production activities of private households	36.4	36.4	27.3
Extraterritorial organizations and bodies	48.0	39.1	37.5
Total	47.0	41.0	51.6

The situation of the different sectors regarding the extent of innovation is rather different according to the type of innovation (see Table 4.3). Some sectors seem to be strong in the three types of innovation, such as "Real estate, renting and business activities". Others are weak whatever the type, such as "Public administration". "Manufacturing" and "Transport" look innovative in product/service and in innovation process/tools/instruments, but less innovative when knowledge and method are concerned. "Mining" is strong in innovation of process/tools/instruments, "Trade" is strong in product/service and "Education" and "Health" in innovation of knowledge and method.

When the type of innovation is related to the size of the organisation, it becomes clear that the largest organisations give more room to innovation than smaller ones (see Table 4.4). The largest ones give special attention to the innovation of products and services, whereas the smallest ones remain particularly far from innovation of process/tools/instruments. The innovation of knowledge and method seems to be less sensitive to the size of the organisation.

Table 4.4
Extent of innovation and size of organisation (private sector)

Size	Innovation product or service	Innovation process/ tools/instruments	Innovation knowledge method
1-9	45.1	36.6	51.8
10-49	48.7	38.3	48.1
50-99	51.7	43.0	49.8
100-249	49.5	41.6	47.3
250-999	55.3	44.8	51.5
1000 or more	64.1	55.5	55.1
Total	54.1	44.9	51.5

4.3.2 Extent of innovation in European countries

When the type of sector (private or public) is considered, private organisations appear to be more innovative, though public ones cannot be considered outside the movement towards more innovation (Table 4.5). National differences can also be noticed.

The product or service innovation makes the clearest distinction between the two sectors: 54% of graduates working in private companies consider their organisation as developing intense activities of product or service innovation, compared with 37% of graduates in public organisations. The respective proportions are 45% and 36% for the innovation of technology/tools/instruments. When the innovation of knowledge and method is considered, both sectors appear on the same foot, with around 51% of the graduates in innovative organisations.

If British organisations, both private and public ones, appear to be more innovative whatever the type of innovation (which also is the case of Finnish and to a less extent of Austrian ones), French organisations, but also Swiss ones seem to be less innovative. 62% of British graduates in the private sector consider their company or their occupation promoting an intense innovation for their products or services. Close to them are Austrian, Dutch, Finnish and German graduates. In contrast, only 42% of French graduates express a similar opinion. The same opposition can be observed for the public sector. On the one hand, half of British and Dutch graduates consider they work in a context where the innovation of product or service is high, while this is only the case for 20% of French (and Swiss) graduates.

The two other types of innovation present more or less the same pattern: UK organisations more innovative, and French ones which are it less. Finns are close to the first ones and Swiss close to the second ones.

Table 4.5
Proportion of graduates who consider high or very high the extent of innovation in their organization or their work with respect to the following aspects

Product or service			
Private sector		**Public sector**	
United Kingdom	62.1	United Kingdom	52.8
Austria	61.2	Netherlands	47.5
Netherlands	57.8	Italy	45.0
Finland	57.6	Austria	41.2
Germany	57.4	Finland	39.7
Czech Republic	55.4	Belgium	37.7
Belgium	54.9	Estonia	36.1
Switzerland	53.9	Norway	35.9
Italy	51.7	Germany	34.1
Norway	50.7	Czech Republic	31.3
Estonia	49.8	Spain	30.9
Spain	46.0	Switzerland	27.6
France	41.9	France	20.2
Total	53.8	Total	37.4
Technology, tools or instruments			
Private sector		**Public sector**	
United Kingdom	52.9	United Kingdom	48.1
Czech Republic	49.5	Estonia	45.0
Finland	49.1	Italy	44.9
Estonia	48.4	Austria	41.2
Italy	48.1	Spain	40.6
Belgium	46.3	Belgium	37.7
Norway	44.0	Czech Republic	36.2
Austria	43.0	Switzerland	33.0
Spain	42.6	Finland	32.7
Netherlands	41.4	Netherlands	31.6
Germany	40.9	France	28.1
Switzerland	38.6	Norway	25.1
France	37.6	Germany	24.7
Total	45.0	Total	35.5
Knowledge or methods			
Private sector		**Public sector**	
United Kingdom	59.9	United Kingdom	62.0
Finland	58.5	Finland	60.2
Belgium	57.4	Austria	58.7
Netherlands	56.4	Belgium	56.5
Czech Republic	55.5	Netherlands	56.5
Austria	55.1	Germany	52.9
Italy	53.1	Italy	51.0

Norway	52.0	Norway	49.7
Estonia	51.0	Estonia	47.8
Germany	45.6	Switzerland	46.3
Spain	44.9	Czech Republic	45.8
Switzerland	42.4	Spain	44.5
France	36.9	France	33.9
Total	51.4	Total	51.6

4.3.3 Organisations at the forefront of innovation

The third question about the position of the company regarding its initiative in innovation provides a complementary perspective. After a rapid consideration of the countries according to this dimension, the characteristics of the market, size and sector will be taken into account. A last development will compare the information provided by the REFLEX survey with the ones derived from the European Innovation Scoreboard.

Table 4.6 provides answers 1 and 2 to the question "Is your organisation or - in case of self-employment – are you normally at the forefront when it comes to adopting innovations, new knowledge or new methods, or is it more a follower?" When looking at the answers, Swiss organisations appear better ranked than in the previous tables. At the bottom of the distribution, organisations from the three "southern" European countries of the sample, France, Spain and Italy, look more frequently like followers.

Table 4.6
Proportion of graduates working in organisations at the forefront of innovation by country

	Proportion of graduates working in organisations at the forefront of innovation (private sector)
Finland	60,7
Austria	56,3
Switzerland	55,0
Czech Republic	53,4
Norway	53,2
United Kingdom	49,6
Germany	49,5
Estonia	47,7
Netherlands	45,6
Belgium	42,2
France	40,3
Spain	38,8
Italy	38,7
Total	48,0

The main characteristics of the organisations at the forefront of innovation appear close to the ones already observed. One half of graduates (52%) working in private companies facing a very strong competition declare these organisations are at the forefront of innovation; this is the case for 37.8% of graduates in organisations where the strength of competition is very weak (see Table 4.7).

Table 4.7
Proportion of graduates working in organisations at the forefront of innovation, and strength of competition

Strength of competition	Proportion of graduates working in organisations at the forefront of innovation	
	Private sector	Public sector
1. Very weak	37.8	28.8
2.	45.2	35.4
3.	40.3	39.8
4.	48.6	45.0
Very strong	52.2	42.3
Total	48.1	37.2

The same holds true for the scope of operations. Graduates working in organisations with an international scope of operations declare more frequently they are at the forefront of innovation (58% against 33.2% for private companies and 55.1% against 26.4% for public organisations) (see Table 4.8). When the size of the organisation is concerned, big organisations appear more frequently at the forefront of innovation, a result which is not particularly original: 58% of graduates working in private companies with more than 1000 employees consider their company at the forefront in innovation against 39% for graduates in organisations smaller than 10 employees (see Table 4.9). The proportion increases regularly with the size. The same holds true for public organisations, but with a more narrow range between large and small organisations.

Table 4.8
Proportion of graduates working in organisations at the forefront of innovation, and scope of operations

Scope of operations	Proportion of graduates working in organisations at the forefront of innovation	
	Private sector	Public sector
Local	33.2	26.4
Regional	38.4	35.7
National	42.9	40.3
International	58.0	55.1
Total	48.2	37.5

Table 4.9
Proportion of graduates working in organisations at the forefront of innovation, and size of organisation

Size of organisation	Proportion of graduates working in organisations at the forefront of innovation	
	Private sector	Public sector
10-49	43.1	38.6
50-99	44.8	39.7
100-249	46.2	38.1
250-999	50.9	35.4
1000 or more	58.0	38.4
Total	48.5	37.7

Table 4.10
Proportion of graduates working in organisations at the forefront of innovation, and sector of activity

	Proportion of graduates working in organisation at the forefront of innovation	N Total
International Standard Industrial Classification		
C - Mining and quarrying	55.6	133
D – Manufacturing	54.7	2641
E - Electricity, gas and water supply	52.1	163
I - Transport, storage and communications	51.6	818
K - Real estate, renting and business activities	49.3	3942
J - Financial intermediation	46.9	1207
A - Agriculture, hunting and forestry, fishing	46.8	190
G - Wholesale and retailtrade; repair of motor vehicles, motorcycles and personal and household goods	40.8	1004
M – Education	40.8	3897
F – Construction	39.4	569
H - Hotels and restaurants	38.2	136
N - Health and social work	37.4	3457
O - Other community, social and personal service activities	36.9	1035
P - Activities of private households as employers and undifferentiated production activities of private households	36.4	11
Q - Extraterritorial organizations and bodies	30.0	20
L - Public administration and defence; compulsory social security	29.8	1791
Total	43.4	21014

The position regarding innovation varies with the sector of activity. Whereas more than half of graduates working in "Mining and quarrying", in "Manufacturing", in "Electricity, gas and water supply", in "Transport, storage and communications", or in "Real estate, renting and business activities" consider their company is at the forefront of innovation, less than 40% of graduates do the same in service activities such

as "Hotels and restaurants" or "Health and social work", without mentioning "Public administration" (see Table 4.10).

It may be interesting to compare these results with the ones provided by the "European Innovation Scoreboard 2006/ Comparative Analysis of Innovation Performance" prepared for the Commission, under the Lisbon strategy. Obviously, the exercise of this report is of a different nature, since it uses 25 indicators, split into five main categories (input/innovation drivers, input/knowledge creation, input/innovation and entrepreneurship, output/applications, output/intellectual property) to evaluate and to compare the innovation performance of the EU member states and some other countries. Eight indicators have been selected for the comparison, which seem to be more directly related to innovation in organisations and to innovative employment: business R&D expenditures (% of GDP), share of medium-high-tech and high-tech R&D (% of manufacturing R&D expenditures), share of enterprises receiving public funding for innovation, SME's using organisational innovation (% of all SMEs), sales of new-to-market products (% of total turnover), sales of new-to-firm products (% of total turnover), employment in medium-high and high-tech manufacturing (% of total workforce).

We can compare the ranking of the countries according to the selected European Innovation Scoreboard indicators and according to the proportion of graduates in organisations to be considered at the forefront of innovation (see Table 4.11).

Table 4.11
Ranking of countries according to the European Innovation Scoreboard indicators and to the REFLEX survey

EIS		REFLEX (innovation leaders)	
Country	Position	Country	Position
Germany	1	Finland	1
Finland	2	Austria	2
Switzerland	3	Switzerland	3
Austria	4	Czech Republic	4
Belgium	5	Norway	5
Italy	6	United Kingdom	6
Czech Republic	7	Germany	7
United Kingdom	8	Estonia	8
France	9	Netherlands	9
Netherlands	10	Belgium	10
Spain	11	France	11
Estonia	12	Spain	12
Norway	13	Italy	13

Since the EIS indicators are of different nature, the sum of the ranks for each indicator has been used; for REFLEX, the classification comes from the previous table on innovation leadership.

Obviously, results don't match exactly, but Finland, Switzerland, Austria, the United Kingdom, France, the Netherlands and Spain are ranked around the same level in the two classifications. There are some exceptions. Germany and Belgium appear more innovative in the EIS classification, whereas the opposite is true for Norway and Estonia. Surveys such as REFLEX can complete the information gathered through other sources, and may offer the opportunity for a discussion about the place and the role of graduates regarding innovation.

4.4 The place and the role of graduates regarding innovation

Along with the question of working in an innovative environment, the participation to the innovation process appears to be a means of observing to what extent graduates are knowledge workers. On average, graduates working in private companies face more frequently innovative situations: 90% of graduates are employed in private companies where at least some innovation of product or service takes place (79% for public organisations), the respective proportions being 85% and 77% for innovations of tools or processes, 91% and 88% for the innovations of knowledge or method. Three main questions will be studied here: to what extent do graduates participate to the innovation process? How can the work tasks of innovative graduates be characterised? Do their organisations correspond to specific features?

4.4.1 The participation of the graduates to the innovative process

More than half of the graduates consider they play a role in introducing innovation in their organisation, whatever the situation of the company regarding innovation (36% when innovation of technology/tools/instruments is considered, 47% when it is about the innovation of product/service and 61% in the case of innovation of knowledge/methods). Table 4.12 shows the percentages per country separately for those working in the public and in the private sector.

If innovation opportunities are less frequent in the public sector when innovation of product/service or innovation of technology/tools/instruments are considered, it is not more the case when the innovation of method/knowledge is taken into account (62% of graduates working in a public organisation consider they play a role in introducing innovation of knowledge/method).

Graduates from Nordic countries (Norway and Finland) seem to be more frequently involved in the introduction of innovation, whatever the type of innovation and the

sector. On the other hand, French and German graduates appear to be often less associated to the innovative process. Special attention may be given to the case of Estonia and Czech Republic, since graduates in these "new" European countries appear to be frequently involved in innovation activities.

Table 4.12
Proportion of graduates who play a role in introducing innovations in their organisation

Product or service			
Private sector		**Public sector**	
Norway	60.7	Estonia	54.9
Finland	56.7	Finland	49.1
Estonia	55.2	Italy	48.0
Czech Republic	53.2	Norway	47.4
Netherlands	52.2	Czech Republic	46.6
Austria	49.7	Netherlands	45.0
Germany	48.9	United Kingdom	44.9
Switzerland	48.7	Belgium	40.0
Italy	46.7	France	39.5
United Kingdom	45.9	Austria	36.9
Belgium	43.7	Germany	33.9
France	43.0	Switzerland	31.6
Spain	41.4	Spain	30.7
Total	49.2	Total	42.7
Technology, tools or instruments			
Private sector		**Public sector**	
Norway	45.7	Estonia	44.2
Finland	45.5	Italy	41.6
Estonia	43.5	Czech Republic	41.3
Czech Republic	42.4	Finland	39.3
Italy	40.7	Spain	34.7
Switzerland	37.0	France	33.5
United Kingdom	36.5	Belgium	33.3
Spain	36.5	United Kingdom	31.6
France	36.3	Netherlands	28.5
Austria	34.5	Norway	27.2
Netherlands	34.0	Austria	26.5
Belgium	33.8	Switzerland	26.1
Germany	32.7	Germany	18.2
Total	38.2	Total	32.2

Knowledge and methods			
Private sector		**Public sector**	
Czech Republic	69.3	Estonia	76.2
Norway	69.1	Czech Republic	72.9
Finland	66.8	Finland	67.0
Estonia	66.4	Norway	62.9
Netherlands	60.4	United Kingdom	62.4
France	59.4	France	61.4
Italy	59.1	Belgium	61.1
Belgium	58.8	Germany	60.3
United Kingdom	58.8	Netherlands	59.2
Austria	56.3	Italy	58.4
Spain	54.6	Austria	57.1
Switzerland	54.4	Switzerland	53.8
Germany	52.8	Spain	52.4
Total	60.2	Total	62.3

Another characteristic of the knowledge workers regards their networking activities since innovation requires ability to capture ideas outside the organisation, as Cohen and Levinthal (1990) pointed out. The Oslo manual reminds that "the presence of expert technological "gatekeepers" or receptors – individuals who, through many means, keep abreast of new developments (including new technology and codified knowledge in patents, the specialised press and scientific journals), and maintain personal networks which facilitate flows of information – can be crucial to innovation within a organisation".

Table 4.13
Contacts of graduates with experts outside the organisation, according to the role in innovation

		Introduction innovation of product		Introduction innovation of technology		Introduction innovation of technology	
		Yes	No	Yes	No	Yes	No
I take the initiative in establishing professional contacts with experts outside the organization (from 1/not at all to 5/to a very high extent)	Yes (3-5)	71.2	50.0	70,2	45.9	71.4	53.3
	No (1-2)	28.8	50.0	29.8	54.1	31.6	46.6
	Total	100.0	100.0	100.0	100.0	100.0	100.0
		10179	11564	7777	13968	13484	8503

Graduates have been questioned to what extent they take the initiative in establishing professional contacts with experts outside the organization. Those who introduce innovation are clearly engaged in active networking, since 70% among them take

initiative in contacting external experts, compared with 50% among the other graduates. The proportions are identical in the three types of innovation (see Table 4.13).

4.4.2 Innovation and working environment

A first consideration regards the way the work of graduates involved in innovative activities may be characterised. According to the results of a regression analysis (see detailed results in Appendix 3), four most significant characteristics emerged: the extent of utilisation of knowledge and skills, the demand for more knowledge and skills than possessed, the definition of the goals of the job and the decision on how to do the job. Table 4.14 contrasts the answers of graduates involved in each of the three types of innovation against the others.

Table 4.14
Characteristics of the job content of innovative graduates

		Role in introduction of innovation of product		Role in introduction of innovation of technology		Role in introduction of innovation of knowledge	
		No	Yes	No	Yes	No	Yes
To what extent are knowledge and skills utilized in your current work?	To a very high extent*	31,8	40,1	32,5	41,3	27,3	41,1
To what extent does your current work demand more knowledge and skills than you can actually offer?	Not at all	NS		13,3	9,7	NS	
Are you responsible for: setting goals for your own work?	To a very high extent*	33,8	49,0	37,1	47,6	29,7	48,2
Are you responsible for: deciding how you do your own job?	To a very high extent*	43,5	57,2	46,3	56,4	39,6	56,5

* score=5

Whatever the type of innovation, innovating graduates utilize more intensively their knowledge and skills. More than 40% of them consider they utilize them to a very high extent, against 32% for graduates not involved in innovation of product or service, or in innovation of technology, and even 27% of graduates not involved in innovation of knowledge or method. Innovation activities don't seem discriminating when the question regards to what extent the present work demand more knowledge and skills than possessed. The only slight difference can be observed in the answers of those who declare this is not the case: 13% of graduates not involved in innovation of technology declare they don't need more knowledge and skills, against 10% of graduates involved.

Differences are more obvious when the definition of the contents of the job is at stake. Innovative workers are clearly more autonomous: they are more frequently responsible to set the goals of their own work and they are also more often responsible for the decisions regarding how to do their job.

Around one half of innovative graduates consider they are responsible to a very high extent for setting goals for their own work, against only 30% of those not involved in innovation of knowledge and method, the difference being slightly narrower for those involved and not involved in innovation of technology (48% against 37%).

The same holds true when the decisions on the tasks are considered: 56-57% of innovative graduates decide to a very high extent how to do their job, compared with 40% of graduates not involved in innovation of knowledge, or 34% of graduates not involved in innovation of product or service.

4.4.3 Innovation activities and characteristics of the organisation

As no strong differences appeared in the previous analyses according to the type of innovation, an innovation index, which represents the means of the marks for the three types of innovation for each graduate, will be used.

Different to the earlier analyses, the characteristics of the organisation will be related to the innovative role of the graduates, and not to the innovation behaviour of the organisation. Three main dimensions are considered here: the scope of operations, the sector of activity and the size. The results are shown in Table 4.15. When the scope of operations is considered, the same logic as the one already observed appears. Graduates are more frequently involved in innovative activities when the scope of activities of their organisation is wider. Manufacturing activities but also business and financial services promote innovation among graduates. Education and health and social work represent sectors where innovation is also present.

The most striking result regards the role of the size of the organisation on innovation activities, since graduates appear to be more frequently involved in innovation activities when they work in a smaller organisation.

Table 4.15
Innovation and characteristics of the organisation

Dependent variable: Innovation index	B*
Regional scope of operations	0.15
National scope of operations	0.23
International scope of operations	0.56
Ref: local scope of operation	
Manufacturing and other productive activities	0.35
Trade, transport and other traditional services	0.13
Business and financial services and communication	0.36
Education	0.27
Health and social work	0.27
Ref: public administration	
10_49 workers	-0.09
50_99 workers	NS
100_249 workers	-0.11
250_999 workers	-0.08
>1000 workers	NS
Ref: <10 workers	
Other variables in the model : country	
	Adjusted R^2
N:17159	0.10367

The reported coefficients present a level of significance above 1/100

In order to illustrate such a result, the proportion of graduates involved in the three types of innovation taken together is contrasted toward the size of the organisation.

Table 4.16
Innovation activities according to the size of the organisation

	Number of people working in total organization	Proportion of graduates involved in the three types of innovation	Total
Private sector	1-9	37.7	2214
	10-49	26.0	2179
	50-99	22.7	1056
	100-249	20.3	1224
	250-999	18.1	1670
	1000 or more	19.1	3699
	Total	24.1	12042
Public sector	1-9	35.0	357
	10-49	22.2	1262
	50-99	21.3	834
	100-249	21.3	1115
	250-999	21.0	1478
	1000 or more	17.9	3126
	Total	20.7	8172

Table 4.16 shows clearly that graduates working in small organisations are more frequently involved in innovative activities than graduates hired by large organisations, both in the public and the private sector. Less than 20% of graduates working in organisations larger than 1000 employees develop the three types of innovation, compared with more than 35% of workers in organisations with less than 10 employees or with 26% of workers in private companies with a number of employees between 10 and 50. Graduates in big organisations are part of large groups of highly qualified and experienced workers and have dependent positions, whereas in small organisations, they get more responsibilities in the development of the product.

4.5 Are graduates equipped for innovation?

One of the main questions at the heart of this project regards to what extent higher education institutions prepare graduates to fulfil the tasks required by the present knowledge and innovation societies. Since innovation is more precisely tackled in this part, information has to be provided on the links between the characteristics of the study programme and the ability ot perform innovative activities.
Three main questions will be addressed here: What are the fields of study more linked to innovation? What are the competencies more related to innovation? Are innovation workers specialised?

4.5.1 Innovation activities and field of study

Table 4.17
Field of study and introduction of innovation

Field of education and training	Introduction of innovation product/service		Introduction of innovation technology/tools/ instruments		Introduction of innovation knowledge/ method	
	%	N	%	N	%	N
Education	49.2	1,954	32.0	1,943	68.6	2,012
Humanities and Arts	44.4	2,490	29.5	2,475	59.5	2,524
Social sciences, Business and Law	43.2	7,333	28.6	7,291	57.0	7,358
Science, Mathematics and Computing	44.9	2,231	47.1	2,226	65.9	2,232
Engineering, Manufacturing and Construction	54.4	3,756	53.6	3,758	64.2	3,770
Agriculture and Veterinary	54.2	507	42.3	504	68.7	514
Health and Welfare	44.6	3,228	30.1	3,210	59.4	3,248
Services	47.6	510	30.3	512	57.8	517
Total	46.5	22,009	35.7	21,919	61.1	22,175

When the field of study is taken into account, "engineering, manufacturing and construction" appears to be the one which leads more frequently to cope with the introduction of innovation. 54% of graduates of that field are involved in the introduction of innovation of product/service and technology/tools/instruments (see Table 4.17). Around two thirds introduce innovation of knowledge and methods. Two other fields, "Science, mathematics and computing" and "Agriculture and veterinary" present the same pattern.

A second result regards the width of discrepancies between fields when the type of innovation is considered. Whereas the discrepancies are larger for the innovations of technologies/tools/instruments (which concern around 30% of graduates in the fields of education, humanities and arts, social sciences, business and law and also health and welfare and services), they are very tight for the innovation of knowledge and methods. In this last case, education and agriculture and veterinary are even the disciplines which present the highest proportion of graduates introducing innovations (68%).

The Canberra Manual, which deals with human resources in science and technology notes the following with respect to fields of study: "some fields, like the natural sciences or engineering and technology, are often considered, at least in English-speaking areas, to be more directly relevant to S&T activities than the social sciences, humanities or other fields". This is why the manual makes a distinction within fields of study between core, extended and completed coverage. Natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences represent the core, whereas humanities and other fields represent the extended. This classification appears to be coherent with the REFLEX results, except for what has been called in our survey innovation of knowledge/method where education is predominant.

4.5.2 Characteristics of the study programme and innovation activities

What are the main characteristics of the study programme related to innovation activities? A regression analysis has been run, from which the most significant variables describing the programme have been kept. Following the value of the regression coefficients, the most important characteristic is to participate in research projects when in higher education (see Table 4.18). Other features of the study programmes may induce innovative positions as well: work placements and internships, project and problem based learning, freedom in composing the programme, multiple choice exams, employers being familiar with the programme. Graduates involved in innovation activities also strived more frequently for the highest marks as a student. This may be related to the characteristics of the programme being more frequently demanding and prestigious.

Table 4.18
Regression coefficients of the characteristics of the study programme

Dependent variable : Innovation index	B
Description apply to study programme: programme was generally regarded as demanding	.04
Description apply to study programme: employers are familiar with the content of programme	.02
Description apply to study programme: there was freedom in composing your own programme	.03
Description apply to study programme: programme was academically prestigious	.04
Modes of teaching and learning: participation in research projects	.05
Modes of teaching and learning: internships, workplacement	.03
Modes of teaching and learning: theories and paradigms	.03
Modes of teaching and learning: group assignments	.02
Description apply to study programme: programme had a broad focus	.02
Modes of teaching and learning: project and/or problem-based learning	.03
Modes of teaching and learning: multiple choice exams	.02
Description study behaviour: I strived for the highest possible marks	.02
Other variables included in the model: country, field of study, level of degree, gender	
N=17,942 Adjusted R square=0.085	

The reported coefficients present a level of significance above 1/100

4.5.3 What are the competences more related to innovation?

Taking into consideration that the graduates are equipped with different types of competences, developed partially by the programs followed during higher education, it is important to observe what are the competences more linked to the three types of innovation. The probability to play a role in introducing each of the three types of innovation has been regressed separately on each of the 19 competences acquired by graduates controlling for the country. The most significant results will be presented (Regression coefficient higher than 0.2). Six competences correspond to this criterion for the introduction of innovation of product, four in the case of the introduction of technology and nine when the introduction of knowledge is considered. These results mean that the more useful competences are not the exactly the same, according to the type of innovation considered.

Tables 4.19 to 4.21 show the means of competences for graduates who play a role in the introduction of each type of innovation and for those who don't.

Table 4.19
Means of the most differentiated competences (Introduction of innovation of product or service)

	Ability to present products. ideas or reports to an audience	Ability to come up with new ideas and solutions	Alertness to new opportunities	Willingness to question your own and others' ideas	Ability to mobilize the capacities of others	Ability to coordinate activities
Yes	5.12	5.58	5.24	5.56	5.12	5.67
No	4.69	5.17	4.86	5.26	4.80	5.40
Difference	0.43	0.41	0.38	0.30	0.32	0.27

The competences which differentiated most between those who play or do not play a role in introducing innovations of product or service are competences linked to what is currently associated with the qualities of a researcher, ability to come up with new ideas and solutions, willingness to question your own and others' ideas, alertness to new opportunities (see Table 4.19). But competences related to working in group are also relevant, such as the ability to coordinate activities and the ability to mobilize the capacities of others. Strong communication capacities also seem useful, such as the ability to present products, ideas or reports to an audience.

Table 4.20
Means of the most differentiated competences (Introduction of innovation of technology, tools or instruments)

	Ability to come up with new ideas and solutions	Ability to use computers and the internet	Analytical thinking	Willingness to question your own and others' ideas
Yes	5.62	6.06	5.57	5.57
No	5.22	5.72	5.26	5.30
Difference	0.40	0.34	0.31	0.27

When the introduction of innovations of technology, tools or instruments is considered, only four competences strongly oppose the graduates who play a role in introducing this type of innovation and the others (according to our criterion): ability to come up with new ideas and solutions, ability to use computers and the internet, analytical thinking and the willingness to question your own and others' idea (see Table 4.20).

The situation is different with the third type of innovation, the innovation of knowledge or methods. In that case, ten competences correspond to the criterion. Apart from the competences linked to the innovation of product or service, we can notice that also academic competences, such as the mastery of the own field or discipline are important (see Table 4.21).

Table 4.21
Means of the most differentiated competences (Introduction of innovation of knowledge or method)

	Ability to present products, ideas or reports to an audience	Ability to come up with new ideas and solutions	Willingness to question your own and others' ideas	Alertness to new opportunities	Ability to mobilize the capacities of others	Analytical thinking	Ability to make your meaning clear to others	Mastery of your own field or discipline	Ability to rapidly acquire new knowledge
Yes	5.07	5.54	5.53	5.16	5.07	5.48	5.50	5.45	5.77
No	4.59	5.08	5.19	4.83	4.77	5.20	5.26	5.24	5.57
Difference	0.48	0.46	0.36	0.33	0.30	0.28	0.24	0.21	0.20

4.5.4 Are knowledge workers specialised?

According to Peter Drucker (1959), knowledge workers would be specialised. In order to investigate such an assumption, we looked at the following question: "what field of study do you feel is most appropriate for your current work?".

Table 4.22
Field specialisation and innovation

	Introduction of innovation of product or service		Introduction of innovation of technology, tools or instruments		Introduction of innovation of knowledge or method	
	Yes	No	Yes	No	Yes	No
Exclusively own field	30.7	33.0	31.1	32.4	32.4	31.3
Own or a related field	55.8	50.8	56.5	51.3	55.2	50.0
A completely different field	6.6	6.9	6.4	7.0	6.0	7.8
No particular field	6.8	9.3	6.0	9.3	6.3	10.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

The most striking result of Table 4.22 regards the specialisation of the graduates' work, whatever their situation in relation to innovation. More than 80% consider that the most appropriate field for their current work in exclusively their own field or a related one. Nevertheless, graduates more involved in innovative activities appear to be a bit more specialised than the others: around 88% of them consider their field or a close one as a prerequisite for their work.

4.6 Innovation, occupations and rewards

After a first glance at the relation between occupations and innovation, the impact of innovation activities on earnings will be studied.

4.6.1 Occupations and innovation

The role played regarding innovation is related to the occupation of graduates. To study this question, the occupations grouping at least two percent of the graduates have been considered. These 18 occupations, which represent 70% of all working graduates, are presented in Table 4.23. The observations show a relation with the type of innovation.

Table 4.21
Participation to innovative activities of the main occupations

Occupation	Proportion in the total of occupied population	Proportion playing a role in introduction of product or service	Proportion playing a role in introduction of technology, tools or instruments	Proportion playing a role in introduction of knowledge or methods
Managers of small enterprises	2.2%	74.4%	53.7%	79.8%
Production and operations managers	1.8%	71,0%	53.3%	77.2%
Other specialist managers	2.9%	65.4%	46.1%	76.1%
Architects, engineers and related professionals	9.4%	53.8%	54,0%	65.2%
College, university and higher education teaching professionals	2.4%	48.7%	43.1%	79.1%
Computing professionals	4.1%	50.9%	57.4%	59.1%
Other teaching professionals	2.4%	50.2%	35,0%	72.1%
Health associate professionals (except nursing)	1.8%	53.8%	34.7%	67.3%
Primary and pre-primary education teaching professionals	4,0%	49.8%	32.8%	72.4%
Writers and creative or performing artists	1.8%	56.6%	31.8%	57.7%
Nursing and midwifery professionals	2.3%	48,0%	29.6%	60.7%
Social science and related professionals	5.6%	44.4%	26.8%	62.8%
Secondary education teaching professionals	4.9%	38.2%	28.2%	66.1%
Health professionals (except nursing)	5.3%	39.2%	34.7%	55.6%
Business professionals	10.2%	44.2%	26.8%	56.8%
Finance and sales associate professionals	3.4%	45.2%	26.7%	54.5%
Legal professionals	3.7%	38,0%	20.8%	50.6%
Administrative associate professionals	3.1%	30.2%	24.4%	46.1%
Total	71.3%	48.0%	36,0%	62.8%

When it comes to the innovation of product or service, the managers of small organisations and the managers and operation managers are the categories at the forefront of innovation (respectively 76% and 67% introduce innovation), followed by other specialist managers (64%), health associate professionals, teaching professionals other than teachers and writers/artists (55%) and architects, engineers and related professionals (54%). This last category appears to be one of the more innovative when the innovation of technology, tools or instruments is at stake. This type of innovation

is in fact rather discriminatory since it concerns with intensity only some specific occupations, computing professionals, managers of small enterprises, production and operation managers, on top of the architects and engineers.

The results underline that innovation is not only related to technical innovation. That appears clearly when the innovation of knowledge or methods is taken into account. In that case, university and higher education teaching professionals appear to be the more innovative category, together with the categories already quoted, as managers of small enterprises, production and operation managers (78%). Such an intensity for higher education teachers can be linked to the research activities embodied in the tasks of this occupation, but is also related to the teaching activities as shown by the high proportions among the primary and pre-primary education teaching professionals and among the secondary education teaching professionals (at least two-thirds of graduates in these categories introduce innovation of knowledge or methods).

The importance of occupations such as managers, engineers/architects and computing professionals in the second type of innovation (.innovation of technology/tools/instrument) may allow to understand why competences as ability to come up with new ideas and solutions, to use computers, analytical thinking, willingness to question your own and others' ideas emerged as strategic competences for that type of innovation. On the same ground, the importance of an occupation like teachers of all levels may explain why competences such as mastery of own field or discipline or abilities of presentation to an audience were important for the introduction of innovation of knowledge or method.

These findings can be related to the classification of occupations proposed by the Canberra Manual. The core occupations are the following: physical, mathematical and engineering science professionals (such as physicist, chemist, operation research analyst, computer system engineer, architect and mechanical engineer), life sciences and health professionals. Extended occupations comprise, amongst others, production and operations department managers, general managers, teaching professionals (university professor, school teacher), physical and engineering science associate professionals, life science and health associate professionals, lawyers, economists. Notwithstanding some strong similarities between the two distributions, the Canberra one and the REFLEX one, new insights need to be mentioned from the REFLEX information. Whereas managers belong to the "extended" category, they appear clearly as one of the occupations most concerned with innovation. Unsurprisingly, the same comment applies to the teaching professionals, who consider innovation as a main part of their duties.

4.6.2 Are innovation activities rewarded?

Regression analysis allows identifying if innovation activities are rewarded and to what extent they are. To play a role in the introduction of innovation is worthwhile. It represents an increase of the earnings from 3% for innovation of technology/tools/instruments to 6% for the introduction of knowledge/methods, with some slight differences between sectors: innovation is more rewarded in the private sector that in the public one (see Table 4.24).

Table 4.24
Relative earnings of innovative activities

		Coefficients		
Model	Variables	ALL	PRIVATE	PUBLIC
1	Introduction innovation of product or service	0.05	0.06	0,05
2	Introduction innovation of technology/tools/instruments	0.03	0.03	NS
3	Introduction knowledge/methods	0.06	0.05	NS

Other variables: countries, sector, gender, level of degree, total working hours main work, size of the organisation
Dependent variable: logarithm earnings main job
All coefficient significant at 1/100 level

4.7 Conclusion

The concept of Knowledge and Information Society (ies) became undoubtedly a reality in Europe. The survey confirmed that innovation represents a main tool in the day-to-day life of most organisations, especially those more confronted with strong competition and globalisation. Surveys like REFLEX may offer a different perspective to surveys specifically dedicated to innovation activities in organisations. The extent of innovation extension, as perceived by graduates, is different from country to country, according to the economic, social and political trajectory, to the culture, to the representation of the different sectors of economic activity.

Graduates represent crucial actors in this innovation process: more than half declare they play a role in introducing innovation in their organisation. Nevertheless, innovation cannot be restricted to industrial processes. Its importance for services, including the public ones (education, health), has been noticed. Innovative graduates play their role of knowledge workers and expert technological gatekeepers. Their jobs present some specific characteristisc: more autonomy, more room to define their own goals and the way to perform it.

Though innovation is more developed in big organisations, it stands out that small ones offer more opportunities for graduates to be involved in innovation activities.

Some specific competences are mobilised by the graduates who play a role in introducing innovation: ability to present reports, ideas or products to an audience, to come up with new ideas and solutions, to use computers and the internet, willingness to question own and others' ideas, alertness to new opportunities. Such competences can be related to certain modes of teaching and learning. Study programmes of graduates involved in innovation have been more frequently demanding. They offered opportunities to develop research projects, to be part of internship activities. Project and problem based learning seem also to represent a good basis for preparing graduates to be part of the innovation society.
When the earnings are considered, innovative activities appear to be rewarded, especially in the private sector. That represents an additional proof that these activities are recognised as such by organisations.

The information provided by the REFLEX survey may be considered as an input for higher education institutions which have not yet introduced reforms in their ways of teaching and learning. Competences useful for innovative activities are produced by modes of teaching and learning which assume an active participation of the students to the learning process, through research projects, internships, project and problem based learning. Innovation comes from graduates academically brilliant but also open to new ideas and concepts, ready to communicate and to work with others. Conservative institutions are threatened by such an evolution.

Though REFLEX allowed making new insights about the role of graduates in the European society, complementary information may be useful. Additional knowledge on the contents of the job of graduates may give a more complete vision of what innovation activities precisely represent. And data on PhD graduates would obviously complete this first view. Though they are less numerous than Bachelor and Master graduates, their role in innovative activities would have to be taken into account, in order to get a full view of the graduates' participation to the innovation activities of European organisations.

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Chapter 5
Mobilization of Human Resources

Jim Allen

5.1 Clarifying concepts

In a sense, this chapter is something of an oddity in the context of this report. It is only a slight exaggeration to say that the report as a whole is about different kinds of human resources of higher education graduates, and most chapters pay attention among other things to the mobilization of the particular type of resource that is the subject of the chapter. In this chapter, the focus is on the mobilization of human resources in general. The oddity lies in the fact that the ability to mobilize human resources is itself a human resource. In particular when the discussion turns to the competences which are thought to be especially relevant to mobilization of human resources, things can get a little confusing. We may even find ourselves in a situation where we are describing the degree to which competences important for mobilization are themselves being mobilized.

At an abstract level, it looks deceptively simple to define the subject of mobilization of human resources. In large part as a result of the learning that takes place in higher education institutions in different countries, there is at any given moment a certain stock of human capital that could, at least in principle, be put to productive use in the economy. Economic growth can be achieved not only by increasing this stock of human capital, but also by increasing the *proportion that is actually being put to productive use*. The main idea of this chapter is that higher education has an important role to play in this latter area as well as the former, by teaching its participants how to put their own knowledge and skills to good use, as well as how to play a role in mobilizing the competences of other people with whom they work.

If higher education does play such a role, this should be reflected in the ways in which human resources are mobilized *in higher education*. One might expect that graduates who actively mobilize their own and others' resources after leaving higher education already start doing so in higher education. This is not only a matter of putting in long hours at study, but should involve a high degree of motivation to get more out of their study than what is minimally required to pass exams. In addition, there are often ample opportunities for students to mobilize their own capacities by taking part in various extra-curricular activities, such as paid work, positions in student or voluntary organizations, or time spent abroad. It is important to take into account the possibility that that engaging in such extra-curricular activities might leave students with

less time to spend on their studies. More generally, it is important to look at features of higher education that are related to a high degree of study effort and motivation.

At the most basic level, the first thing to look at when describing the mobilization of human resources *after graduation* is whether they are being mobilized at all. In other words: do graduates participate in the labour force, and if so are they in paid employment? In general we can say that it is better for graduates to work than not to work, but there may be a large amount of variation among those participating in the labour force in terms of the *extent* to which human resources are being mobilized. Not every working graduate is necessarily employed for a full working week. This is of course not always a bad thing: part time work may provide opportunities for some graduates taking care of young children, or for participation in further education and training.

For those who work, whether this is fulltime or part-time, a more important consideration is the extent to which they are able to make use of their full potential in the time they spend at work. There is an extensive literature on this subject, most of which falls under the general heading of overeducation (see e.g. (Duncan and Hoffman, 1981; Hartog & Oosterbeek, 1988; Sicherman, 1991; Hersch, 1991; Cohn & Khan, 1995; Van Smoorenburg & Van der Velden, 2000). Although working in a job requiring one's own level (or in some versions one's own field) of education is something most graduates would strive for, this is neither a necessary nor a sufficient condition for mobilizing one's own capacities (see e.g. Allen & van der Velden 2001). In particular, graduates can acquire skills that help them to mobilize their own capacities even when they are working in jobs other than they were trained for. In the context of this chapter, in which the focus is about the ability to mobilize resources as well as the actual mobilization, this is an important point.

Things get more complicated when we consider the fact that higher education graduates are not only responsible for mobilizing their own capacities, but can also be called on to help mobilize the capacities of other workers. It should be stated at the outset that our data don't allow anything like a comprehensive analysis of this aspect of mobilization. The main limitation is that we have almost no information at all about who these others are. Are they other higher education graduates, or workers with a lower level of education? What kind of work are these other workers doing? And in particular: to what extent are these workers utilizing their capacities, and what is the contribution of the graduates in our survey to this? These are questions we simply cannot answer. We can however answer other important questions, such as: to what extent are graduates expected to work with, and particular to monitor and supervise, others? To what extent is the output of graduates interdependent with that of co-workers? To what extent do graduates bear responsibility for setting goals or deciding strategies for the organizations in which they work? And what kinds of competences are they required to use in fulfilling these duties?

This chapter is not just about describing the extent to which graduates mobilize their own capacities, or are involved in mobilizing those of their co-workers. At least as important is to try to uncover the factors that contribute to this mobilization. A basic assumption underlying this chapter is that graduates are not entirely at the mercy of the work situation they find themselves in for the mobilization of competences, but can actively strive to increase the level of mobilization even when the objective conditions are unfavorable. Higher education has a role to play, by teaching its students how to put the available human resources – whether their own or others' – to good use. How well higher education plays this role is a key element of the chapter.

If we manage to establish that higher education indeed has the capacity to influence the level of "mobilization" competences, the next step is to see whether this actually results in more mobilization. In doing so, it should be kept in mind that there are limits to what higher education and higher education graduates can do. Mobilization is likely to be influenced as much or even more by the characteristics of the firms and organizations in which graduates work. A key focus of this project is to establish whether firms and organizations do what they need to do in order to get the best out of higher education graduates.

In the next section we describe various indicators for the degree of mobilization of one's own resources in higher education: study hours, intrinsically and extrinsically motivated study behaviour, and extracurricular activities, and use several multivariate analsyses to determine which features of higher education are related to a high degree of study effort. We subsequently look at how graduates rate their own study programmes as producers of competences that are thought to be relevant to mobilizing human resources, and look for features of higher education that are related to high acquired levels of these competences. In the next section we describe various indicators for the degree of mobilization of one's own resources: labour force participation and working hours, participation in activities outside the world of work, the education-job match and (under)utilization. Following that we move on to a description of several indicators of mobilization of the capacities of others, including supervision, quality control and strategic decision-making authority. Sections 5.5 and 5.6. contain a number of multivariate analyses aimed at exposing some important determinants of the utilization of one's own capacities and the mobilization of others' capacities. Section 5.7 comprises a brief conclusion.

5.2 Mobilization of human resources during higher education

The data contain a number of indicators of the mobilization of human resources by students during their time in higher education. Several of these refer to the amount of effort made by students to achieve good study results: the amount of time spent each week on studying, doing extra work above what is required to pass one's exams and striving for higher grades. In addition, and potentially important in preparing

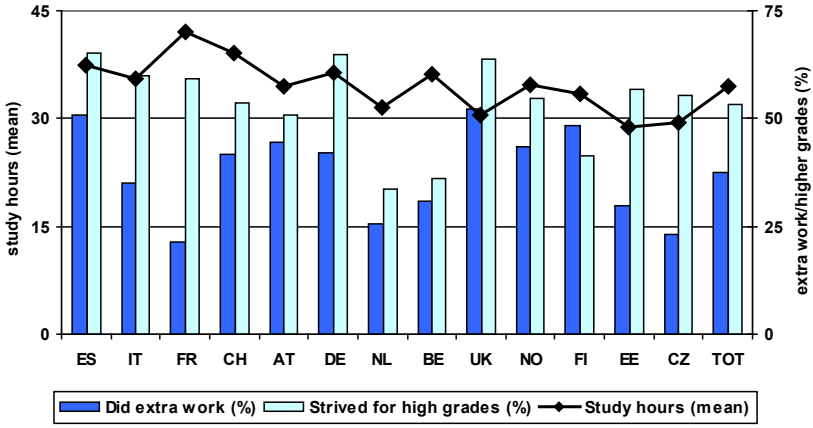
students to mobilize their own and others' resources after graduation, we have information on various kinds of other experiences gained while enrolled in higher education. After describing these features, in this section we will present the results of a series of regression analyses aimed at uncovering features of higher education that are related to a high degree of effort by students.

5.2.1 Study behaviour

Figure 5.1 shows three different indicators of the amount of effort students put into achieving good results. The most seemingly straightforward of these is the total amount of time spent on average on studying (including lectures, internships etc.). A limitation of this indicator is that it may be influenced negatively by students' ability and/or efficiency: in order to achieve the same results, less gifted students, or students who are less efficient in their use of time, will need to spend more hours studying just to achieve the same results as their more talented and/or efficient peers. Particularly the possible relationship with time efficiency is potentially problematic when we wish to consider this as an indicator of mobilization of one's own human resources. For this reason, we include two additional indicators. The first indicates the degree to which students did extra work during higher education above what was needed to pass their exams. This can be regarded as an indicator of intrinsic study motivation, since it is not related to any obvious rewards in terms of demonstrable study achievement. In contrast, the second indicator, the extent to which students strive for higher grades, is more an indicator of extrinsic study motivation, since such grades can improve graduates' CVs.[1] Figure 5.1 shows the distribution of the three indicators across the participating countries.

1. Both of these indicators are measured on a 5-point scale ranging from 1 "not at all" to 5 "to a very high extent". Figures 5.1 and 5.2 present the percentage of answers 4 or 5.

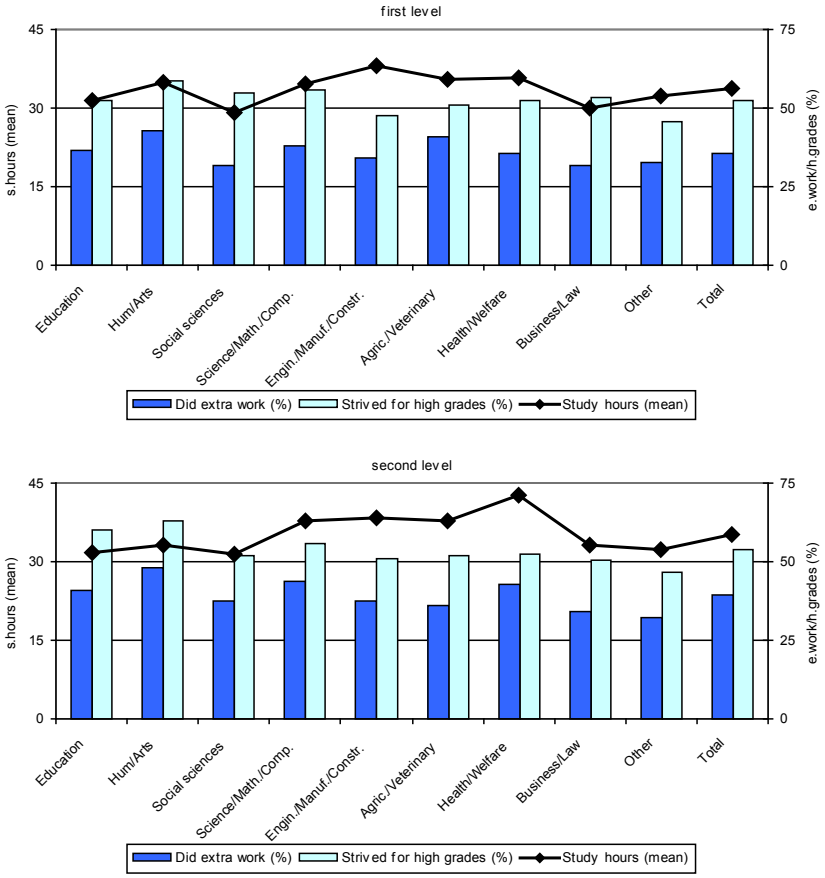
Figure 5.1
Study behaviour, by country



According to the three indicators, the effort that European students put into achieving good study results in higher education is moderate at best. Although students report working close to a fulltime working week on their study (slightly less than 35 hours per week; this rises to 37 hours for fulltime students), only 37% of graduates reported doing substantial extra work above what was required to pass their exams. A higher percentage (but still only slightly more than half) reported that they strived for the highest possible grades, suggesting that the study motivation of European graduates is more extrinsic than intrinsic.

Figure 5.1 reveals large differences between countries in all three indicators. Study hours vary from less than thirty in Estonia and the Czech Republic to more than 42 in France. The other two indicators also vary greatly between countries. With the exception of Finland, more graduates in each country indicated that they strived for high marks during higher education than that reported doing extra work above what was required to pass exams. Only in Spain and the UK do more than half of graduates report having done substantially more work than needed to pass exams, compared to a quarter or less in France, the Czech Republic and the Netherlands. Spanish and British graduates are also among the top with respect to striving for higher grades, together with their German peers. Around two thirds of graduates in these countries reported that they strived for higher grades, compared to only around a third of Dutch and Flemish graduates. In general, there is little relation between the mean study hours in a country and the other two indicators. A notable exception is the Netherlands, which combines below average study hours with low levels of both extrinsic and intrinsic study motivation. Figure 5.2 shows the same indicators by level and type of education.

Figure 5.2
Study behaviour, by field and level of education



Second level graduates report slightly higher study hours than first level graduates. The differences by field are more pronounced. At both levels graduates in the 'harder' fields such as Engineering or Health report much higher study hours than graduates in the softer fields like Humanities or Social Sciences. The order is almost reversed for the other indicators: Humanities graduates report the highest levels of both intrinsic and extrinsic motivation, while Engineering graduates report quite low levels.

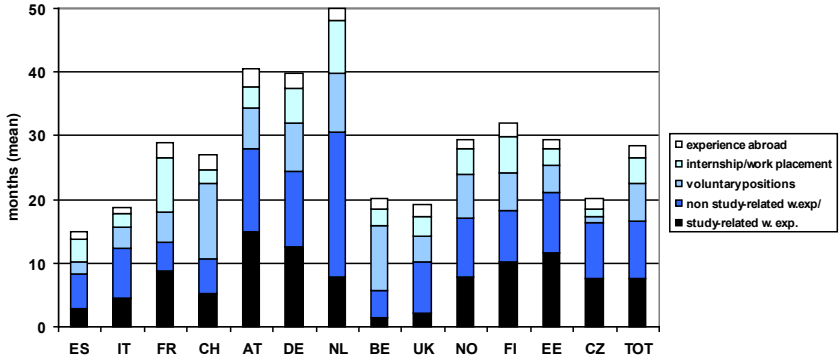
5.2.2 Other experiences during higher education

Figure 5.3 shows the total number of months that students spent acquiring various kinds of other experience while in higher education.[2] In terms of mobilization of

2. It should be noted that the number of months says nothing about the amount of time spent each month on the activity in question. It is likely that some activities, particularly experience abroad and

human resources, these indicators have rather mixed meanings. At a general level one might argue that any kind of additional activity is a sign of an active attitude and is therefore positive. However, some activities, in particular non study-related work experience, are probably undertaken mainly for instrumental reasons and have little bearing on what students hope to do after graduating. In contrast internships, other study-related work experience and experience abroad may prove highly relevant to graduates' later career development. Voluntary positions occupy an intermediate place: while in most cases probably not directly related to graduates later career in terms of substance, such experience can help students develop assertiveness and leaderships skills that may prove invaluable.

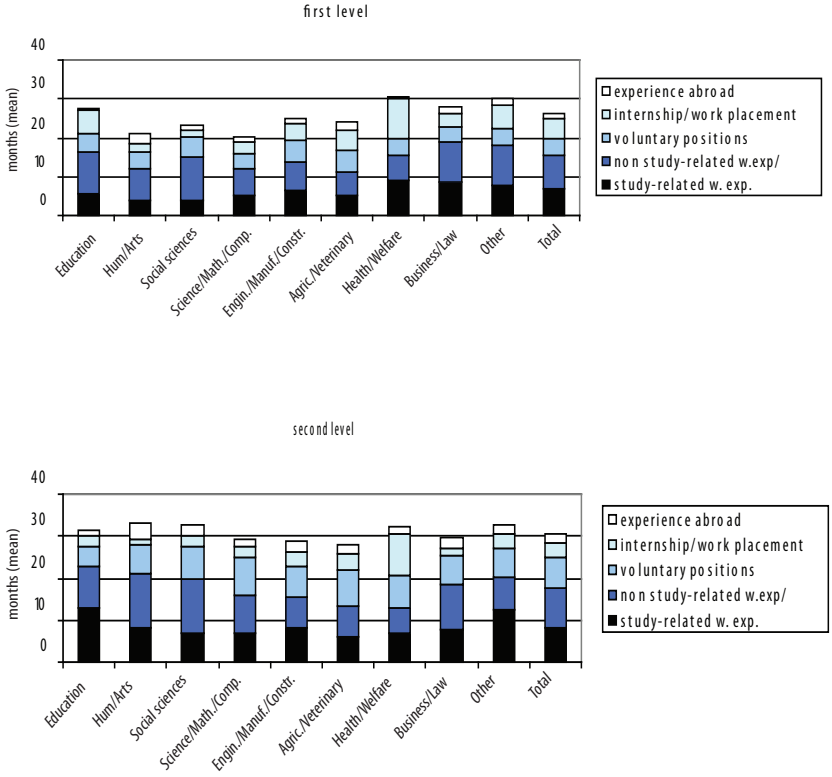
Figure 5.3
Experiences during higher education, by country (months)



Most striking in Figure 5.3 are the large differences between countries. Even taking into account the fact that the number of months is a far from perfect indicator of actual time spent, it is surprising that the differences are so large. Dutch graduates spend an average of 50 months on the included activities, compared to 20 months or less in Spain, Italy, Flanders and the UK. Closer inspection reveals that almost half the experiences of Dutch students involve non-study-related work. Relevant work experience is most common in Austria and Germany, and hardly occurs in Flanders and the UK. Swiss, Flemish and Dutch students spend the most time occupying voluntary positions, French and Dutch students spend most time on internships, and Austrian graduates spend the most time abroad. Figure 5.4 shows the same figures by level and type of higher education.

internships, are more or less fulltime activities, while others, particularly voluntary positions, may involve no more than a few hours each month.

Figure 5.4
Experiences during higher education, by field and level of education (months)



Second level graduates acquire more of most forms of experience than first level graduates. The exception is internships and work placements, on which the often more vocationally oriented first level students spend more time. At both levels, health graduates spent a lot of time on the various forms of experience, particularly on study-related work experience and internships. Second level humanities and social sciences graduates also send a lot of months on experience outside education, but a large proportion of this involves non-study-related work experience. Voluntary positions are particularly common among second level graduates in almost all fields. Second level Humanities graduates gain the most experience abroad.

5.2.3 Determinants of study behaviour

To some extent at least, the effort students expend on their study is likely to depend on their own innate personality. It is however conceivable that experiences gained

in higher education can influence this, by exposing students to situations in which they feel more motivated. To examine this, OLS regression analyses were run with the three indicators presented in Section 5.2.1 as dependent variables, and personal background characteristics, programme characteristics and additional experiences as predictors.[3]

Table 5.1
Relation between personal background characteristics and study behaviour (standardized linear regression coefficients)[4]

	Did more work than needed to pass exams	Strive for highest possible grades	Study hours
Gender (female)	0.038	0.084	0.040
Age	0.054		-0.023
At least one parent has HE	-0.018	-0.023	
Had (pre)school-aged child during HE			

Table 5.1 shows the effects of personal background characteristics on the indicators of study behaviour. According to all three indicators, women clearly work harder in higher education than men. Older students worked less hours but did more often extra work than younger students, which may indicate a greater degree of efficiency or other benefit of their greater life experience. Interestingly, social background in terms of having at least one parent with a higher education degree has no effect at all on study hours, and a negative effect on the other two indicators. These negative effects seem at first sight counterintuitive, but may in fact reflect a lower degree of self-confidence among students who are so to speak treading new ground in their family. Such students may feel an extra need to prove that they belong in higher education, while for those whose parents have already been there it may seem more natural. Having (pre)school-aged children while in higher education has no effect at all on study behaviour as indicated by these three items.[5]

Table 5.2 shows the effect of various programme characteristics. Second level students studied longer hours and did more often extra work than first level graduates, but were no more or less inclined to strive for higher grades. Trivially, parttime students studied much shorter hours than fulltime students. Less obvious is the finding that this is also reflected in the intrinsic and extrinsic motivation of students. Of the other programme characteristics, the degree to which a programme was regarded as demanding has the strongest effects. Again, in the case of study hours this is only to be expected. It is at least a little surprising that such programmes are positively related

3. It must be remarked at the outset that we cannot establish with any certainty the causal link involved. Nonetheless, in some cases it seems at least plausible that the feature in question promotes motivation and effort.
4. The results presented in Tables 5.1 to 5.4 are based on the same three regression analyses, so all effects reported effects include controls for all other variables. All multivariate analyses in this chapter include controls for country, field and type of HE, gender, age and parents' education.
5. This holds for both mothers and fathers.

to the other two indicators. One might as well imagine that students of programmes that are especially demanding might have their hands full just getting through the required study material, and would find extra work and striving for higher grades a luxury that they can ill afford. The positive effect of demanding programmes may suggest that students who are challenged by a demanding programme rise to the challenge by working even harder than they need to get their degree. The remaining programme characteristics have only weak or nonsignificant effects, and in one case even a weak negative effect.

Table 5.2
Relation between programme characteristics and study behaviour (standardized linear regression coefficients)

	Did more work than needed to pass exams	Strive for highest possible grades	Study hours
2nd level programme	0.059		0.038
Part-time programme	-0.083	-0.100	-0.277
Other programme characteristics:			
• Generally regarded as demanding	0.137	0.089	0.156
• Employers familiar with content			
• Freedom to compose own programme		0.026	-0.028
• Broad focus		0.019	
• Vocational orientation		0.028	
• Academically prestigious		0.028	

Table 5.3 shows the effect of various modes of teaching and learning on study behaviour. In most cases the effects are only rather weak. A somewhat stronger effect is seen for the extent to which the teacher as source of information was emphasized on the willingness to strive for higher grades. This feature has no effect at all on either study hours or intrinsic motivation, suggesting that strongly teacher-centred education may promote a more extrinsic study motivation. A strong emphasis on lectures and on facts and practical knowledge have positive, although not very strong, effects on all three indicators.

Table 5.3
Relation between modes of teaching and learning and study behaviour (standardized linear regression coefficients)

	Did more work than needed to pass exams	Strive for highest possible grades	Study hours
Lectures	0.034	0.037	0.035
Group assignments			
Participation in research projects	0.028		
Work placements/internships			0.031
Facts & practical knowledge	0.028	0.029	0.028
Theories & paradigms			
Teacher as source of information		0.052	
Problem- or project-based learning	0.032		0.031
Written assignments	0.033	0.036	
Oral presentations	0.033	0.043	
Multiple choice exams			

Table 5.4 shows the effects of experiences gained during higher education. In general, only quite weak effects are observed. Particularly in the case of study hours this is surprising; one would expect time spent on one activity to be at the expense of another, so one would expect to observe negative relationships. This is not the case.[6] It seems that students find time for these other activities without this compromising the time they spend on studying. Study related work experience has a positive effect on intrinsic and extrinsic study behaviour, but for non study-related experience the opposite is true. Spending time in voluntary positions is related to a lower degree of striving for high marks. This may reflect a greater degree of self-confidence among graduates who have acquired such experience.

Table 5.4
Relation between experiences during higher education and study behaviour (standardized linear regression coefficients)

	Did more work than needed to pass exams	Strive for highest possible grades	Study hours
Study-related work experience	0.032	0.021	
Non study-related work experience	-0.020	-0.037	
Voluntary positions		-0.026	
Work placements			0.034
Experience abroad			

6. Work placements (which are included in study hours) even have a positive effect on the overall hours of study.

5.3 Higher education as producer of "mobilization" competences

A key idea underlying this whole chapter is that graduates are not entirely at the mercy of the work situation they find themselves in for the mobilization of competences, but can actively strive to increase the level of mobilization even when the objective conditions are unfavorable. In the previous section we saw some indications for this in the different levels of effort students put into their study. We also saw indications that certain features of higher education may stimulate students to apply themselves more and to try to get more out of their higher education programme. It may be that such experiences actually foster the acquisition of competences that help graduates to make the most of their capacities regardless of the objective conditions in which they find themselves. If this is the case, higher education may have a role to play, by fostering such abilities. It is equally conceivable that higher education may play a role in fostering abilities that are useful for mobilizing the human resources of others.

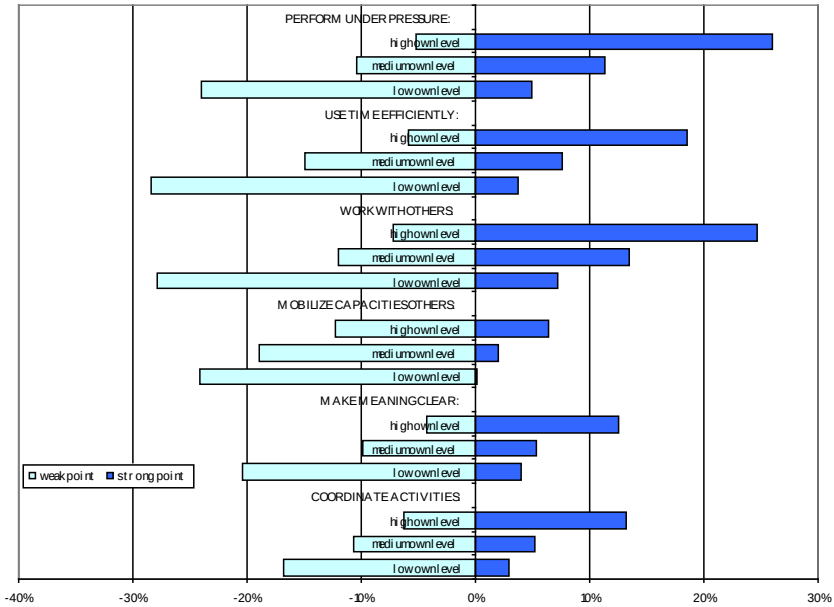
As pointed out in Chapter 1, six competences were singled out in advance on theoretical grounds as likely to be important for graduates' ability to mobilize human resources. These are the ability to *work under pressure*, the ability to *use time efficiently*, the ability to *work productively with others*, the ability to *mobilize the capacities of others*, the ability to *make one's meaning clear to others*, and the ability to *coordinate activities*. The first two competences are thought to be especially important for mobilizing one's own human resources, and the last four especially for mobilizing the human resources of others. We refer to these six competences in this chapter collectively as "mobilization competences".

In Chapter 1 a mixed picture emerged in terms of graduates' evaluation of their study programme in terms of mobilization competences. On one hand, around one in five graduates described the ability to work productively with others and the ability to perform well under pressure as a strong point of the study programme, and few saw these competences as weak points. In contrast, around one in six graduates regarded the ability to mobilize the capacities of others as a weak point of the study programme, with hardly any mentioning this competence as a strong point. The ability to use time efficiently was more in balance, although it was slightly more likely to be rated a strong point than a weak point. Relatively few graduates offered any opinion one way or the other about the study programme in terms of the remaining two mobilization competences, the ability to make one's meaning clear to others, and the ability to coordinate activities.

It is reasonable to assume that graduates evaluation of the study programme with respect to a given competence is related to the extent to which graduates have acquired the competence in question during higher education. While we don't have a measure of this in our data, we do know how highly graduates rate their own competences at the time of the survey. Figure 5.5 shows the percentage of graduates who report that the mobilization competences were weak or strong points, split into those who at

the time of the survey report a low, medium or high level of the relevant competence (respectively those who answered 1-2, 3-5 and 6-7 on the 7-point scale ranging from 1 "very low" to 7 "very high").

Figure 5.5
Strong and weak points of mobilization competences, by own level



As we might expect, the higher graduates rated their own level of competence, the more inclined they are to rate that competence as a strong point and the less likely they are to rate it as a weak point of their study programme. That said, it is far from a one-to-one relationship. Some graduates rated a competence as a weak point even though their own level was high, and some rated a competence on which their own reported level was low as a strong point of the programme. Particularly striking is the pattern for the ability to mobilize the capacities of others. Even graduates who reported that their own level was high were much more likely to rate this competence as a weak point than as a strong point of the programme. It may be that these graduates have acquired most of this competence at work. While we cannot test this supposition directly, we do have some indirect indications. Almost half of those graduates who rated their own level on this competence as high but regarded it as a weak point of their study programme are currently responsible for supervising others in their current work. This percentage is considerably higher than the 37% for the population as a whole (see Section 5.4.2), which may suggest that at least part of this competence has been developed at work.

The question arises what higher education can do about improving the level of graduates' competences in these areas. To gauge this, we conducted a series of multivariate analyses, in which the effect of various aspects of graduates' higher education experiences were used as predictors of the graduates' own level of the mobilization competences. We focus hereby on some key characteristics of higher education programmes, the main modes of teaching and learning applied, the experiences acquired during higher education, the results achieved at the end of the programme, and the behaviour of students during the programme as independent variables. Tables 5.5 to 5.8 show the relevant results.

Before going in to a discussion of the results in detail, we can make some remarks about the results in general. First of all, it appears that higher education can make a difference in terms of generating mobilization competences. Many of the characteristics and experiences of higher education have a statistically significant effect on the acquired level of these competences. Secondly, it should be remarked that the individual effects, even when statistically significant, are not very large. To give some kind of perspective on what the effects mean, a graduate who reported that his or her study programme is regarded as demanding to a very high degree scores on average a quarter of a point higher (on a seven-point scale) on the ability to make your meaning clear than a graduate who reported that the programme was not at all demanding. It should be stressed that this was one of the strongest effects observed; most of the other effects were not as strong. Thirdly, the cumulative effect of these characteristics is also not very large. Only a small fraction of the total variance in these competences is explained by these variables. Even taking into account the fact that our indicators almost certainly do not cover the full range of variation in educational experiences that might help shape competences, this is disappointing. In sum, we can say that not only is there no individual 'magic bullet' that on its own guarantees success, even cumulatively the contribution that higher education can make is quite modest.

Turning now to the effects of the various indicators, Table 5.5 shows that the programme characteristic that makes the biggest difference in most cases is whether or not the programme was demanding. This is not very surprising, one would expect students of demanding programmes to learn more competences *in general* than graduates of less demanding programmes. Vocationally oriented programmes are good at producing those competences that are thought to be relevant for mobilizing the human resources of others, while academically prestigious programmes are good at producing competences relevant to mobilizing one's own human resources. Programmes that are familiar to employers seem to produce somewhat higher levels of ability to perform under pressure, but lower levels of ability to coordinate activities. First and second level programmes do not generate significantly different levels of mobilization competences, with the exception of the level of ability to mobilize the capacities of others, which appears to be a little lower among second level than among first level graduates. Freedom to choose and the breadth of focus do not have any significant effects on mobilization competences.

Table 5.5
Effects of programme characteristics on the acquired level of competences relevant for mobilization (standardized linear regression coefficients)

	Ability to: perform well under pressure	use time efficiently	work productively with others	mobilize capacities of others	make meaning clear to others	Coordinate activities
2nd level programme						
Other programme characteristics						
Generally regarded as demanding	0.026	0.046	0.041	0.026	0.051	0.039
Employers familiar with content	0.030					-0.021
Freedom to compose own programme						
Broad focus						
Vocational orientation				0.027		0.028
Academically prestigious	0.028	0.031				

Table 5.6
Effects of modes of teaching and learning on the acquired level of competences relevant for mobilization (standardized linear regression coefficients)

	Ability to: perform well under pressure	use time efficiently	work productively with others	mobilize capacities of others	make meaning clear to others	Coordinate activities
Lectures						
Group assignments		0.031	0.044			0.030
Participation in research projects						
Work placements/internships						
Facts & practical knowledge		0.030	0.036		0.032	0.024
Theories & paradigms	0.021		0.030	0.031	0.030	
Teacher as source of information						
Problem- or project-based learning						
Written assignments						0.026
Oral presentations	0.037		0.034		0.052	0.027
Multiple choice exams						

Table 5.6 shows effects of various modes of teaching and learning on the level of mobilization competences. Student-centred aspects like groups assignments and oral presentations have quite strong effects on several mobilization competences. Although these are often features of project- and/or problem based learning, this mode of teaching and learning has hardly any effect after controlling for these aspects. Interestingly, facts and practical knowledge and theories and paradigms also have rather strong effects. This suggests that, in addition to methods in which students play an active role, a strong emphasis on theoretical and practical knowledge helps generate competences that are important for mobilizing human resources. We can only speculate

about the mechanism involved here, but it is conceivable that the possession of a good knowledge base makes it easier for graduates to make the most out their own and others' human resources.

Table 5.7 shows the effects of various forms of experience gained during higher education. As we might expect, study-related work experience has an effect on the development of several of the mobilization competences. The effects are not very strong however. The strongest effects however are those of positions held in voluntary organizations during higher education, especially on the competences thought to be relevant for mobilizing the human resources of others. Non study-related work experience, work placements and time spent abroad have little or no effect.

Table 5.7
Effects of experiences during higher education on the acquired level of competences relevant for mobilization (standardized linear regression coefficients)

	Ability to:					
	perform well under pressure	use time efficiently	work productively with others	mobilize capacities of others	make meaning clear to others	Coordinate activities
Study-related work experience	0.025			0.029		0.037
Non study-related work experience				0.023		
Voluntary positions			0.022	0.041	0.032	0.049
Work placements						
Experience abroad						

Table 5.8 shows the effects of level of study behaviour on the level of the six mobilization competences. In general, study behaviour showed surprisingly little effect on the development of mobilization competences. This is doubly surprising, since one would expect a high degree of motivation to work hard and achieve good results to not only to be good for developing competences in general, but in a sense to be a component of the very competences we are looking at here. After all, one might assume that a high degree of motivation is a prerequisite for mobilizing human resources. The only positive exception is a rather strong effect of a willingness to strive for higher grades on the ability to use time efficiently. The only other effect of note is a negative effect of willingness to do more work than needed to pass exams on the ability to perform under pressure. It is unclear what mechanism is involved here, but it may be a case of reverse causality, whereby students that cannot handle pressure well tend to over-prepare for their exams.

Table 5.8
Effects of level of study behaviour on the acquired level of competences relevant for mobilization (standardized linear regression coefficients)

	Ability to:					
	perform well under pressure	use time efficiently	work product-ively with others	mobilize capacities of others	make meaning clear to others	coordinate activities
Study Behaviour						
• Average study hours			0.024			
• Strived for higher grades		0.040				
• Did more work than needed to pass exams	-0.031					

5.4 Mobilization of human resources after higher education

In this section we will try to put a further piece of the puzzle into place by describing some indicators that may be regarded as relevant to the mobilization by graduates of their own resources. We start by briefly describing the extent to which graduates mobilize their own human resources: are they actively engaged in the labour force, if so for how many hours and at what level, to what extent do they utilize their capacities in the hours when they are at work and what other activities are they engaged in. In this section we try to provide an impression of this dimension of mobilization. We then present some indicators of the extent to which graduates are involved in mobilizing the human resources of others: are they directly responsible for supervising or monitoring the performance of other staff members, and do they have real strategic decision-making authority at the level of the organization?

5.4.1 Mobilizing one's own capacities

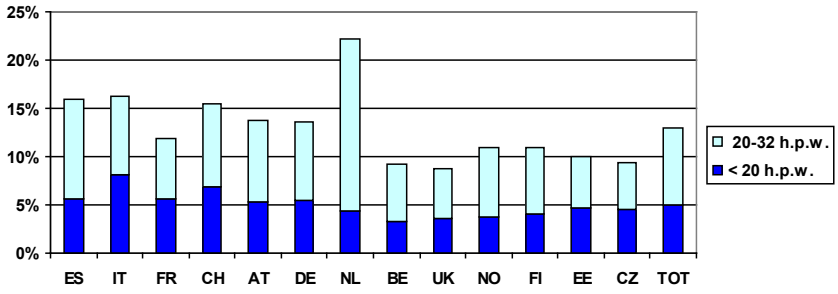
Labour force participation and education-job match
Chapter 7 reports extensively on labour force participation and the education-job match, so we will not dwell long on this here. It is sufficient to mention a number of the most striking results. The authors show that around a three-quarters of first level graduates and a slightly lower proportion of second level graduates are currently employed in jobs that match their own level and field of education. The remaining graduates are either unemployed or are employed in jobs for which their own level and/or field of education is not considered appropriate. The authors refer to these graduates collectively as "mismatched". British and Spanish graduates have relatively high shares of mismatches, while relatively few Finnish and Norwegian graduates samples are mismatched. Czech and British first level graduates are quite often employed in jobs that do not match their own field of education, while Spanish graduates are more often employed or working jobs that match neither their own level nor their own field. This shows that the Spanish sample more often than the other samples experi-

ence the most severe forms of mismatch. Graduates in the Humanities are most likely to be mismatched both in terms of being unemployed and in terms of having employment at an appropriate level and in an appropriate field. Health and Welfare graduates are least likely to experience such mismatches.

Working hours

Mobilizing one's own resources is not only a matter of having appropriate employment. Graduates can only mobilize their own capacities in the hours that they actually work, and many graduates work less than a fulltime week. Figure 5.6 shows the percentage of graduates who work part-time.[7]

Figure 5.6
Percentage of graduates working part-time, by country (% of graduates in paid employment)



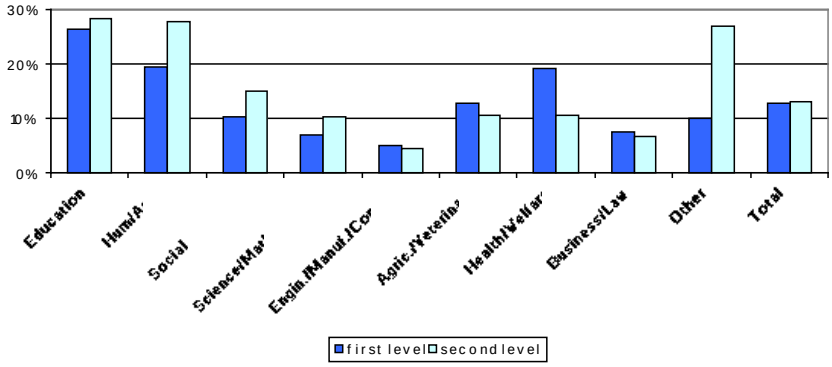
About 13% of all graduates work part-time. In general, the highest proportion of part-time work is seen in those countries with a high level of unemployment. The major exception to this rule is the Netherlands, where part-time work is known to be particularly popular as a form of work-sharing between young parents, and where the unemployment level is low. Most of these Dutch graduates work in "longer" part-time jobs, with working hours between 20 and 32 hours per week. In countries such as Italy and Spain, where the unemployment level is relatively high and a higher proportion of graduates work less than 20 hours per week, it seems more likely that part-time work is more often involuntary, being the only work that graduates have been able to obtain.

There is little difference between first and second level programmes in terms of part-time work (see Figure 5.7). There are however pronounced differences between fields of study. Arts & Humanities and Education graduates are more likely to work shorter

7. Since there is no international standard definition of fulltime work, any cut-off point we choose will be somewhat arbitrary. We adopt a conservative definition of full-time work. Based on the assumption that a standard working day is no more than 8 hours, anybody working 33 hours or more per week will be working for more than the equivalent of four standard days. We define this for our purposes as a fulltime working week.

hours than graduates in other fields. By contrast, only a small proportion (less than 5%) of all graduates at both levels in Engineering, Manufacturing & Construction work part-time.

Figure 5.7
Percentage of graduates working part-time, by field and level of education (%)

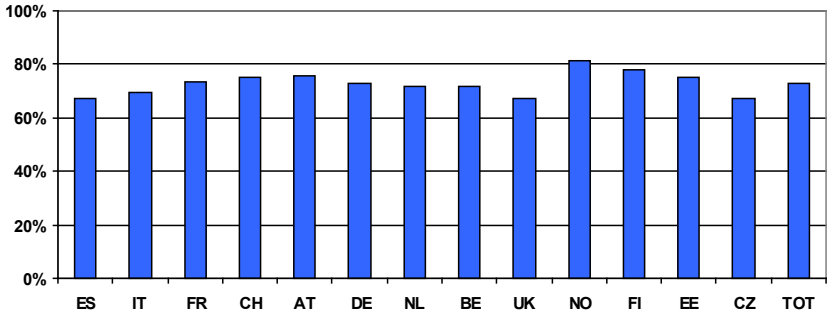


Utilization of knowledge and skills

Although we have established that a large proportion of graduates work for long hours in jobs matching their education, this provides no guarantee that graduates' capacities are sufficiently utilized. It is often assumed that overeducation implies underutilization. However, in recent years, there has been an increasing awareness that, although overeducation is likely to be related to underutilization, the two are in fact quite distinct (see e.g. Allen & Van der Velden 2001). By no means all overeducated workers fail to utilize their capacities and, conversely, some adequately educated workers are less than satisfied about the extent to which their knowledge and skills are utilized in their work. Such discrepancies may be due to the fact that graduates are in fact more or less able than their level of education suggests or, alternatively, to the fact that the requirements of the job in terms of knowledge of skills is different from what one would expect from the formal level of education required. Since it is actual mobilization of graduates' own capacities we are interested in, we need a more direct indicator than overeducation. Figure 5.8 shows the proportion of graduates per country who report that they utilize their capacities to a high or very high extent.[8]

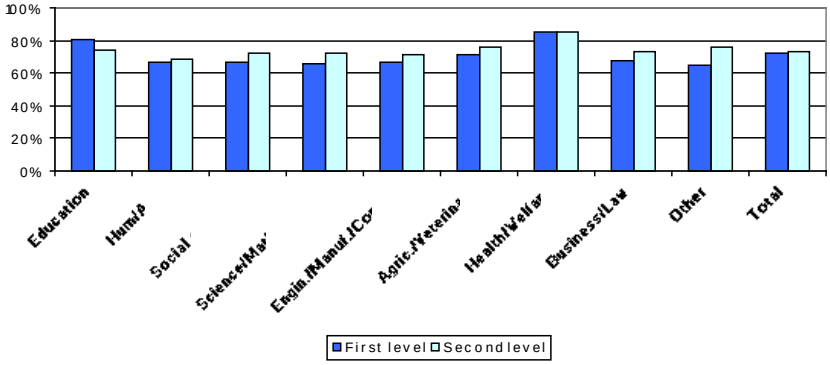
8. Answer 4 or 5 on a five-point scale ranging from 1 (not at all) to 5 (to a very high extent) to the question "To what extent are your knowledge and skills utilized in your current work?"

Figure 5.8
Utilization of knowledge and skills, by country (%)



In general, as one would expect, there is quite a strong correspondence between the degree of overeducation and the degree of skill utilization in a country. The countries that are shown in Chapter 7 to have high levels of mismatches are generally speaking the countries with the lowest levels of skill utilization and vice versa. First level programmes show slightly lower levels of skill utilization than second level programmes (see Figure 5.9). Again mirroring the results in Chapter 7, Arts & Humanities graduates show a relatively low degree of utilization, and Health & Welfare graduates a high degree.

Figure 5.9
Utilization of knowledge and skills, by field and level of education (%)



These results suggest that overeducation is indeed related to skill utilization. In order to confirm that this also applies at the individual level, Figure 5.10 shows the percentage of graduates that report high levels of utilization, by categories of education-job match.

Figure 5.10
Utilization of knowledge and skills, by education-job match (%)

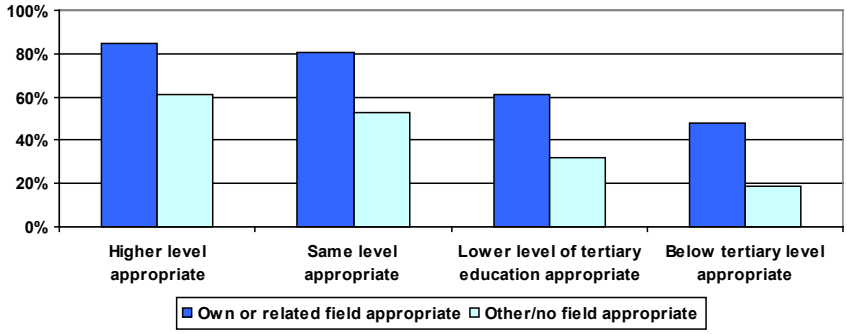


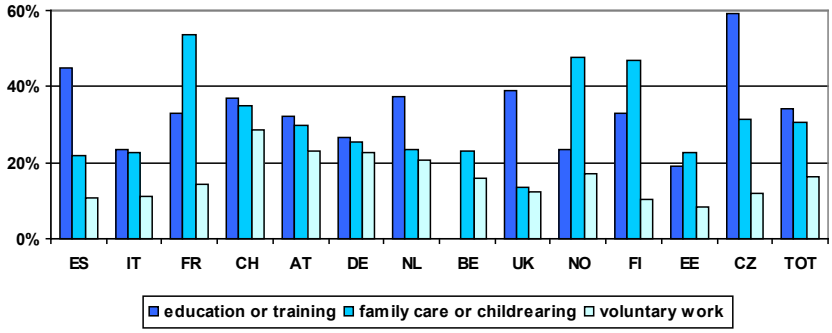
Figure 5.10 indeed confirms the expected relation. In every country, the highest percentage of skill utilization is seen among graduates working at the same or a higher level, decreases somewhat for graduates working at a lower level of tertiary education, and is lower still for graduates working below tertiary level. At each level we also observe a strong relation with the horizontal match: graduates working in jobs for which their own or a related field is most appropriate report much higher levels of skill utilization than those working in jobs for which another field or no particular field would have been more appropriate. Although the expected relation between education-job match on one hand and skill utilization on the other is confirmed, there are a number of points that are worthy of note. Firstly, although the utilization level is high for graduates working in jobs for which at least their own level and their own field are most appropriate, it is well below 100%. One might be inclined to dismiss this as random noise, but additional analyses confirm that the level of skill utilization within this group is clearly associated with higher values on outcome variables like job satisfaction and income. More striking is the fact that about one in five graduates working below tertiary level and outside their own field nonetheless report a high degree of skill utilization. This result is once again validated by a strong relation with outcome variables. Although finding employment that matches one's own level and/or field of education obviously increases one's chances of utilizing one's own knowledge and skills capacities, many overeducated graduates nonetheless manage to mobilize their own human resources in this respect. Given this variation in skill utilization within categories of education-job match (over which higher education and graduates will have little if any direct control), it is of interest to identify factors that have an impact on it. We will return to this point later in the chapter.

Other activities

Although the focus of this chapter is mainly on mobilization of human resources within the world of work, it is important not to lose sight of the fact that graduates can also put their capacities to use in other areas. Figure 5.11 shows the degree

of participation in the four weeks preceding the survey in activities other than paid work.

Figure 5.11
Participation in past 4 weeks in activities other than work, by country (%)



* Education/training not asked in Belgium-Flanders.

Given the fact that the survey was conducted around five years after graduation, a surprisingly large proportion (about a third) of all graduates are involved in some kind of education or training. There are pronounced differences between countries, with around 60% of Czech graduates engaged in further learning, compared to around one in five in Estonia and less than a quarter in Italy and Norway. A slightly lower proportion of graduates were involved in family care, ranging from more than half in France, to less than 15% in the UK. The proportion of graduates doing some kind of voluntary work is lower than that engaged in the other two classes of activity, but at around 17% is still substantial. Almost 30% of Swiss graduates do voluntary work, and even in the country with the lowest percentage (Estonia) more than 8% are engaged in this type of work.

Additional analyses (not shown here in detail) reveal that participation in training is hardly related to labour force status. It is highest among parttime workers, suggesting a kind of dual status incorporating study and work, and lowest among those not in active employment, indicating that training and paid work are not generally speaking substitutes for each other, and may even be to some extent complementary. In contrast, there are clear indications that family care and voluntary work are substitutes for paid employment. Family care is very common among those not in the labour force and relatively rare among full-time workers (although more than a quarter of fulltime working graduates still take on some caring duties). Unsurprisingly, full time workers participate less in voluntary work than graduates working less hours or not at all.

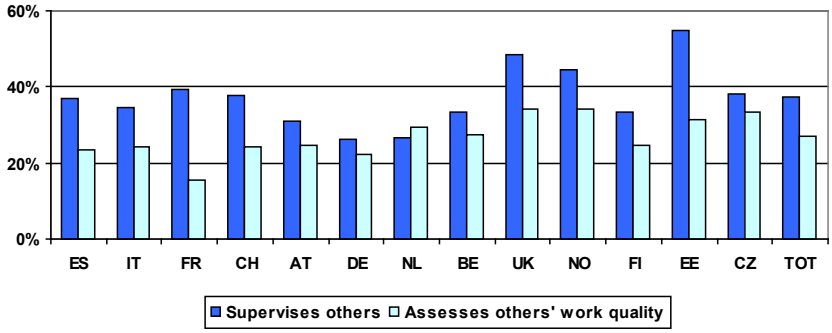
5.4.2 Mobilizing capacities of others

We have established that most graduates are fairly successful at mobilizing their own capacities. Ideally, we would like to find out whether the same applies to mobilizing capacities of others. In the case of one's own capacities, we had a very direct indicator of the degree to which these are actually utilized at work. In the case of mobilization of the capacities of others, things are less straightforward. On one hand, we have quite a lot of indicators of the formal role graduates play in the organizations in which they work. We know whether graduates are responsible for supervision and/or quality control with respect to the work of others, and the extent to which graduates bear strategic decision making authority in their organization. In other words, we know *whether* graduates are involved in mobilizing the capacities of others. However, the impact of these things on the actual performance of other workers – the direct measure of this kind of mobilization - takes place "offstage" as it were. Although we can probably assume that, in general, employers assign such responsibilities to people who they feel are best suited to them, we need to keep in mind that we may be missing variance in *how well* graduates are fulfilling these duties.

Formal responsibility for other staff members
The simplest indicator of the role played in mobilizing others, and the one most commonly encountered in labour market research, is whether or not a person is responsible for supervising others. Although this indicator is far from useless, it clearly has its limitations. The label 'supervisor' is used to describe a multitude of roles, ranging from a simple "first among equals" role in a teamworking situation to positions of great authority and responsibility. Nor does additional information help us much, since genuine authority figures in many organizations may only have one or two other key figures working under them, while lower level managers on the work-floor may 'supervise' the work of tens or even hundreds of unskilled workers. A key question is that of control over the quality of performance of others. Figure 5.11 therefore supplements information on the proportion of graduates who supervise others with data on the proportion of graduates who report a high degree of responsibility for assessing the work of others.

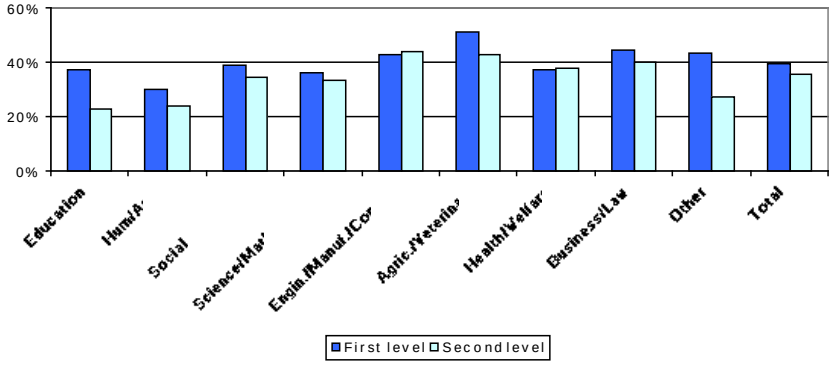
It is clear from Figure 5.12 that only a minority of graduates are responsible for mobilizing others, even based on these rather minimalist indicators. About a third of graduates supervise other workers, and only a quarter are responsible for assessing the work of others. This suggests that supervision may indeed often be a rather perfunctory task without much substance. Nonetheless, at the aggregate level of countries, there is a clear relation between the two. Estonian and UK graduates bear supervisory responsibility most often, and UK graduates are also most often responsible for assessing others' work. In contrast, German graduates score rather low on both indicators. The main exception to the general pattern is formed by French graduates, who rarely assess the quality of others, but quite often supervise.

Figure 5.12
Responsibility for other staff members, by country (%)



A little unexpectedly, first level graduates are slightly more likely to supervise others than their more highly qualified second level graduates (see Figure 5.13).[9] This difference is probably attributable to the fact that second level graduates are much more likely to work as autonomous professionals than their first level peers. Engineering and Agriculture graduates often have such responsibilities. Education and Arts & Humanities graduates are less likely to do so.

Figure 5.13
Percentage of graduates who supervise others, by field and level of education (%)



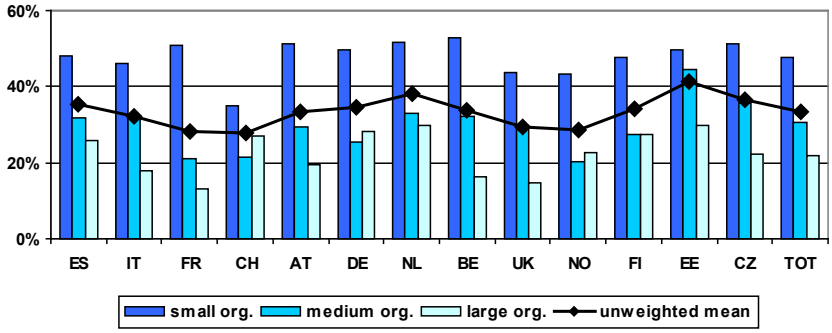
Strategic decision making authority

Regardless of whether they actually work with others, graduates who play a strong role in setting goals and/or deciding strategies for their organization will thereby also influence the mobilization of their co-workers. Although we have indicators of the role of graduates in both setting goals and deciding strategies for their organization, these are highly correlated. To avoid unnecessary repetitions, Figure 5.14 shows the

9. To avoid cluttering things, the percentage of graduates who assess others' work quality is not shown. The overall pattern for this indicators is similar to that for supervision.

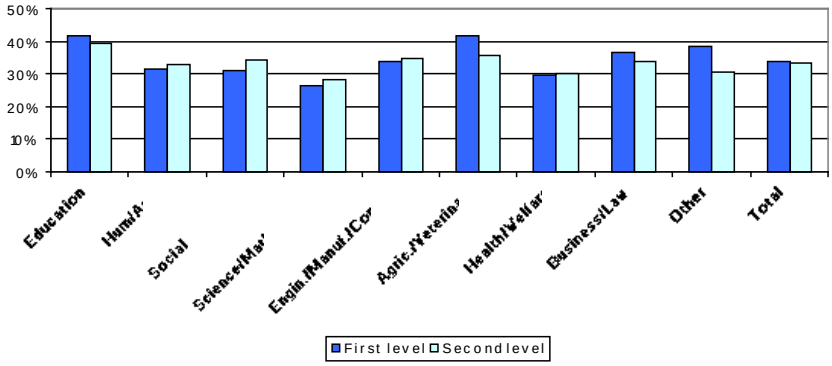
percentage of graduates who report that at least one of these two descriptions applies to them to a high or very high extent. Because the meaning of these questions depends on organization size (it is easier to bear responsibility for a small than a large organization) a breakdown by size is presented. To allow easier comparison between countries, an unweighted mean of the percentages in small, medium and large organizations is superimposed on the graph.

Figure 5.14
Strategic decision making authority, by country and organization size (%)



As expected, the proportion of graduates who bear responsibility for the organization is strongly dependent on organization size. Almost half those working in small organizations (1-49 employees) bear such responsibility; only about 1/5 of those working in large organizations (>= 250 employees) do so. Although this pattern is largely reproduced in all countries, there are some differences in the absolute level per country. French, Swiss, British and Norwegian graduates are relatively unlikely to bear strategic decision-making authority for their organization. Estonian and Dutch graduates are most likely to bear such responsibility. There is little difference between first and second level graduates (see Figure 5.15). Education and Agriculture & Veterinary graduates often bear such responsibility, and Science, Mathematics & Computing graduates are relatively unlikely to bear such responsibilities.

Figure 5.15
Strategic decision making authority,* by field and level of education (%)



Note *: Unweighted mean of percentage in small, medium and large organizations

5.5 Determinants of utilization of own capacities

Having established, in section 5.3, that higher education has only a modest capacity to influence the level of mobilization competences, we may wonder whether it can realistically make a contribution to increasing the actual level of mobilization. We do this by way of a series of multivariate regression analyses. In this section we look at determinants of utilization of own capacities. Of course a key point hereby is to establish whether the competences relevant to mobilizing human resources have the expected effects. It is important to remark at this point that although we have earmarked the abovementioned six abilities as mobilization competences on theoretical grounds, we cannot be certain in advance that these are the only, or indeed even the most important, competences that play a role in mobilizing human resources. For this reason, we also include clusters of the competences representing professional expertise, functional flexibility and innovation and knowledge management. In addition, because we cannot be sure that all of the effects of higher education occur through competences, we include the same set of higher education characteristics and characteristics as were included above as predictors of competences. Such characteristics may influence utilization directly, by making graduates better at getting the most out of themselves in difficult situations, but also indirectly, by improving graduates' chances of being selected for jobs that are well matched to their abilities. In addition to competences and higher education characteristics and experiences, we also include some indicators of experiences gained outside higher education and some characteristics of the organizations in which graduates currently work that may have an effect on their ability to mobilize their own human resources. The results are shown in Tables 5.9 to 5.15.

Looking first to the results as a whole, we can say that a limited number of predictors have very strong effects, while most predictors have little or no effect. All in all, the

model explains about one eighth of the total variance in utilization. Encouragingly, a large part of this is accounted for by competences and higher education characteristics and experiences. This suggests that, although higher education only explains a relatively small proportion of mobilization competences, it has a meaningful effect on the actual utilization of one's own capacities. Nonetheless, it is clear that utilization is influenced more by factors outside our model than by the indicators we have included. A large part of this is of course the match between one's own education and that regarded as appropriate for the job. This has not been included here because it is conceptually so closely intertwined with utilization, which would mask a lot of the effects of our predictors. More interesting, especially in the case of the effects of higher education characteristics, is the pattern of effects within categories of mismatch. If education has a role to play, this may be mainly in those unfortunate but inevitable situations where graduates find themselves in employment not matching their education. Especially then graduates are likely to benefit from having competences that help them get more out of themselves. For this reason, the effects of competences and higher education characteristics and experiences are shown separately for different categories of mismatch.

Turning to the effects of individual predictors, Table 5.9 shows the effects of different kinds of competences.

Table 5.9
Utilization of capacities, by own level of competences (standardized linear regression coefficients)

	own level and field	own level, other field	lower level, own field	lower level, other field	all employees
Mobilization competence					
Ability to perform well under pressure	**0.031**		0.058		**0.043**
Ability to use time efficiently				**-0.098**	
Ability to work productively with others	**0.026**				
Ability to mobilize the capacities of others					
Ability to make your meaning clear	**0.035**		0.068		**0.031**
Ability to coordinate activities	-0.023			**0.100**	
Clusters of other competences					
Professional expertise	**0.099**	**0.202**			**0.120**
Functional flexibility	**-0.036**		-0.063		**-0.065**
Innovation and knowledge management	**0.050**				**0.060**

The results shown in Table 5.9 are surprising in several respects. First of all, the competences that were thought to be important for mobilizing one's own resources – the ability to perform well under pressure and the ability to use time efficiently - have relatively little effect. The ability to perform under pressure does help somewhat in jobs matching the graduates own field, but the ability to use time efficiently has no positive effect at all and even a strong negative effect in jobs that match neither the

graduates' level nor their field. We might speculate that in such jobs, which presumably place few demands on graduates' specialized abilities, being able to organize one's time efficiently may only exacerbate the problem.

At least as surprising as the relative absence of effects of the competences that were expected to be especially relevant is the strong effect of the cluster professional expertise. This is the only competence or cluster to show a significant effect when graduates' work does not match their education. Even more remarkable is the finding that the effect is strongest among graduates working in jobs for which their own or a higher level but a different field is regarded as most appropriate. It would seem that possessing a high level of professional expertise enables graduates to better utilize their capacities in general, even (or especially) when their work doesn't match their training. Competences related to innovation and knowledge management also improve mobilization, although not when the job doesn't match one's education. The quite strong negative effects of functional flexibility could be a case of reversed causality: graduates who are not in a position to do what they are good at may need to become more flexible.

Table 5.10 show the effects of several programme characteristics.

Table 5.10
Utilization of capacities, by programme characteristics (standardized linear regression coefficients)

	own level and field	own level, other field	lower level, own field	lower level, other field	all employees
2nd level programme	**0.033**	**0.094**			**0.043**
Other programme characteristics					
Generally regarded as demanding	0.020				
Employers familiar with content	**0.062**		**0.069**	0.073	**0.089**
Freedom to compose own programme					
Broad focus					
Vocational orientation	**0.063**		**0.093**		**0.075**
Academically prestigious	**0.030**				**0.038**

Higher education characteristics have some residual effects on utilization after controlling for competences. Graduates of second level programmes are more successful in utilizing their knowledge and skills than graduates of first level programmes, although this only holds in jobs that match the graduates' own level. The familiarity of employers with the content of the programme has quite strong effects, as does vocational orientation and to a lesser extent academic prestige. It may be that these effects work more indirectly, by increasing the chance that graduates find their way to employers who know what they are capable of, than directly, by enhancing graduates' abilities to get the most out of themselves. This is consistent with the finding that the effects of these characteristics are largely confined to graduates working in jobs matching their

own field. Having graduated from a demanding programme has no significant overall effect on utilization after controlling for competences (on which, as we saw earlier, it has a rather strong effect).

Table 5.11
Utilization of capacities, by modes of teaching and learning (standardized linear regression coefficients)

	own level and field	own level, other field	lower level, own field	lower level, other field	all employees
Lectures	**0.043**				**0.033**
Group assignments					
Participation in research projects					
Work placements/internships		0.097			**0.029**
Facts & practical knowledge	**0.038**			-0.073	
Theories & paradigms					
Teacher as source of information					
Problem- or project-based learning		0.071			
Written assignments					
Oral presentations				0.101	
Multiple choice exams					

Modes of teaching and learning have few residual effects after controlling for competences (see table 5.11). The effect of work placements may, like vocational orientation and familiarity of employers with the content of the study programme, be indirect, increasing the chances that graduates are employed by organizations that are geared to their specific knowledge and skills. Such an effect is however not plausible for lectures, which also show a positive effect. It is not clear what mechanism underlies this effect.

As Table 5.12 shows, experiences either before, during or after higher education have little effect on utilization. Only study-related work experience during higher education and work experience since graduation have significant positive effects, but these are quite small. The only other significant effect in Table 5.12 is that of initial search duration, which decreases the level of utilization.

Table 5.12
Utilization of capacities, by experiences before, during and since higher education (standardized linear regression coefficients)

	own level and field	own level, other field	lower level, own field	lower level, other field	all employees
EXPERIENCES BEFORE HE					
Study-related work experience					
Non study-related work experience					
EXPERIENCES DURING HE					
Study-related work experience					0.028
Non study-related work experience					
Voluntary positions					
Work placements					
Experience abroad					
EXPERIENCES AFTER HE					
Work experience				0.075	0.023
Initial search duration	-0.020				-0.034

Table 5.13
Utilization of capacities, by study achievement and motivation, cultural and social capital and parental role (standardized linear regression coefficients)

	own level and field	own level, other field	lower level, own field	lower level, other field	all employees
Study achievement and motivation					
Relative grade	0.022				**0.037**
Did more work than needed to pass exams	0.020				
Strived for higher grades	**0.027**				
Cultural and social capital					
Quality of social network	**0.077**	**0.073**	**0.063**	**0.124**	**0.090**
At least one parent has HE					**0.021**
Parent of young child (<5yrs)					
Father					
Mother	**-0.039**				**-0.033**

As Table 5.13 shows, study achievements, in the form of grades, has a significant, but not very large effect on utilization. Study motivations, indicated by the extent to which graduates were prepared to do more work than needed to pass exams and/or to strive for the highest possible grades, has no overall significant effect on later utilization, although a very weak effect is seen for graduates working in jobs matching their own level and field of education. Social capital, in the form of a good social network, has a strong positive effect on utilization – also in non-matching jobs – but cultural

capital, in the form of having at least one highly educated parent, only seems to improve utilization of one's knowledge and skills very slightly. Both these effects may be due to an increased chance of finding employment in which one can utilize more of one's capacities rather than through an increased ability to get more out of oneself. However, we should remark that the measure of social capital, like the dependent variable, refers to the situation as it was when graduates completed the questionnaire. In contrast to the other predictors described so far, which refer to the situation during or even before higher education, we cannot plausibly claim that this relation is causal, only that graduates who have a good social network utilize their capacities more on average than graduates with a less useful network. Having at least one child under five years has a small but significant negative effect, however only for women.

Table 5.14 shows the effects of various characteristics of the organization in which graduates work and the market in which the organization operates. Like social network, the situation described by these variables is concurrent with that for the dependent variable, so the effects should be regarded as descriptive rather than causal. As such, there is little point in considering the results separately for different categories of education-job match. We suffice with the results for all employed graduates.

Table 5.14
Utilization of capacities, by organization and market characteristics (standardized linear regression coefficients)

Self-employed	**0.060**
Public/non-profit sector	**0.122**
SCOPE OF OPERATIONS (ref.: local):	
Regional	
National	
International	
SIZE OF ORGANIZATION (ref.: <10 employees):	
10-49	
50-99	
100-249	**-0.021**
250-999	
1000 or more	
MARKET CHARACTERISTICS	
Strong competition	
Competition based on quality	**0.030**
Unstable demand	**-0.020**
CHANGES IN ORGANIZATION	
Work tasks	
Reorganization	**-0.033**
Large-scale layoffs	**-0.038**
Organization at the forefront of innovation	**0.073**
Extent to which performance is monitored	

As one might expect, the self-employed are better able to utilize their own capacities than those who work for others. Working in the public or non-profit sector has an even stronger positive effect. There is little evidence that working in larger organizations, and/or in organizations with a national or international scope, allows graduates any more or less opportunities to utilize their capacities than they have in smaller and/or more locally oriented organizations. Of the market characteristics, competition based on quality (as opposed to price) has a small positive effect on utilization. Instability in demand is associated with lower levels of utilization. Organizational change in the form of reorganizations and/or large scale layoffs, have a negative effect on utilization, although this is not very large. Graduates working in organizations that are more at the forefront when it comes to introducing innovations have more opportunities to utilize their knowledge and skills than graduates who work in organizers that tend to follow rather than set the trend. There is no significant effect of monitoring of performance, suggesting that, in general, graduates neither abuse the greater degree of freedom, nor make use of it to put their capacities to better use.

5.6 Determinants of mobilization of others' capacities

As mentioned above in Section 5.4.2, in the case of mobilization of the capacities of others, we only have indicators of *whether* graduates are involved in mobilizing the capacities of others, and not of *how well* they are doing so. This means that any observed effects of educational and background characteristics work through increasing or decreasing the chance that employers assign such responsibilities to graduates, and not necessarily through making graduates better or worse at actually fulfilling such roles. Since we assume that employers will be more inclined to assign such responsibilities to people who they feel are best suited to them, educational and background characteristics may act as signals (or help to promote other characteristics that in turn are seen as signals) of suitability.

In this section, the results of three multivariate analyses will be presented. The dependent variables are supervision (logistic regression analysis of chance that one is a supervisor), assessing quality of others (OLS regression analysis of the extent to which one is responsible for this) and strategic decision making authority (OLS regression analysis of the mean of the two underlying variables). Most of the same independent variables are included as in the analysis of utilization. Tables 5.15 to 5.20 show the results of these analyses.

In all three cases, higher education variables and competences account for 7-8% of the total variance in the dependent variables. Particularly competences have quite strong and consistent effects (see Table 5.15). As we might expect, the ability to mobilize the capacities of others has the strongest effects on all three indicators, especially the chance that one supervises others. A similar pattern holds for the ability to coordinate activities and the ability to perform well under pressure, but the effects are not

as strong. Contrary to expectations, the ability to make your meaning clear has no effect on any of the three outcomes, and the ability to work productively with others even has a negative effect on supervision and strategic decision making authority. This seems to suggest a rather hierarchical attitude towards leadership. Surprising as well is the finding that the ability to use time efficiently significantly reduces the chances that one is assigned a leadership role in terms of the three indicators.

Table 5.15
Mobilization of capacities of others, by own level of competences (regression coefficients)[10]

	supervise others	quality control	strategic decision-making authority
Mobilization competences			
Ability to perform well under pressure	0.133	0.055	0.025
Ability to use time efficiently	-0.066	-0.050	-0.054
Ability to work productively with others	-0.107		-0.047
Ability to mobilize the capacities of others	0.228	0.139	0.094
Ability to make your meaning clear		-0.023	
Ability to coordinate activities	0.198	0.079	0.078
Clusters of other competences			
Professional expertise	0.187	0.058	0.049
Functional flexibility		0.026	0.081
Innovation and knowledge management			0.029

As was the case for utilization, the competence cluster representing professional expertise has strong effects. This is not so surprising: one would expect employers to put someone who knows his or her stuff in charge. In contrast to what we saw for utilization, functional flexibility has a positive effect on quality control and strategic decision making authority. Innovation and knowledge management has only a rather weak effect on strategic decision making authority.

Table 5.16
Mobilization of capacities of others, by programme characteristics (regression coefficients)

	supervise others	quality control	strategic decision-making authority
2nd level programme	0.153		
Other programme characteristics			
Generally regarded as demanding			
Employers familiar with content			
Freedom to compose own programme	-0.077		
Broad focus			
Vocational orientation			
Academically prestigious			

10. The coefficients presented in Tables 5.15 to 5.20 are logistic regression coefficients in the case of "supervising others" and standardized linear regression coefficients in the other two columns.

Programme characteristics have little effect on leadership (see Table 5.16). It seems that employers look for direct signals of leadership traits in terms of competences rather than relying on characteristics of the programmes graduates have followed. Graduates of second level programmes are slightly more often employed as supervisors, while graduates who reported a high degree of freedom in composing their own study programme were less likely to be supervisors.

Table 5.17
Mobilization of capacities of others, by modes of teaching and learning (regression coefficients)

	supervise others	quality control	strategic decision-making authority
Lectures			
Group assignments			
Participation in research projects		0.021	0.041
Work placements/internships			
Facts & practical knowledge			
Theories & paradigms			0.019
Teacher as source of information			
Problem- or project-based learning		0.031	0.026
Written assignments			
Oral presentations			
Multiple choice exams			0.019

The reliance of employers on competences rather than educational proxies to assign leadership roles is further borne out by Table 5.17. Although several modes of teaching and learning have significant effects on quality control and strategic decision making authority, the effects are quite weak. A strong emphasis on participation in research projects and on problem- or project based learning has a positive effect on both indicators, while emphasis on theories and paradigms and – curiously – multiple choice exams increase the chances that one is responsible for strategic decision making.

Table 5.18
Mobilization of capacities of others, by experiences before, during or after higher education (regression coefficients)

	supervise others	quality control	strategic decision-making authority
EXPERIENCES BEFORE HE			
Study-related work experience		0.025	0.032
Non study-related work experience		-0.020	
EXPERIENCES DURING HE			
Study-related work experience			
Non study-related work experience			
Voluntary positions			
Work placements	0.015		
Experience abroad			
EXPERIENCES AFTER HE			
Work experience	0.015	0.053	0.036
Initial search duration		-0.025	-0.029

The most marked effect of the experience variables (see Table 5.18) is the positive effect of work experience after graduation on all three dependent variables.. Study-related experience before higher education also has an effect on quality control and strategic decision making, but not study-related experience during higher education has no effects on leadership. A longer initial search duration has a negative effect on quality control and strategic decision making authority.

Table 5.19
Mobilization of capacities of others, by relative grade, cultural and social capital and parental role (regression coefficients)

	supervise others	quality control	strategic decision-making authority
STUDY ACHIEVEMENT			
Relative grade			
CULTURAL AND SOCIAL CAPITAL			
Quality of social network		0.037	0.050
At least one parent has HE			-0.018
PARENT OF YOUNG CHILD (<5YRS)			
Father	0.241	0.039	0.058
Mother	-0.334	-0.031	-0.041

Table 5.19 shows that having a good social network can get you places at work. Although this has no effect on supervision, it does increase the extent to which one is responsible for quality control and/or strategic decision making. Confirming a widely held stereotype, employers would rather put dads in charge than mums. For women

(the interaction effect with gender) the effect of having one or more young children is uniformly negative, while for men (the main effect), it is consistently positive.

Finally, Table 5.20 shoes the effects of organization characteristics. Being self-employed trivially increases the extent of strategic decision making authority, and only slightly less trivially the extent to which one is responsible for quality control. Graduates working in the public or non-profit sector are less likely to supervise and/or assess the work of others. Size and scope of organizations have the expected (trivial) effects on strategic decision making authority. More interestingly, there is also a negative effect of size on supervision and quality control. It is not immediately obvious why these organizations would be less likely to let higher education graduates supervise or assess others.

Table 5.20
Mobilization of capacities of others, by organization characteristics (regression coefficients)

	supervise others	quality control	strategic decision-making authority
Self-employed		0.038	0.190
Public/non-profit sector	-0.318	-0.085	
SCOPE OF OPERATIONS (ref.: local)			
Regional			-0.036
National			-0.075
International			-0.102
SIZE OF ORGANIZATION (ref.: <10 employees)			
10-49			-0.104
50-99	-0.258	-0.035	-0.116
100-249			-0.136
250-999	-0.391		-0.132
1000 or more	-0.464	-0.025	-0.142
MARKET CHARACTERISTICS			
Strong competition		0.027	
Competition based on quality			0.026
Unstable demand		0.019	
CHANGES IN ORGANIZATION			
Reorganization	0.395	0.072	0.047
Large-scale layoffs			-0.030
Organization at the forefront of innovation	0.051	0.043	0.082
Extent to which performance is monitored		0.033	-0.059

Graduates working in organizations experiencing strong competition, and those working in organizations experiencing unstable demand are more likely to supervise and/or assess the work of others. There is however no effect on strategic decision making authority. By contrast, the more competition is based on quality, the more responsibility graduates bear for strategic decision making.

The degree of stability of the organization and its environment seems mainly to work in the graduates' favour in terms of their being assigned leadership roles. We saw already that unstable demand increases graduates' role in quality control. Further, graduates in organizations that have undergone a reorganization since they started working there are much more likely to be supervisors and to bear responsibility for quality control and/or for strategic decision making. This is consistent with the idea that supervisors survive. However, graduates in organizations that have experienced large-scale layoffs are given less strategic decision making authority. Innovations in product or service, or in knowledge or methods, appear to provide organizations with a reason to assign higher education graduates more leadership responsibility. Finally, the only characteristic to show opposing effects is the extent to which a graduates own performance is monitored. Graduates for whom this is the case are in turn more likely to be responsible for controlling the quality of the work of others. This may suggest that the degree of control or monitoring may to some extent be a structural characteristic of organizations as a whole. In contrast, graduates whose work is closely monitored bear less strategic decision making authority.

5.7 Conclusions

In this chapter we looked at several indicators of mobilization of human resources during and after higher education and attempted to shed some light on the factors that promote or inhibit such mobilization. We found evidence that European students are somewhat economical with the effort they put into achieving good study results in higher education. They work slightly less than 35 hours per week on their study, but only a minority reports doing substantial extra work above what was required to pass their exams. Students appear to be more extrinsically than intrinsically motivated: to the extent that they put in extra effort, they want to see this rewarded in the form of higher grades. There are substantial differences between countries, with Dutch graduates putting in the least effort and Spanish graduates putting in the most according to the indicators used.

If students don't work as hard as they might on their study, this does not mean that they are idle. On average students put in almost 30 months during their study on other activities, mainly paid employment. Again, we see strong differences between countries, with Spanish graduates doing least and Dutch graduates the most. This result would appear to suggest that there is a trade-off between study and extra-curricular activities, but multivariate analyses reveal that the relation between the

two is surprisingly weak. Although non-study-related work experience is related to lower levels of intrinsic and extrinsic study motivation, study-related work experience appears to increase both forms of motivation. Neither form of work experience has any effect on study hours. Of various programme characteristics, the degree to which a programme was regarded as demanding has the strongest effects on study hours as well as on intrinsic and extrinsic motivation. In the case of study hours this is only to be expected, but one might imagine that students of programmes that are especially demanding would find extra work and striving for higher grades a luxury that they can ill afford. The positive effect of demanding programmes may suggest that students who are challenged by a demanding programme rise to the challenge by working even harder than they need to get their degree.

We identified six competences which were thought to be particularly relevant to mobilizing human resources. Of these, the ability to mobilize the capacities of others was most often regarded as a weak point of the study programme. This applied even to graduates who reported that their own level of this competence is high, which suggests that graduates may develop this competence at work rather than during higher education. Demanding study programmes are particularly effective in fostering mobilization competences. Student-centred modes of teaching and learning like groups assignments and oral presentations also have quite strong effects on several mobilization competences, as does a strong emphasis on theoretical and practical knowledge. A good knowledge base may make it easier for graduates to make the most out their own and others' human resources. Of the various forms of extra-curricular activities, the strongest effects are found for positions held in voluntary organizations during higher education, especially on the competences thought to be relevant for mobilizing the human resources of others. A little surprisingly, study hours and intrinsic and extrinsic study motivation have almost no effects on mobilization competences.

In general, higher education graduates seem to be rather successful at mobilizing their own capacities in their current work. Most are employed in a more or less full-time capacity in jobs that match their own level and field of education. Relatively few graduates report that their capacities are underutilized. Even those graduates who work in jobs requiring no tertiary education often manage to utilize a good proportion of their capacities, particularly those competencies that were predicted to be relevant for mobilization of human resources. And graduates are not only active in the world of work: a large proportion are also engaged in training, family care or voluntary work. This even applies to full-time working graduates, although they are somewhat less likely to be engaged in family care or voluntary work (but not training) than graduates who work shorter hours or not at all.

Although the percentages are lower, a considerable proportion of graduates also occupy positions in which they are responsible for mobilizing the capacities of others. About a third of graduates are supervisors, and about a quarter bear a high degree of responsibility for quality control. In small organizations almost half of all graduates

bear a high degree of strategic decision-making authority, although in medium and small organizations this proportion drops to about a quarter and a fifth respectively.

Surprisingly, the degree of mobilization of own capacities appears to be more strongly influenced by one's own level of professional expertise than by specific mobilization competences. There are relatively few residual effects of higher education characteristics and experiences after competences have been taken into account. However, one's social network appears to be a good predictor of all forms of mobilization of human resources, suggesting that knowing the right people can help get one into demanding jobs with real authority. Several characteristics of the organizations graduates work in and the context in which it is located have significant effects on mobilization. Private sector employees are less likely to utilize their own capacities, but more likely to play some kind of leadership role in the organization. A similar split is observed for reorganizations, which have negative effects on utilization, but positive effects on mobilization of others. Working in an organization which is at the forefront in terms of innovation has a positive effect of all forms of mobilization.

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Chapter 6
International Dimensions of Higher Education and Graduate Employment

Ulrich Teichler

6.1 The growing relevance of international dimensions

"Internationalisation" and "globalisation" tend to be named as key issues in Europe when changes in the relationships between higher education and the world of work are under consideration. The technological and economic dynamics are often described as globalisation, whereby an increasing proportion of graduates is active in organisations which are globally and interconnected and have to use foreign language to communicate with persons from different cultures, to build up in-depth knowledge on other countries and to represent their organisation abroad. Life in general becomes more international with growing migrant populations as well as more and more graduates opting for careers in other countries. Universities historically were among the most international organisations anyway, and in recent years many curricular reforms are undertaken to prepare students better both for the globalising world in general and for possible international careers in specific (cf. Huisman and van der Wende 2005; Altbach 2006; Teichler 2004; Knight 2006). Last but not least an increasing number of students – many of them mobilized by the ERASMUS Programme of the European Union - opt for temporary student mobility, whereby most of them expect that this will help to cope more successfully with increasing international dimensions of the world of work and other spheres of life and also believe that this leads to career enhancement in general (see Teichler 2002, Bracht et al. 2006).

In the framework of the REFLEX study on graduate employment and work, attention was paid to mobility in the life course: the country of origin and the country they lived, studied and worked at different life stages. This does not only allow us to analyse patterns of mobility over these life stages, but also to examine how internationally mobile persons differ from non-mobile ones in the early stages of career. With respect to a growing international character of work assignment, the REFLEX study addressed the role foreign language proficiency plays. Thus, it is possible both to identify the professional areas in which high levels of foreign languages are required and to examine how careers of those highly versatile in foreign languages differ from those less proficient in this respect. Moreover, as similar questions were posed in the predecessor project CHEERS, it is possible to analyse changes from the graduates

cohorts 1994/95 to the graduate cohort 1999/2000 (Teichler and Jahr 2001; Jahr and Teichler 2007).

First, an overview will be provided on the frequency of mobility during early life stages, during the course of study and during the first few years after graduation. Subsequently we will examine the extent to which mobility during the course of study and shortly afterwards has an impact on employment and work. Thereafter, the professional relevance of foreign language proficiency will be examined. Finally, differences of careers will be analyzed between those employed in their home country and those who were mobile after graduation.

6.2 International mobility

6.2.1 Information available

The REFLEX study addressed international mobility at various stages of the graduates' life. First, graduates were asked to state whether they and their parents were born abroad and whether they lived in a foreign country

- at the age of 16,
- during their course of study,
- when they became employed for the first time after graduation, and
- at the time the survey was conducted, i.e. about five years after graduation.

Second, they were asked to provide information whether they spent time abroad during their study period for purposes of study and work. Those spending some period abroad provided information as well about the length of their stay abroad.
Third, similar questions were posed regarding mobility after graduation. Graduates provided information whether they spent any time abroad after graduation for study and for work and in which country they were employed at the time the survey was undertaken, i.e. about five years after graduation. Again, information was provided on the periods of stay abroad.

6.2.2 Migration and mobility prior to study

As Table 6.1 shows, about 4 percent of the graduates surveyed in the REFLEX study were *born in another country* than that of their institution of higher education; we can assume that most of them were foreign citizens. This is more or less the same percentage as was found five years earlier in the CHEERS project. This proportion was about ten percent among those graduating in Switzerland and the United Kingdom, but only two percent or less in Belgium, the Czech Republic, Estonia, Finland, Italy and Spain.

About 2 percent of the respondents *lived in a country different from that of graduation at the age of 16*. Actually, the majority of graduates surveyed which had come from other countries did not move to the country of study as a young child or during their period of school education, but rather later for the purpose of study.

Table 6.1
Mobility Prior to Study by Country (percent)

	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	CZ	EE	Tot
Born abroad	2	1	3	10	5	5	5	1	11	4	2	1	0	4
Mother born abroad	2	2	11	25	10	5	7	2	18	5	1	3	0	7
Father born abroad	1	1	10	23	9	5	7	2	18	4	1	3	0	7
Abroad at age of 16	1	0	2	6	4	3	2	1	9	2	1	1	1	2

About twice as many of the REFLEX graduates' parents as the REFLEX graduates themselves *were born in another country*, as Table 1 shows as well. The number of respondents living in the country of graduation since birth whose parents were immigrants is about as high as the number of respondents who were born in another country and came to the country of graduation either as migrants as children or moved to this country for the purpose of studying the full degree programme.

Available educational statistics show that about 6 percents of the students in the European countries analysed during the later half of 1990s had been foreign students (cf. Kelo, Teichler and Wächter 2006; UNESCO 2006). It does not come as a surprise to note that the proportion of foreigners among graduates according to the REFLEX survey is slightly lower. On the one hand, some short-term mobile students are included in the educational statistics who eventually graduate in the home country. On the other hand, the proportion of students not successfully graduating seems to be higher among foreign students than among home students.

6.2.3 Mobility during the course of study

26 percent of the graduates responding in the REFLEX study reported that they spent a period abroad, i.e. different from the country of graduation, during the course of study for purposes of study and/or work. Actually,

- 21 percent spent a period of study abroad and
- 7 percent a period of work abroad during their course of study.

Thus, about two percent spent both periods of study and of work abroad. Other student and graduate surveys suggest that most of the students reporting work abroad actually spend an internship abroad, i.e. working experience linked to their study.

Table 6.2 shows substantial differences of mobility during the course of study by country of graduation. But even in countries where temporary periods abroad for

study and work were a less frequent choice than on average in Europe in the latter half of the 1990s, i.e. Spain, Italy, the United Kingdom, Estonia and Norway, a period abroad for study or work is by no means an exception. The proportion ranges even in these countries from 16 to 19 percent.

Table 6.2 shows as well that many graduates from the Czech Republic (17%) and Finland (14%) had spent a period of work abroad during their course of study. In reverse, few Italian and Spanish graduates experienced an internship or another period of work while still having been enrolled. Actually, those going abroad during their course of study for the purpose of study or work spent on average (arithmetic mean) a *period* of 7 months for study and 6 months for work in another country.

Table 6.2
Mobility During the Course of Study by Country (percent)

	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	CZ	EE	Total
Abroad during study for study and/or work	16	17	36	30	36	30	30	28	19	19	32	27	17	26
Spending time abroad during higher education for study	12	15	31	27	30	29	26	24	15	17	24	13	12	21
Spending time abroad during higher education for work-related reasons	3	3	9	6	10	5	7	6	5	4	14	17	7	7
Living abroad during study programme	0	0	1	1	0	0	1	1	1	1	0	0	0	1
Duration of time abroad														
Months for study														
Arithm mean	7	5	6	7	7	8	6	6	10	8	6	6	8	7
Median	6	4	4	6	6	6	5	5	6	6	5	4	4	6
Months for work-related reasons														
Arithm mean	7	7	6	7	8	4	5	3	9	8	6	5	6	6
Median	4	3	3	5	5	3	4	2	5	6	3	4	4	4

These data by and large confirm results of other studies previous studies which had focussed on temporary student mobility in Europe. Among the Western European respondents of the CHEERS survey who had graduated five years earlier, 18 percent had spent some time during the course of study abroad in order to study or to work (Jahr and Teichler 2007), i.e. about two-thirds as many as among the respondents of the REFLEX survey. The available data underscore the fact observed in other student surveys as well that temporary student mobility was clearly on the rise in Europe over the 1990s.

It should be noted that no Europe-wide statistics are available of the proportion of students spending a period abroad during their course of study (see the overview on available statistics in Kelo, Teichler and Wächter 2006; data available for Germany

and Italy are in tune with the findings of the REFLEX study presented in Table 2; see Teichler 2006); therefore the findings presented in Table 2 are a valuable information on the state of student mobility in Europe.

6.2.4 Mobility after graduation

7 percent of the graduates surveyed who graduated in the country where they were born, reported that they have spent some time *after graduation for the purpose of further study* in another country than that of their graduation (i.e. the graduation taken as a base line in the REFLEX survey). This proportion was highest among graduates from Estonia (13%) and Switzerland (12%). Altogether, 40 percent of the respondents undertook further studies within the first five years after graduation that were addressed in the REFLEX survey. Thus, about one sixth of the graduates embarking on further study studied at least for some time in another country. The average *period* of subsequent study abroad was 4 months. This confirms the finding of other surveys that students are obviously motivated through their study abroad experience to continue study after graduation towards advanced levels of qualification (see Bracht et al. 2006).

16 percent spent *at least some time after graduation working in a country different from that of graduation*. As Table 6.3 shows, this proportion was clearly highest among those who had graduated in Belgium (28%) and Austria (23%). On average, those working abroad during the first five years after graduation did this for 11 months.
Looking at certain moments in time after graduation we note that

- 4 percent lived in another country when they were employed for the first time after graduation,
- 3 percent lived in another country five years after graduation, i.e. when the survey was conducted, and also
- 3 percent of those employed five after graduation worked abroad.

The respective proportions were highest among Austrian and British graduates (see Table 3). 9 percent of Austrian graduates each worked abroad shortly after graduation and five years after graduation, i.e. three times as many as the average of countries analysed.

Among the respondents of the CHEERS survey who had graduated four years earlier, also about 3 percent each were employed abroad when they started their career and employed abroad and lived abroad at the time the survey was conducted. 18 percent of them reported that they had worked abroad for some period, among them the majority commissioned for some period by the home country employer (Jahr and Teichler 2007). Altogether, the relatively small figures and the different phrasing of the questionnaires does not allow any conclusion on the basis of these two surveys whether employment and living abroad has remained constant in recent years.

Table 6.3
International Mobility During the First Five Years After Graduation by Country (percent of those graduating in their home country)

	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	CZ	EE	Total
Mobility after graduation	19	18	21	28	27	16	18	32	21	10	18	24	24	22
Abroad for study	8	10	6	12	7	5	4	9	6	5	4	7	13	7
Abroad for work	11	11	17	19	23	13	16	28	18	7	15	18	14	16
Living abroad when starting first employment	3	2	5	4	9	2	2	3	8	1	3	3	2	4
Living abroad five years after graduation	2	3	3	6	9	2	1	3	7	1	2	2	4	3
Working abroad five years after graduation	2	3	4	2	9	3	1	4	7	1	3	2	2	3
Duration of time abroad														
Months for study														
Arithm. mean	8	9	9	8	11	8	6	9	8	10	7	8	11	9
Median	6	3	4	4	5	4	3	5	4	9	4	5	6	5
Months for work-related reasons														
Arithm. mean	14	10	10	9	16	10	9	8	12	14	13	7	11	11
Median	6	4	3	4	7	5	5	2	6	9	6	4	6	5
Kind of mobility after graduation														
Work long (more than one year)	5	2	5	6	9	3	4	5	7	3	5	3	5	5
Work short (not more than one year)	8	7	11	13	12	9	11	20	10	4	9	15	9	11

Available labour market statistics suggest that only about three percent of the highly qualified labour force in Europe are nationals of other European countries. The findings of the REFLEX survey seem to be in line with these data; however, *the REFLEX data do not suggest that intra-European professional mobility among highly qualified persons is increasing substantially in recent years*.

Of all graduates surveyed in the REFLEX study who worked abroad five years after graduation, 17 percent had chosen Germany, 12 percent the United Kingdom, 11 percent Switzerland and 9 percent the U.S. as destination. This pattern is clearly distinct from that of graduates surveyed in the CHEERS study of whom 15-16 percent each had gone to the United Kingdom, the U.S. and Germany.
As Table 6.4 shows,

- Germany is the exceptionally frequent destination for graduates from Austria (43 % of graduates from Austria universities working abroad in Germany) and the Netherlands (32 %),
- Similar priorities can be noted for graduates from France going to Switzerland (31 %), from Belgium to the Netherlands (33 %) and from Norway to Sweden (31 %), while graduates from other countries opted for a broader range of destinations.

Table 6.4
Major Countries of Work Abroad Five Years After Graduation by Country of Graduation (percent; only those graduating in their home country)

Country of employment	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	CZ	Total
Germany	12	9	16	22	43	0	32	7	2	0	12	20	17
United Kingdom	17	16	5	21	4	10	7	21	0	9	12	34	12
Switzerland	0	9	31	0	15	16	0	0	6	0	8	3	11
United States	16	9	0	16	6	18	12	7	15	35	4	4	9
Netherlands	2	0	3	7	3	2	0	33	0	10	6	6	7
France	13	9	0	15	2	6	2	16	13	0	0	2	6
Belgium	6	6	5	5	3	5	11	0	2	0	4	8	4
Luxembourg	2	0	13	0	1	15	0	2	0	0	0	0	4
Sweden	0	3	0	0	0	3	4	0	0	34	23	1	3
Spain	0	10	4	3	0	2	0	2	0	0	6	1	3
Ireland	6	3	2	0	0	0	4	0	12	6	7	0	2
Canada	2	3	8	0	0	3	3	0	3	0	0	3	2
Italy	8	0	0	5	3	0	0	0	7	0	0	1	2
Denmark	1	5	0	0	1	0	0	0	0	0	9	0	1
China	0	2	3	0	1	2	0	0	2	0	0	0	1
Liechtenstein	0	0	0	3	5	0	0	0	0	0	0	0	1
Austria	2	3	0	2	0	3	0	0	0	0	4	1	1
Norway	3	0	0	0	0	0	0	0	6	0	4	0	1
Australia	0	0	0	0	2	0	3	0	5	0	0	0	1
United Arab Emirates	0	0	0	0	2	0	0	2	0	0	0	0	1
Russia	0	1	0	0	1	0	3	0	3	0	0	1	1
Thailand	0	0	0	0	0	6	4	0	0	0	0	0	1
Slovakia	0	0	0	0	0	0	0	0	0	0	0	10	1
Romania	0	0	3	0	1	0	0	0	0	0	0	0	1
South Africa	0	0	0	0	3	0	0	0	0	0	0	0	1
Portugal	8	0	0	0	0	0	0	0	0	7	0	0	1
Other	2	13	5	0	7	10	15	10	24	0	2	5	8

Foreign graduates (foreign nationals at the time of graduation in the CHEERS study, graduates born abroad in the REFLEX study) show clearly distinct patterns of border-crossing mobility after graduation. The CHEERS study already had shown that the majority of foreign graduates either returned to their home country for life and work or got employed in a third country.

Among employed REFLEX graduates born in a country different from that of graduation,

- 16 percent were employed in their country of birth, and
- 5 percent were employed in a third country

about five years after graduation. Obviously, persons graduating abroad are – unlike those graduating in their home country – not solely preoccupied with the career in the country of graduation, but rather opt for subsequent border-crossing mobility in large numbers.

6.3 The impact of international mobility during the course of study and early career on employment and work

6.3.1 The manifold relevance of early international mobility

Various studies undertaken prior to the REFLEX study have shown that mobility prior to study, temporary study and other study-related temporary activities abroad as well as studying the whole degree programme in another country are likely to lead graduates from European institutions of higher education to international careers and well as to work assignments in their home country or the country of graduation different from their home country that require visible international competencies. International experiences prior to and during the course of study are obviously valuable assets both for mobility after graduation and for job roles characterized by visible international dimensions.

Prior findings are less conclusive, though, whether international experience prior to or during the course of study will lead to more high-flying careers in general. For example, surveys of former ERASMUS students suggest that they perceive advantages with respect to insertion to the world of work as compared to their non-mobile peers, but that they do not reach a higher status a few years after graduation (see Maiworm and Teichler 1996; Teichler 2002; Bracht et al. 2006). Therefore, it is interesting to compare the careers of internationally experienced REFLEX respondents to those not mobile prior to and during the course of study.

6.3.2 Mobility during the course of study and early career

Graduates surveyed in the REFLEX study who had been internationally mobile temporarily during the course of their study had a smoother transition to employment in some respects than formerly non-mobile students. Their job search period was somewhat shorter (3.8 months on average as compared to 4.3 months of the non-mobile ones), and their overall period of unemployment during the first years after graduation was clearly shorter on average.

It is interesting to note as well that graduates who had been mobile during the course of study changed employers somewhat more often during the first five years after graduation than graduates who had not been mobile. Actually, formerly mobile students had 2.4 employers on average as compared to 2.2 of those who had not been mobile.

6.3.3 The distinct profile of those mobile during or shortly after the course of study

It is widely assumed that persons opting for a period of study abroad are a select group. As a consequence, an eventual more successful career of formerly mobile students might not be the result of the study abroad experience but rather due to differences in socio-biographic background and study between the formerly mobile and the formerly non-mobile students. It is often argued that formerly mobile students often come from families where the father and possibly the mother have a higher education degree and have an above-average income and status. Moreover, formerly mobile students are often depicted as highly motivated and energetic persons, i.e. persons with values and abilities which might turn out to be useful on the job anyway. However, one cannot take this widely claimed arguments as well founded – among others because the ERASMUS programme, the single most important institutional driver for temporary mobility of students within Europe, clearly intends to serve a broad range of students with respect to socio-biographic background, country and field of study, as well as academic ability. For example, studies undertaken suggest that ERASMUS only seems to be socially selective if compared to all youth in Europe, but not if compared to all youth enrolled in higher education.

In any event, a study aiming to analyse the impact of mobility during the course of study on the graduates' career is well advised not merely to compare the careers of formerly mobile students to formerly non-mobile students, but to take into consideration a possible selectivity effect on this relationship. For example, the abovementioned somewhat shorter job search period of formerly mobile students than those who had not been mobile during the course of study turns out to be significant when controlled by various socio-biographic dimensions as well as by various dimensions of study behaviour.

In the framework of the REFLEX study, the impact of early mobility on subsequent career is analysed somewhat differently from prior studies. The logic of the REFLEX study, undertaken five years of graduation, is to ask about the impact of all prior experiences on the competences and on the employment and work situation five years after graduation. Therefore, it is appropriate to examine the impact of both the international experience during the course of study and of shortly after the course of study (i.e. prior to the biographic moment of the survey) on the employment and work situation five years after graduation. Similarly, we have to ask context first: How do the students who had been mobile during the course of study and/or shortly after graduation differ from those students who had not been mobile at all up to the moment the survey was undertaken?
Actually, of the REFLEX respondents who had graduated in the country where they were born,

- 15 percent had been temporarily mobile only during their course of study,

- 10 percent had international experience both during their course of study and during the first few years after graduation, and
- 11 had been internationally mobile only during the first few years after graduation.

Table 6.5 provides an overall overview how respondents having been mobile during or shortly after the period of study differ from those not mobile as far as their socio-biographic background and their course of study are concerned. Those who had been mobile:

- come more from families with parents graduating from higher education programmes,
- have been over-proportionally enrolled in Humanities and less than average in Education as well as in Health and Welfare,
- have been frequently enrolled second level programmes (i.e. those higher education programmes that provide direct access to PhD programmes,
- were more active in student organisations or other voluntary organisations, and
- have participated more frequently in internships or other work experience during the course of study.

Surprisingly – in contrast to overrepresentation of women in the ERASMUS programme – the percentage of women among the formerly mobile persons is not higher in the REFLEX survey than among the non-mobile persons. Also, those mobile during and shortly after the course of study do not differ in the weekly time and intensity they had spend on their study from those who had not been mobile.

- Asked to rate their success during the course study, formerly mobile students considered their grades as compared to other students of their programmes higher than formerly non-mobile students.

The CHEERS study had shown that persons who had been mobile during the course of study rated their general competences upon graduation only marginally higher than those who had not been mobile. A significant higher level was only observed for a minority of general dimensions addressed. As one might expect, however, formerly mobile students rated them by far superior in respect of dimensions directly related to international experience, e.g. foreign language proficiency and understanding of other cultures.

Table 6.5
Socio-Biographic Background and Study by International Mobility During and Shortly After the Course of Study (per cent; only those graduating in their home country)

	International mobility				Total
	No mobility	During	After	Both	
Gender					
Male	39	37	53	47	41
Female	61	63	47	53	59
Father or mother with higher education degree					
ISCED5+6	38	49	44	51	42
Field of study					
Education	11	7	5	5	9
Humanities	10	18	12	20	12
Social sciences	31	30	30	33	31
Law	7	6	6	5	7
Natural sciences	6	5	10	8	6
Mathematics	4	3	5	2	4
Engineering	18	19	26	19	19
Health	13	12	7	7	11
Level of study programme					
Second level programme	49	63	55	68	54
Study behaviour					
Study-related work experience during higher education	44	53	44	54	46
Non-study related work experience during higher education	47	58	53	57	50
Participated in work placement/internships	57	62	50	56	57
Position in student or other voluntary organizations	19	32	27	36	23
Average grade in study programme					
Average grade higher than average	50	54	57	61	52

The REFLEX survey suggests, as Table 6.6 indicates, similarly that those mobile during the course of study perceive their general competences about five years after at most in a few areas and marginally higher than those not having studied abroad for some period. The study shows, however, that international experience shortly after graduation is slightly more strongly linked to competences five years after graduation than international experience during the course of study.

Table 6.6
International Mobility During the Course of Study and Shortly After Study and Rating of Competences* Five Years After Graduation (percent; only home graduates)

Competences five years after graduation	No mobility	Only during study	Only after study	Both	Total
Foreign language competences	3.9	5.0	5.1	5.7	4.4
Professional expertise	5.1	5.1	5.2	5.3	5.1
Functional flexibility	5.0	5.1	5.1	5.3	5.1
Innovation and knowledge management	5.4	5.4	5.5	5.6	5.4
Mobilisation of human resources	5.4	5.4	5.4	5.5	5.4

Note *: Competences rated on a seven-point scale ranging from 1 "very low" to 7 "very high". Foreign language competences based on a single item. See Chapter 1 for operationalization of professional expertise, functional flexibility, innovation and knowledge management and mobilisation of human resources. As regards competences directly linked to visible international work tasks, the REFLEX study only addressed foreign language proficiency. It confirmed the findings of the CHEERS study. Again, international experience during the first few years after graduation is slightly more closely linked to foreign language proficiency about five years after graduation than mobility during the course of study. Altogether, persons who had been abroad both during the course of study and during the first few years after graduation rate their foreign language proficiency highest.

6.3.4 Impact on employment and work five years after graduation

In several respects, international mobility during the course of study or shortly after graduation seems to lead to clearly substantially more successful employment and work about five graduation. Only small differences can be observed as regards occupational status in general, the usefulness of the higher education study programme for current work tasks and job satisfaction. However, Table 6.7 shows that those who had been internationally mobile

- more frequently are short-term employed: for example 28 percent of those mobile both during the course of study and shortly afterwards not permanently employed as compared to 19 percent of the non-mobile ones,
- slightly more often are full-time employed,
- have on average an about 10 percent higher income,
- are less often employed in positions not requiring tertiary education at all (those mobile both during and shortly after the course of study 5 % as compared to 8 % of those non-mobile),
- are over-proportionally active in large organisations,
- are more often active in organisations viewed as innovative, and
- most clearly differ from formerly non-mobile graduation in being more active in organisations with an international scope: 55 percent active in those organisations among those mobile only shortly after graduation and those mobile both during the course of study and afterwards as well as 34 percent of those mobile only during the course of study as compared to 26 percent of those not mobile.

Table 6.7
International Mobility During the Course of Study and Shortly After Study and Select Aspects of Employment and Work Five Years After Graduation (percent; only home graduates living in home country five years after graduation)

	No mobility	Only during study	Only after study	Both
Permanent employed in 2005	80	77	77	73
Full-time employed in 2005 (35+)	78	80	83	80
Appropriate (sub)level of education current job relative to highest sublevel currently attained				
Higher level	11	11	12	11
Same level	73	75	75	75
Lower level of tertiary education	7	8	7	9
Below tertiary level	9	7	6	5
Usefulness of study programme				
Provided a good basis for current work tasks	52	50	49	52
Occupational position				
Other	3	2	2	2
Clerks	5	3	3	3
Associate professionals	22	17	17	16
Professionals	63	68	67	67
Manager	7	9	10	12
Job characteristics				
Opportunity to learn new things	63	67	68	69
New challenges	54	58	62	60
High earnings	27	27	29	29
Good career prospects	36	36	41	42
Social status	38	41	41	44
Job security	66	62	57	54
Size of the organisation				
1-49	35	29	28	32
50-999	38	41	37	39
1000+	27	30	35	29
Working in innovative organisations regarding				
Product or service	45	47	52	52
Technology, tools or instruments	39	40	47	45
Knowledge or methods	50	50	54	54
Scope of operations of organization				
Local	24	15	11	11
Regional	26	25	15	16
National	24	25	21	21
International	26	35	53	52
Gross monthly income job 2005 (fulltime employed graduates)				
Arithmetic mean (Euros)	2,511	2,878	2,725	2,873
Median (Euros)	2,300	2,612	2,600	2,746

The last finding, again, supports the view that international experience and learning is very important horizontally, i.e. as a preparation for work either abroad or for work at home which is characterized by visible international components.

As already pointed out, the data presented in Table 6.7 cannot be viewed as direct impact measures because they might be influenced by other factors such as country of graduation, field of study, kind of degree, etc. Some of these factors are controlled in the multiple regression analysis presented in Table 6.8. Two dependent variables are presented: income and usefulness of the study programme as a basis for performing current work tasks. The multiple regression analysis was performed separately for countries and study programmes within countries (first and second level programmes) in order to check if the relevance of international mobility during study depends on country and level of degree. Two models were developed and tested. In the first model, only field of study (dummies) and international mobility (dummy variable) were included. In the second model also relevant bio-graphic variables (gender, school performance) and aspects of study behaviour (work experiences, activities in student organisations) were additionally included.

Table 6.8, first, indicates that the links between mobility and the employment and work situation five years after graduation are mostly not spurious. An impact is visible even if socio-biographic and educational factors are controlled which might be favourable for employment and work. Second, mobility during the course of study and shortly afterwards contributes more to higher income than to a close link between the study programme and current work tasks. Third, significant links between mobility and career cannot be observed in all countries and types of study programmes.

- As regards the former we note that mobility has no significant career impact in Finland, Estonia, the Netherlands, Switzerland and the United Kingdom.
- Mobility during the course of study contributes favourably to income of those graduating from second level programmesin the Czech Republic, France, Italy and Spain according to both models of analysis. These same holds true for Norwegian graduates only for the first model and only with a lower level of significance and for Belgian graduates only according to the second model of analysis.
- As regards first level degrees, only graduates from German Fachhochschulen report a significantly higher income as a consequence of mobility during the course of study.
- Mobility during the course of study has significantly increased the perceived usefulness of the study programme for performing current work tasks only for German university graduates, for Czech graduates of other study programmes and, on a lower level of significance for graduates of master-equivalent programmes in France.

Altogether, we note that the general career impact of mobility during the course of study or shortly afterwards is in some cases considerable. However, some effects at least are confined to specific countries.

Table 6.8
The Professional Impact of International Mobility During Study by Country and Type of Study Programmes (significant regression coefficients; OLS)

		Model 1		Model 2	
		Income	Usefulness of study programme	Income	Usefulness of study programme
IT	First level				
	Second level	++		++	
ES	First level				
	Second level	++		++	
FR	First level				
	Second level	++	+	++	
AT	First level				
	Second level			+	
DE	First level	++		++	
	Second level		++		
NL	First level				
	Second level				
UK	First level				
	Second level				
FI	First level				
	Second level				
NO	First level	++		++	
	Second level	+			
CZ	First level		++		--
	Second level	++		++	
CH	First level				
	Second level				
BE	First level				
	Second level			++	
EE	First level				
	Second level				

+ significant on the 5 % level
++ significant on the 1% level.

6.4 Foreign language proficiency

The REFLEX study addressed only foreign language proficiency as a dimension of internationally relevant competences and job requirements. Therefore, the following analysis will focus on the differences of employment and work between those graduates with high and those with low foreign language requirements and those with high and low language proficiency.

International experience is a key asset for acquiring foreign language proficiency:

- 71 percent of those mobile prior to their study period rated their ability to write and speak in a foreign language as high as compared to 51 percent of those not mobile prior to study.
- Temporary mobility during the course of study or shortly afterwards is a stronger factor in this respect. 84 percent of those going abroad during the course of study for purposes of study or work or shortly after graduation rated their foreign language proficiency as high as compared to 40 percent of those not mobile during the course of study or shortly afterwards.

Jobs requiring a high level of foreign language proficiency are as a rule the "better jobs" according to a large range of indicators of employment and work success. As Table 9 shows, jobs requiring a high level of foreign language proficiency notably are characterized by more frequent

- high social status (45% as compared to 34%)
- positions as managers or professionals (79% as compared to 69%),
- good career prospects (42% as compared to 31%) and
- opportunities to learn (73% as compared to 59%).

In addition, jobs requiring a high level of foreign language proficiency are characterized by considerably higher wages (€2,454 as compared to €2,750 per month on average). In contrast, jobs requiring high language proficiency are some more frequently part-time.

Altogether, job characteristics differ more strongly according to foreign language requirements than according to actual language proficiency of the graduates. Additional analysis – not shown here – reveals that careers are superior for those whose jobs require a higher level of foreign language proficiency *and* who have also a acquired a high level of foreign language proficiency.

Foreign languages play a varying role according to economic sector:

- On the one hand, foreign language requirements are pronounced in the production sector of the economy.
- On the other hand, foreign languages are far less than average needed in health and social work.

In the production sector, clearly the "better" jobs require by far more often a high level foreign language proficiency. In the health and social work sector, the jobs requiring high foreign language proficiency are also "better" in various respects, but the differences are substantially smaller.

Table 6.7
Foreign Language Proficiency and Select Aspects of Employment and Work Five Years After Graduation (percent; only home graduates living or working at home five years after graduation)

	Language competences		Language requirements	
	Low	High	Low	High
Permanent employed in 2005	80	77	79	78
Full-time employed in 2005	79	80	78	83
Appropriate (sub)level of education current job relative to highest sublevel currently attained				
Higher level	12	10	10	12
Same level	72	75	71	76
Lower level of tertiary education	7	8	8	7
Below tertiary level	9	7	10	5
Appropriate (sub)level of education current job relative to study programme				
Higher level	15	15	13	18
Same level	71	73	71	73
Lower level of tertiary education	5	5	6	4
Below tertiary level	9	7	10	5
Occupational position				
Other	3	2	4	1
Clerks	6	4	6	3
Associate professionals	22	17	22	17
Professionals	62	68	62	69
Manager	7	9	7	10
Job characteristics				
Opportunity to learn new things	61	67	59	73
New challenges	53	60	51	66
High earnings	25	29	24	32
Good career prospects	34	36	31	42
Social status	35	41	34	45
Job security	65	61	64	60
Size of the organisation				
1-49	32	28	32	28
50-999	35	36	35	36
1000+	32	36	33	37
Working in innovative organisations regarding				
Product or service	43	52	42	56
Technology, tools or instruments	36	44	34	50
Knowledge or methods	48	54	46	59
Scope of operations of organization				
Local	27	16	27	12
Regional	27	21	29	16
National	24	22	25	20
International	22	42	19	52
Gross monthly income job 2005	**Low**	**High**	**Low**	**High**
Arithm.mean	2414	2775	2454	2750
Median	2193	2500	2242	2500

6.5 Internationally mobile careers compared to home careers

As already reported, about 3 percent of the REFLEX respondents worked abroad five years after graduation. This held true for

- two percent of those who studied all the time and graduated at their home country,
- five percent of those who studied temporarily abroad and graduated in their home country, and
- 19 percent who graduated in a country different from their location of birth.

By and large, those working abroad differ to a lesser extent from those working at home as far as various dimensions of their employment and work are concerned (see Table 6.8) than those in jobs requiring a high level of foreign proficiency from those requiring little or no foreign language proficiency (Table 6.7).

Actually, those working abroad stated far more often than the professionally non-mobile ones that their job is characterized by

- good career prospects (42% as compared to 31%) and
- opportunities to learn (73% as compared to 59%),
- working in organisations innovative with respect to technology, tools or instruments (55% as compared to 40%).

In contrast, graduates working abroad, as compared to graduates at home, reported, as compared to graduates working in the country of graduation, only somewhat more frequently managerial and professional positions, a high status, good job prospects, new challenges and opportunities to learn new things. For example, 78 percent of those working abroad five years after graduation were in managerial and professional positions as compared to 73 percent of those working in the home country.

Those working abroad are not consistently in a better employment and work situation than those working in their home country. The former had a longer process of transition to employment as well as less frequently permanent jobs and perceived less frequent a high level of job security. Finally, no differences between both groups exist with respect to work autonomy and regarding links between knowledge and work assignment.

Table 6.8
International Career and Select Aspects of Employment and Work Five Years After Graduation (percent; only those who graduated in their home country)

	Home	Abroad
Permanent employed in 2005	79	68
Full-time employed in 2005 (35+)	80	84
Appropriate (sub)level of education current job relative to highest sublevel currently attained		
Higher level	11	14
Same level	73	70
Lower level of tertiary education	8	9
Below tertiary level	8	8
Appropriate (sub)level of education current job relative to study programme		
Higher level	15	23
Same level	72	63
Lower level of tertiary education	5	6
Below tertiary level	8	8
Occupational position		
Other	3	4
Clerks	5	2
Associate professionals	19	16
Professionals	65	69
Manager	8	8
Job characteristics		
Opportunity to learn new things	64	74
New challenges	57	66
High earnings	27	44
Good career prospects	35	45
Social status	38	44
Job security	63	52
Size of the organisation (3 cat)		
1-49	31	24
50-999	36	29
1000+	34	47
Working in innovative organisations regarding		
Product or service	47	55
Technology, tools or instruments	40	55
Knowledge or methods	51	60
Scope of operations of organization		
Local	22	7
Regional	24	13
National	23	12
International	32	68

It should be added that graduates working abroad five years after graduation earned about one tenth more per month than those working at home. In terms of income per hour, the former earned about 16 EURO as compared to 14 EURO of the latter. It is difficult to establish the extent to which this is due to specific allowances for foreigners taking care of hardships of working abroad or due to a "real" income enhancement.

Table 6.9
Monthly Income of Those Working at Home and Those Working Abroad by Country and Field of Study (EURO)

Country	Home	Abroad	Difference	Index	Dif %
IT	1662	2320	658	140	40
ES	1487	2115	628	142	42
FR	2213	2967	754	134	34
AT	2683	3269	586	122	22
DE	3684	5081	1397	138	38
NL	2401	2962	561	123	23
UK	2756	2895	139	105	5
FI	2576	3054	478	119	19
NO	3661	3799	138	104	4
CZ	874	1051	177	120	20
CH	4281	3466	-815	81	-19
Field of study					
1 Education	2186	2201	15	101	1
2 Humanities	2158	1930	-228	89	-11
3 Social sciences	2569	3266	697	127	27
4 Law	2690	3576	886	133	33
5 Natural sciences	2483	2814	331	113	13
6 Mathematics	3050	4522	1472	148	48
7 Engineering	2760	3719	959	135	35
8 Medicine	2690	2793	103	104	4

Actually, highest income advantages of those working abroad are reported, Table 6.9 shows, by graduates from Spain (42%), Italy (40% and Germany (385). In contrast, hardly any difference is stated by those from the United Kingdom and Norway. Swiss graduates working abroad even have on average a 19 percent lower income than Swiss graduates working at home.

Finally, the REFLEX study confirms the findings of previous studies that graduates who had studied abroad, who had acquired internationally competences and who actually work abroad after graduation differ most strongly from the non-mobile ones "horizontally", i.e. in terms of visibly international job assignments. In the REFLEX study, this is demonstrated in Table 6.8 by the fact that more than twice as many graduates working abroad than those working at home are employed in an organisation with an international scope (68% A compared to 32%).

6.6 Concluding observations

The choice of an institution of higher education and the choice of the country of work has remained for the cohort of those graduating from European institutions of higher education around 2000 very much a national affair. Only four percent had graduated in country different from their nationality or their living environment, and only three percent worked five years after graduation in a country different from that of the institution of higher education they graduated from.

But internationalisation of competences and job requirements is widely spread. More than a quarter of the graduates reported that they spent a period abroad during the course of study either for purposes of study or for the purpose of work, whereby work is often related to study (internships or similarly). And even a larger proportion of graduates take over job assignments where high foreign language proficiency is required. The information provided by the REFLEX study and other studies suggest that persons internationally experienced prior to graduation or shortly after are clearly more likely to be internationally mobile and are clearly more likely to take over jobs at home which require international competencies. This confirms a strong "horizontal" link between international learning and experience on the one hand and international work on the other hand.

There are "vertical" links as well, i.e. between international experience and career success, though less close and less consistent. In some respects, work abroad and work requiring visible international competencies are positively rewarded in terms of status and desirable work tasks. Also, temporary study abroad is eventually awarded often by components of a more attractive career. But these "vertical" advantages are less frequent and smaller. They do not hold true in all respects: International careers might require longer periods of transition to work and are often connected with higher employment risks. Moreover, some of the advantages visible at first are spurious, because international careers and international job requirements are more frequent in economic sectors and occupational groups which have an above-average status. Finally, among those with international experience prior to study some are migrants experiencing unequal opportunities in their country of study and work. But altogether, acquisition of international experiences and competencies as well as choice of job requiring international competencies and possibly international professional mobility are on average somewhat more highly rewarded than other study and career options.

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Chapter 7
Winners and Losers

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7.1 Introduction

The preceding chapters look at the outcomes of higher education in European countries, each from a particular perspective. In this chapter we adopt a more holistic view, attempting to determine to what extent particular groups of graduates can be identified as "winners" or "losers" in the labour market. Analyses of labour market successes and failures normally focus on predicting objective measures such as unemployment, over-education and wages. This chapter will also analyse such factors, which implicitly treat participation in higher education as an economic investment on which both individual graduates and societies as a whole hope to recoup a satisfactory economic return. Given the huge sums invested in higher education, this focus on economic returns to education is understandable and legitimate. However, it is important to recognise that there are other ways of looking at success of graduates in the labour market. What if graduates strive for other things than secure employment with high earnings and succeed in reaching those other goals? Are those graduates not also "winners"? More generally, what makes someone a winner (loser) in one dimension does not necessarily imply that he or she is a winner (loser) in other dimensions as well.

In this chapter we will look at determinants of success and failure on both objective and subjective measures. The indicators of objective success or failure are the employment situation – have graduates managed to secure paid work, and if so does this match their own attained level and field of higher education? – and the wages earned. The subjective measures concern work values and the realization of these values, and job satisfaction. We will explore to what extent the objective and subjective indicators have similar predictors. In other words; we will explore to what extent these different indicators overlap or not. Moreover, we will explore to what extent objective success predicts success in the subjective dimensions. Attention will be paid throughout the chapter to country differences in terms of success or failure and how these differences might be explained, as well as possible gender differences and differences by fields and types of higher education. Before presenting the empirical results, we will briefly outline the foundations on which our analyses are based.

Different forms of education–job (mis)match will be studied as indicators of labour markets success or failure; both the most extreme form of mismatch such as unemployment, and vertical educational mismatch which refers to the lack of correspondence between the level of the education acquired and the level required in the job. Also a third form of possible mismatch will be studied, which we call horizontal mismatch; that is working in a job matching one's own level but not one's own field of education. This *may* be a flexible and rewarding way of labour market adaptation, or it might be a situation that is more or less forced upon the individual and represents a kind of mismatch with possibly negative consequences on wages, realization of work orientations or job satisfaction. The identifying of horizontal mismatch is of special interest for our fourth form of mismatch; those being both vertically and horizontally mismatched. This refers to graduate persons holding jobs like for instance taxi-driver or shop assistant. In addition to labour market match or mismatch, our second objective measure of the extent to which the graduates are successful is *wages*.

Different theories have different explanations of success and failures in the labour market. According to the assignment theory (Sattinger 1993) the existence of labour market phenomena as f. i. unemployment and over-education can be motivated as labour market responses to the problem of assigning workers to jobs. Both individuals and jobs can be ranked in terms of skills. Individuals will be ranked according to the skill level they possess and jobs in accordance with the skill level they require. If the there are more skilled workers than there are complex jobs, some individuals will end up in jobs for which they are overqualified. This implies that persons with no-matching jobs will be overeducated, have lower productivity and receive lower wages.

Problems in the educations-work transitions are often explained by the search theory (Hammermesh and Rees 1984), which among other things points to lack of information. Hartog (2000) also points to that due to the search process and to imperfect information unemployment and over-education may exist temporarily and be a result of "waiting room effect". We will examine the labour market situation 5–6 years after graduation, and thus we suppose that the waiting room effect will have minor impact. However, initial problems might have long-lasting effects; thus, the theories of "state dependence" may be relevant contributing to explanations of the occurrence of unemployment and over-education. According to such theories (Heckman & Borjas 1980; Heckman 1981, Andress 1989) unemployment experiences early in the career may have negative effects at a later stage. Persons with a previous period of labour market problems such as unemployment may have an increased risk of being unemployed or having a job for which they are over-educated as a result of a self-enforcing process.

Although over-education is an issue that has been approached in several papers the extent to which over-education or other types of mismatch varies by type of education is studied quite seldom in the literature. In this chapter mismatch by field of study and other characteristics of study programme will be taken into account. Green

and McIntosh (2002) find that business and management studies, as well as social sciences, have the highest over-qualified graduate rates. Heijke et al. (2002) examine the role of 'generic' or 'vocational' educations in the transition to the labour market. They found, among other things, that those with vocational competencies more often had an occupation within own educational domain than those with generic competencies, further, that there was a negative wage effect of having work outside own domain (horizontally mismatched).

Also in the human capital perspective over-education may exist; it may for instance result from a choice because the low-level job is a good investment opportunity (Hartog 2000). The human capital theory (Becker 1964, Mincer 1974) states that a person will be paid in accordance with his/her human capital, but in case of over-education the graduate is not paid according to his/hers potential marginal products (Green et al. 1999, 2002). Empirical research shows that overeducated workers receive lower wages than workers with the attained level of education (Hartog 2000), and empirical research has also shown that human capital factors account for only a part of the wage variation, and for instance it does not account for the gender differences in wages found in many studies. In addition to human capital, also social capital (Bourdieu, 1985; Coleman, 1990) may have an influence on labour market opportunities. This refers to resources situated in social networks.

A job has both a pecuniary and non-pecuniary rewards in the labour market and the graduates do not only strive for secure work or high wages. Mathios (1989) argues f. i. that when analysing wage differentials among highly educated persons, one should take into account the non-pecuniary factors of a job as well. The analysis of realization of work orientations which will be undertaken in this chapter is one way to take into account non-pecuniary factors.

7.2 Labour market situation – match or mismatch

We will investigate the labour market situation among the graduates by the use of a variable we have called "mismatch". This variable is based on the respondent's self-assessment of his/her job in relation to his/hers education. Self-assessment is viewed as the best *available*[1] measure concerning the measurement of education-job mismatch (Hartog 2000).[2]
The graduates are grouped into five categories, ranked in ascending order of presumed severity of mismatch:[3]

1. A job analyst might do a better job, but self-assessment is the most economic method and it probably as valid as job-analyses because the content of jobs change faster than the available instruments for standard classifications of jobs.
2. See Hartog (2000), Allen and van der Velden (2005) and van der Velden and van Smoorenburg (1997) for a discussion of methods concerning the measurement of skills and education-job (mis)match.
3. See further definition in Appendix 4.

1. *Employed with relevant work (that is: no mismatch).*
2. *Horizontally mismatched,* that is working in a job matching one's own level but not one's own field of education.
3. *Vertically mismatched,* that is working in a job matching one's own field but not one's own level of education.
4. *Both vertically and horizontally mismatched.*
5. *Unemployed.*

We will investigate the labour market situation at the time of the survey by educational level and because of this we will use the educational level the graduates had achieved at the time of the survey. We use the label "first level" for graduates who have 3–4 years of higher education (equivalent to bachelors in some countries) *not providing direct access to doctorate*. We use the term "second level" for graduates with 5 years of more higher education *providing direct access to doctorate*.

The number of observations in the analyses below refers to those who belong to the *labour force*, that is being employed, or being unemployed and seeking for a job. The percentage of the respondents who belong to the labour force is 94, varying from 91 per cent in Finland, 92 per cent in Czech Republic, Austria and UK, 93 per cent in Estonia, 94 per cent in France and Italy and 95 per cent in Germany, to 96 per cent in Switzerland and Spain, 97 per cent in the Netherlands and Norway and 98 per cent in Belgium.

Of those who are in the labour force, 4 per cent are unemployed (weighted average for 13 countries), *73 per cent hold relevant employment* and the rest are either vertically mismatched (9 per cent), or both vertically and horizontally mismatched (6 per cent), or horizontally mismatched (8 per cent) according to the definition above. These shares differ a lot by country and level of education, see below.

7.2.1 Labour market situation by country, education level and field of study

The second level graduates are somewhat more often mismatched than first level graduates, but this applies only to vertical mismatch, which involves mostly lower level tertiary jobs in the case of secondly level graduates, but mostly jobs below tertiary level for first level graduates. The share of unemployed is the same in both cases (Table 7.1). Figure 7.1 and 7.2 show how this varies between countries. Those in relevant work are not included in the graphs, to facilitate comparison of the often small proportions in the other categories.

Table 7.1
Per cent mismatch, total sample, by education level

	Horizontally mismatched	Vertically mismatched	Both horizontally and vertically mismatched	Unemployed
First level	10	5	6	4
Second level	7	11	6	4

Figure 7.1
First level graduates. Mismatch at the time of the survey

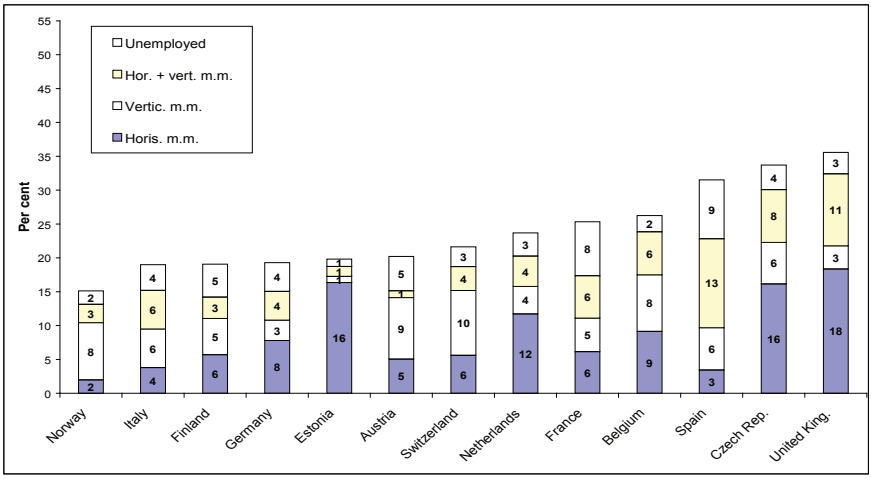
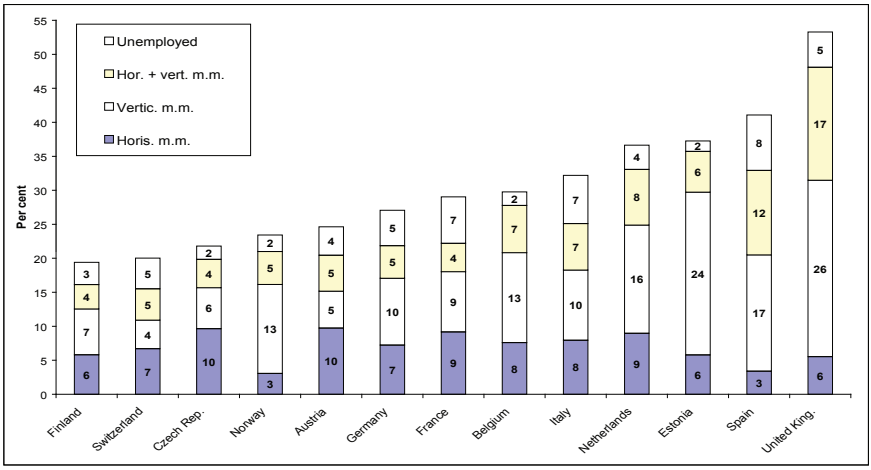


Figure 7.2
Second level graduates. Mismatch at the time of the survey



Both among the first and second level graduates the British and Spanish samples have higher shares that are mismatched than most of the other samples, and this applies also to the Belgian and Dutch samples, however to a less extent. The Finnish and Norwegian samples are among those with the lowest percentages who are mismatched on both levels, followed by Germany and Austria. Else, the country differences vary between the two levels. Among the first level graduates both the Italian graduates and Estonian graduates have low shares who are mismatched and the Czech are among those with the worst situation, while the opposite is the case for second level graduates.

The *type* of mismatch differs a lot in the country samples with lowest shares with a good match. The Czech and the British first level graduates are quite often horizontally mismatched, while the Spanish more often are unemployed and are rather often both horizontally and vertically mismatched. This shows that the Spanish sample more often than the other samples experience the most severe forms of mismatch. The British and Czech samples of first level graduates also have high shares being both vertically and horizontally mismatched. This indicates that their high shares being (only) horizontally mismatched may imply labour market problems.

We see that a relatively high proportions of the second level graduates experience vertical mismatch. This might be due to the fact that at part of them have taken further education and graduated as second level graduates during the period 2001–2005 (2006). If those graduates are overeducated, this may indicate that they hold the same type of position that they held before taking the further education. Table 7.2 shows whether late achievement of second level degree has an impact of the mismatch variable.

Table 7.2
Labour market situation among first and second level graduates. Total sample of 13 countries

	First level graduates	Second level graduates	
		Originally first level graduates; second level degree obtained after reference year*	Second level degree obtained in reference year*
Unemployed	3.7	5.5	4.4
Horizontally and vertically mismatched	5.5	8.5	6.0
Vertically mismatched	5.0	28.8	8.6
Horizontally mismatched	9.9	4.1	7.7
Relevant work	75.8	53.1	73.4
N* (=100%)	9728	1304	12139

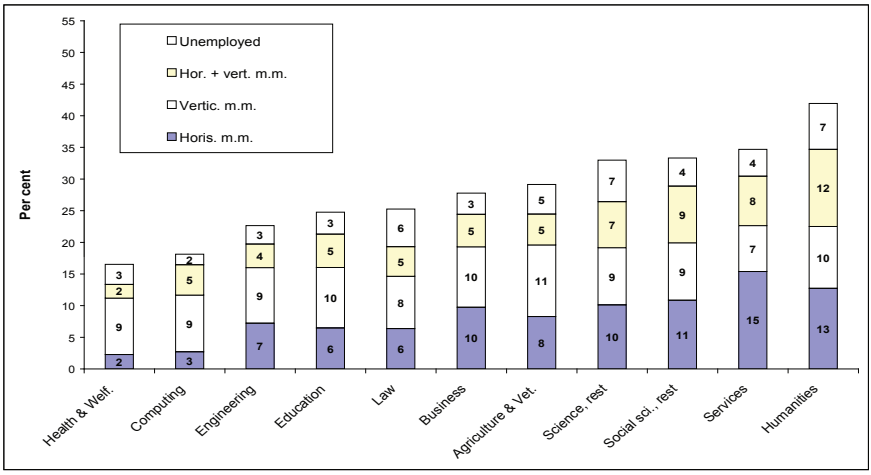
* The year in which the higher education degree referred to in the questionnaire was obtained (in most countries 1999/2000).

Table 7.2 shows that – among other things – the fact that a part of the second level degree graduates have obtained this degree during the 2000–2005 (2006) period, does not have a major impact on the total results for the second level group shown in Figure 7.2. The reason is that the group obtaining second level degree during the 2001–2005 period is small; only ten per cent of the second level group had obtained this degree through further education during the 2000–2005 period. However, we se a great difference concerning the share being over-educated for their job between those who originally had a second level degree and the (originally) first level graduates who later have achieved a second level degree. This means that the returns to education for the latter group do not (yet) fully correspond to their investment in further

education.[4] We will later see whether this also applies to their wages. In multivariate regressions we will take into account whether or nor the degree was obtained through further education or whether the graduates have the same degree at the time of the survey as the one they originally had in the reference year for time of graduation. This will be done both in the wage regressions and in the mismatch regressions.

Figure 7.3 below shows how the labour market situation varies by field of study.[5] The chart shows that Humanities and arts on the one hand and Health and welfare on the other constitute the extreme points. The shares being (only) vertically mismatched (over-educated) differ very little by field of study; it is the combination of the different forms of mismatch versus holding relevant employment that differs. The results in Figure 7.3 also indicate that being horizontally mismatched *may* represent something negative (a real mismatch), because those fields that have the highest share being horizontally mismatched (Humanities, Services, Social Science and Science), also have the highest shares being *both* vertically and horizontally mismatched and/or being unemployed.

Figure 7.3
Mismatch by field of study



4. The point of time the (originally) first level degrees graduated with a second level degree might also be of interest; i.e. it is possible that those who graduated with a second level degree late, for instance in 2004 or 2005, are most vulnerable for being mismatched, and also that this might influence the country differences. We have checked this, and the results were that year of graduation has no effect on the probability of being vertically mismatched, and it also shows that the country differences are not affected by the control for year of graduation.
5. We use the ISCED broad fields of study; however, two of the fields are rather broad and comprise a high share of the graduates. This is Social science, business and law, and Science. We have extracted some of the more vocational groups from this broad categorization. This is Business and management (from Social science) as well as Law. From Science we have taken out the group who has graduated in Computing so that they constitute an own category.

7.2.2 Which factors increase the probability of a good match?

Above we have seen the results of bivariate relations between education level and field of study and the mismatch variable, based on weighted averages. There are a lot of individual variables that are important for the chance of experiencing mismatch such as unemployment and over-education. In this section we will explore the effects of such variables, controlling for the country differences. This will be done by presenting abridged results of multinomial logistic regression models The results will be illustrated in graphs based on estimations of the regression results. [6] The dependent variable is the mismatch-variable described above, which have five different outcomes. The "reference category" in these regressions is "holding relevant work", and we have investigated the probability of being in one of the other four categories relative to holding relevant work. As independent variables we have included demographic variables, educational background variables (field of study, level, grades, vocational study, prestigious study programme, further education) and variables related the graduates' working career both during education and after graduation, as well as parents' education and indicators of social network. The full results are posted on the project website (www.reflexproject.org, see Tables W7.1 and W7.2).

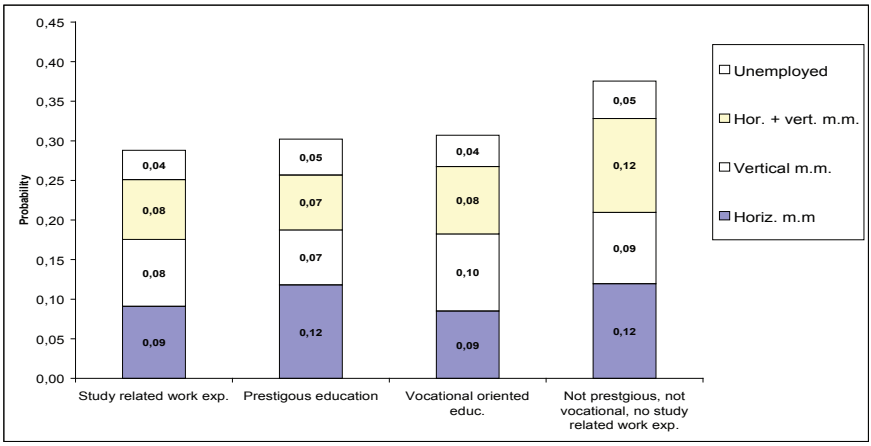
The multivariate analyses confirm that the general pattern of (uncontrolled) differences by field of study shown in Figure 7.3 remains after controlling for other variables, and that most of the differences are significant; those educated in Computing, Engineering, Health and welfare and Education have the best match, and the situation seems to be least favourable for those educating in Humanities, Social science (except Law and Business and management) and Services. This is in line with the findings of Green and McIntosh's (2002) study of British graduates when it comes to Social science but not with regard to Business and management. The effects of selected other variables are shown in Figures 7.4 – 7.6 below.

6. The estimations are made according to the formula

$$P = \frac{e^{z_j}}{1 + \sum e^{z_j}}$$

where Z = the intercept plus the effects of the control variables ($Z = B_0 + B_1X_1 + B_2X_2 \ldots$), and j is an expression of the different outcomes on the dependent variable (the logit has j – 1 different sets of parameters).

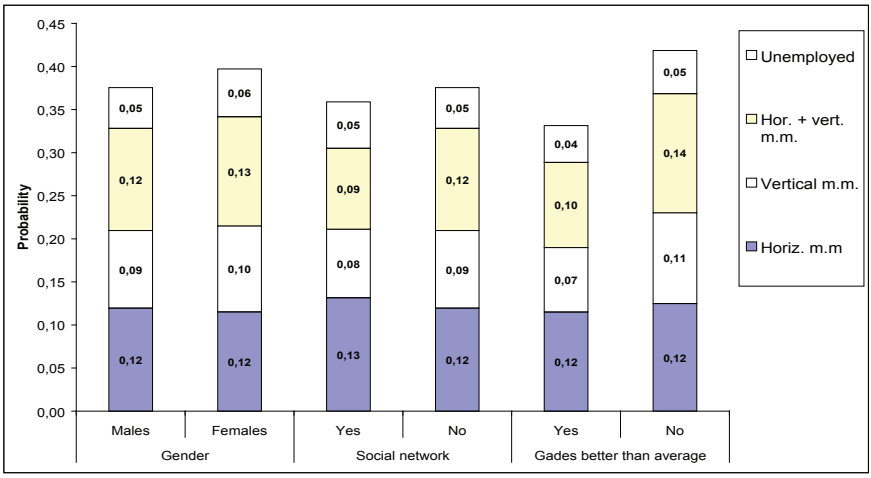
Figure 7.4
Mismatch by characteristics of study programme and relevant work experience before graduating. Estimated probabilities



Reference category: Dutch males, second level degree in Social science, average age and grades, and average amount of work experience after graduation.

Figure 7.4 shows the effect of study related work experience during study, having graduated from a prestigious education or from a vocational oriented study programme respectively by comparing each of the first three columns with the last column. We see that all the three mentioned factors increase the probability of holding relevant work. Although the effects on unemployment, horizontal or vertical mismatch, or both vertical and horizontal mismatch respectively are small, they go in the same direction so that the effect concerning relevant work (in total) is quite high. Study related work experience reduces all kinds of mismatch, but especially the risk of being both horizontal and vertical mismatched. Being graduated from an academically prestigious study programme reduces the risk of being vertically mismatched or both vertically and horizontally mismatched, whereas a vocational oriented study mainly reduces the risk of being horizontally or both horizontally and vertically mismatched. The latter is a confirmation of the results of Heijke et al. (2002), mentioned in the introduction. Below we will look at effects of other variables that might affect the labour market situation.

Figure 7.5
Mismatch by gender, social network and grades. Estimated probabilities



Reference category: Dutch males (except the second column), second level degree in Social science, average age and average amount of work experience after graduation. In the first four columns: average grades. All columns: value 0 on all other variables in the equations.

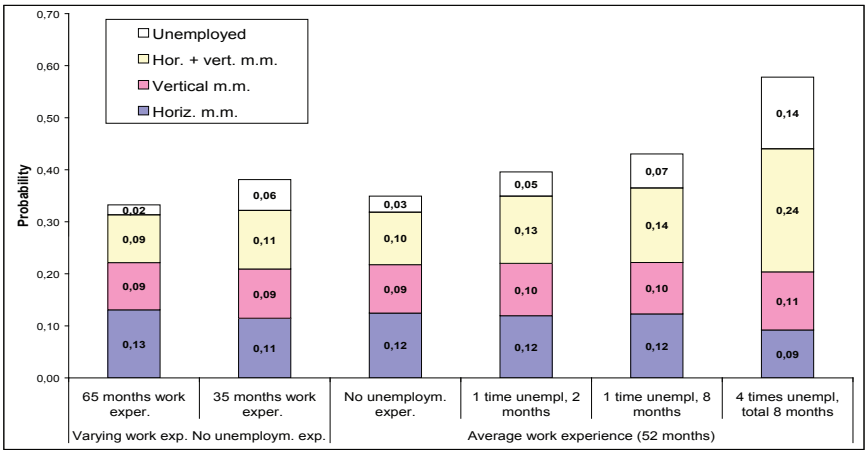
Figure 7.5 shows that the difference between male and female graduates is very small, though the effect of gender is significant. Females have somewhat higher risk of being unemployed and over-educated than males (all other things kept constant). Also having a useful social network has only a small impact, although it does reduce the risk of being both horizontally and vertically mismatched. What *has* a clear effect is grades. Those who report having better grades than their fellow students clearly have less risk of being vertically mismatched or both horizontally and vertically mismatched than those who do not report this.

Our next issue is the effects of unemployment experiences and work experience.[7] We have controlled for both the number of months that the graduates have reported having had paid employment after graduation, the number of unemployment spells and the duration of unemployment. Differences in the amount of work experience are partly due to further education, but this is also controlled for. Thus, Figure 7.6 shows the net effect of work experience and unemployment experience. One third of the graduates reported some unemployment experience, with the lowest shares in Norway, Estonia and the Netherlands and the highest share in Spain (56 per cent!).

7. The estimates in Figure 7.4 and 7.5 above is based on a model where all independent variables except unemployment experience is included, the estimates in Figure 7.6 is based on an extended model including control for number of months with unemployment experience and the number of times unemployed.

The net effect of employment experience may be seen as an effect of acquired human and social capital. We consider the possible effect of unemployment experience as an indicator of state dependency (see the introductory part).

Figure 7.6
Mismatch at the time of the survey by work experience and unemployment experience after graduation. Estimated probabilities



Reference group for the estimates: Dutch male with second level degree in Social science, average age and grades. Else; value 0 on all other variables in the equation, except the variables mentioned in the graph.

There is an effect of both the amount of work experience (irrespective of unemployment spells), and of the duration and number of unemployment spells, and the latter seems to have the greatest effect. The two first columns in Figure 7.6 show that the risk of being unemployed is only 2 per cent among those with 65 months of work experience versus 6 per cent among those with 35 months of work experience (estimated percentages based on no unemployment spells, with all other variables held constant). The last four columns show the estimated percentages for different numbers and total durations of unemployment spells (based on average work experience). Those with only one unemployment spell with the duration of two months have 2 per cent points higher risk of being unemployed at the time of the survey (5 against 3) than those with none unemployment spells, and the risk of being both vertically and horizontally mismatched is 13 versus 10 per cent respectively. If the unemployment spell lasted longer, for instance 8 months as exemplified in the graph, the risk of being unemployed at the time of the survey increases and this also applies, moderately, to the risk of being both vertically and horizontally mismatched. However, the number of times one has been unemployed has an independent effect. This is displayed in the last column, which shows very high risk of being unemployed or both horizontally and vertically mismatched. [8] It is important to note that only the most severe forms

8. The example in this column is moderate; the mean duration of total unemployment of those who have been 4 times unemployed is 14.7 months, but they represent only a very small group. Among those

of mismatch, namely unemployment and both vertical and horizontal mismatch, are strongly affected by previous unemployment experience and/or lack of work experience. There is little or no effect of such experiences on the risk of being only vertically or horizontally mismatched.

The results indicate that problems in the initial phase of transition from education to work may for a substantial part of the graduates result in more long-lasting problems in getting relevant work and possibly stable work. This refers to so-called 'state dependence' (Heckman and Borjas 1980, Pedersen & Westergaard-Nielsen 1993), as mentioned in the introductory part.

The results of regressions that include control for work experience and unemployment spells also give information that contributes to an explanation of the country differences depicted in Figures 7.1 and 7.2. After having controlled for work and unemployment experience the effects of the country dummy variables change and for instance do the Italian and Spanish samples have a rather low risk of being unemployed after such controls. This implies that a considerable part of the country differences shown in Figures 7.1 and 7.2 are caused by country differences in the initial transition phase and differences between the country samples in the amount of work experience among the graduates, and thus, country differences in the general labour market situation.

In addition to effects that are illustrated in the charts above, some other findings should be mentioned. Respondents who have (at least one) parent with higher education, have a (somewhat) decreased risk of being vertically mismatched and being unemployed, but the probability of being (only) horizontally mismatched is somewhat increased if the parents have higher education. This might be interpreted in this way; these graduates have, through their acquaintances/parents, been presented for job possibilities that they find interesting even if the job does not correspond to their field of study. Other findings are: those who have obtained a second level degree during the 2001–2005 period have – as expected (see Table 7.2) increased risk of being vertically mismatched compared to other second level graduates and the first level graduates (controlled for labour market experience). Correspondingly those who had obtained a PhD/specialist degree, have a large risk of being vertically mismatched, and also an increased risk of being unemployed. However, those who had obtained a master/PhD degree during the 2001–2005 period have reduced risk of being horizontally mismatched, indicating that this further education tightens the bonds to their field of study.

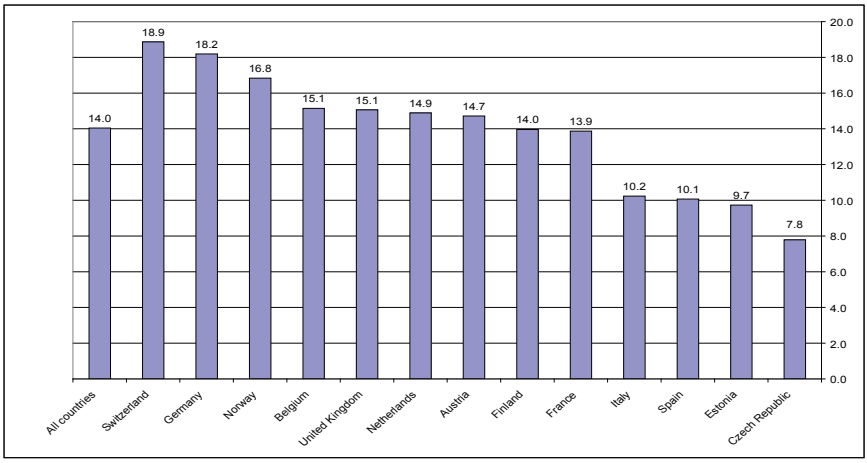
who have experienced at least one spell of unemployment the average total duration is 7.5 months.

7.3 Wages

Wages are the pecuniary reward of being employed. When comparing wages across countries, it is important to take into account that it is not only the wage level that differs, but also the cost of living. It might be meaningless to compare wages across countries without taking these differences into account. In order to do cross country comparisons, we have converted the wages to purchasing power parity (PPP) to correct for the differences in costs of living. One has to keep in mind that this type of adjustment is far from perfect because of the difficulty in finding "baskets" of goods and services that are strictly comparable across countries. Nonetheless, using even an imperfect PPP corrections provides a much better basis for comparing wages across countries than no correction at all.

Figure 7.7 shows the hourly wages converted to PPP and Euro for each country. The average hourly wage for all countries is 14.0 Euro, but varies still a lot between countries.

Figure 7.7
Hourly wage wages converted to PPP and Euro



Broadly speaking, the countries can be divided into three groups, those with the highest wages, the middle group and those with the lowest wages. The figure shows that graduates from Switzerland, Germany and Norway have the highest wages. It is not surprising that graduates from Switzerland and Norway is on the top, but it is surprising that Germany is that high. As expected graduates from Italy, Spain, Estonia and the Czech Republic have the lowest wages. Graduates from the Czech Republic earn less than half of what graduates from Switzerland do and might be considered as a loser on this dimension. The middle group consists of graduates from Belgium, UK, the Netherlands, Austria, Finland and France.

We are interested in what factors have a positive influence on the wages and what factors have a negative impact. To do this we have performed regression analysis between the logarithm of the hourly wage[9] and a set of explanatory variables.[10] Our main focus is on to what extent gender, human capital related factors (educational level, field of study, whether the study programme is academically prestigious, grades), mismatch in the labour market and type of job contract have impact on the graduates' wages. We have performed analyses where we look at all countries together as well as separate analyses for each country. The results of the analysis are summed up in Appendix 6 which shows the percentage change in wages for each of the variables when the other variables are constant, and the main results are also illustrated in graphs below.[11]

The wage differences between countries remain large after controlling for differences between the country samples with regard to human capital related variables and other factors that might cause wage differences. This is shown in Figure 7.8, which shows the controlled and estimated differences between the countries, with the Dutch sample serving as the reference category. The difference between the Netherlands and the high income countries Switzerland, Germany and Norway is somewhat reduced after control for the independent variables, however, the difference is somewhat increased with regard to a lot of the other countries (for instance Austria, Italy and Estonia).

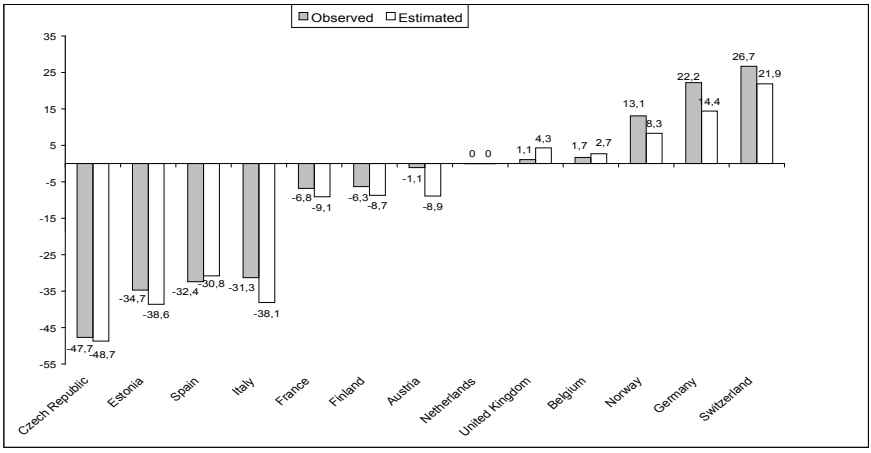
7.3.1 Gender and wages

There is a huge literature documenting lower wages among females compared to males. Parts of the wage differentials have been explained by the fact that males and females choose different fields of study, where females choose education that qualifies for jobs with lower wages than do men (Rumberger and Thomas 1993). In most countries male dominated fields of study have generally higher wages than female dominated (Polachek 1978, Rumberger and Thomas 1993). Also among individuals with identical education males and females have a tendency to have different careers. Women have a tendency to be channelled into jobs with lower wages compared to those held by men (Wood et. al. 1993). Men have a greater tendency to be in jobs related to high wages and good career prospects whereas women to a greater extent than men have a tendency to be in jobs that make it easy to combine family-obligations and work. In this chapter we will examine both whether or not we find gender differences in wages

9. The respondents gave information on the gross monthly wages in the main job. The monthly wage has been converted to hourly wages by correcting for contract working hour.
10. We have estimated two models. In model 1 we have included gender, age, relative grades, level of education, field of study, vocationally oriented study, prestigious study programme, relevant work experience before and after graduation, working hour, parents with higher education and position in students or other voluntary organisations is used in model 1. In model 2 we have in addition to the variables already mentioned mismatch variables and a variable indicating whether the job is permanent or not. The regression coefficients are available in Table W.7.5 on the Reflex website.
11. The percentage impact on wages of a variable is estimated by the following expression: $p=100(e^b-1)$ where p is the percentage wage differential and b is the regression coefficient. The regression coefficients used are from model 2.

(after control for human capital factors) and whether or not there are gender differences in work orientations and the realization of these orientations.

Figure 7.8
Wage differences between countries, estimated and observed

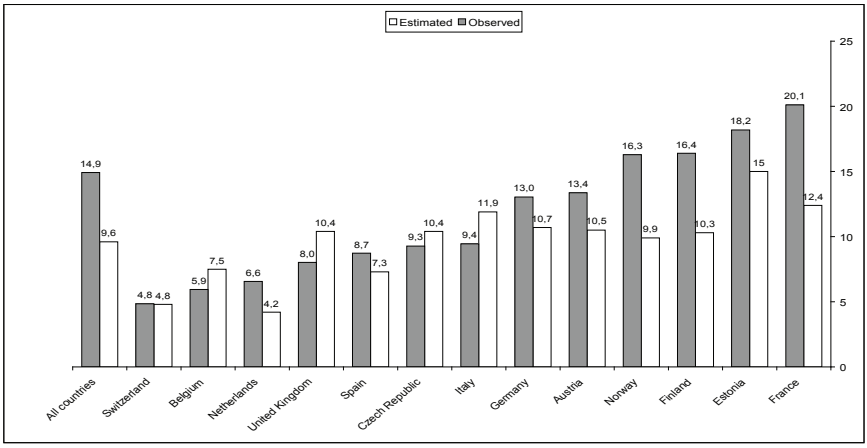


The finding that women have lower wages than men is also the case for our graduates (see figure 7.9). The column "observed" shows that females on average earn 15 per cent less than males. That is quite a big difference. It is interesting to notice that females receive lower wages than males in all countries but the gender gap varies across countries. The differences are smallest in Switzerland and Belgium (5 and 6 per cent respectively) and greatest in Estonia and France (18 and 20 per cent respectively). It is important to keep in mind that the figures mentioned refer to the actual observed difference and do not take into account that males and females might have different level of education or different field of study. Generally females have shorter education than males, are concentrated in fields of study that pay less and might have less work experience. This might explain some of the wage differences between males and females. The column "estimated" in figure 7.9 refers to the gender gap after controlling for these and other factors that might influence wages.

We see that even after controlling for factors that might influence the wages, females still receive significant lower wages than males, about 10 per cent, when we look at all countries together. This means that after controlling for other variables that might influence wages, the initial gender differences in wages has been reduced by one third but must still be characterized as high. Significant lower wages among females apply to all countries. The most striking result of controlling for relevant other variables is that the country differences in gender gap are reduced dramatically. In countries with a small observed gender gap, controlling for other variables makes little differences. In some of these countries (Belgium, UK, Czech Republic and Italy), the estimated gender gap is even somewhat higher than the observed gender gap. In contrast,

controlling for other variables makes a big difference in most of the countries where the observed gender gap was large. The Nordic countries, which often are considered as leading countries when it comes to equal opportunity policy have an estimated gender wage gap around the average for all countries. The highest estimated gender gap is found in Estonia. Although the gender gap in earning varies between countries, we can conclude that women in general might be considered as wage losers and men as wage winners.

Figure 7.9
Wage differences between males and females by country



7.3.2 Education and wages

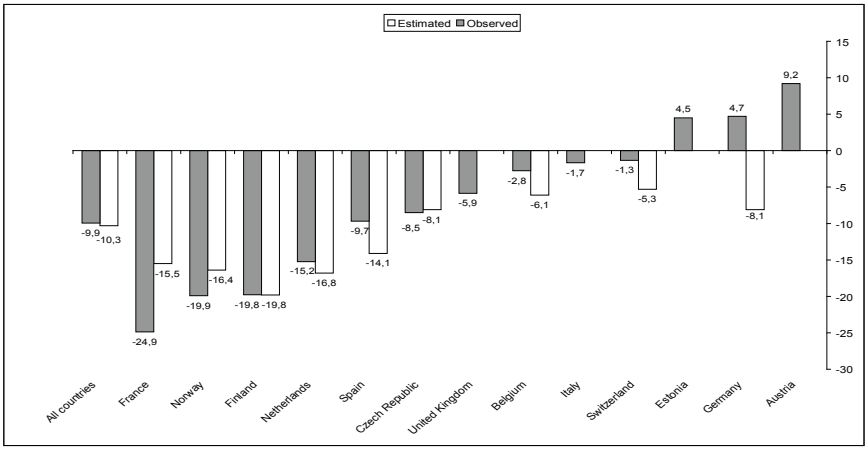
Wages differ both between different levels of education and between different fields of study. Previous research has found that there is a tendency that professionally oriented fields of study such as Business and Engineering have the highest wages whereas those in "softer" fields of study as Humanities have lower earnings (Finnie and Frenette 2003). This will also be examined below.

Another assumption in accordance with the human capital theory is that the longer education the graduates have, the higher is the wages supposed to be. We will now examine to what extent this applies to our graduates as well. Figure 7.10 shows the average difference in wages between first and second level degree graduates as a percentage of the wages of second level degree graduates.[12] Again the column "observed" is based on the uncontrolled average wages while the column "estimated" is based on the regression analyses.

12. The educational level refers to the level in 1999/2000. We have not taken into account whether the graduate hade finished a second level or PhD/specialist degree during the years from 2000 to the time of the survey in the column "observed". However, in the column "estimated" information on further education is used as explanatory variables.

If we look at the column "observed" we see, as expected, that the wage level is highest among second level graduates when we look at all countries together as well as in most of the countries. On average, graduates with a first level degree have 10 per cent lower wages than those with a second level degree but the differences vary a lot across countries. The largest differences between first and second level degree graduates are found in France (25 per cent) and Norway and Finland (20 per cent). However, in Germany, Austria and Estonia graduates with a first level degree have surprisingly the highest wages. In Italy, Switzerland and Belgium the wages among second level degree graduates are only slightly higher than among first level degree graduates. After controlling for other variables – including whether or not one has gone on to complete a higher level degree after 2000 – the country differences become somewhat smaller, but the overall differential remains about the same. The initially large differential in France and Norway is considerably reduced, while the apparent anomaly of higher wages for first level graduates in Estonia, Germany and Austria disappears (in the case of Germany is even reversed) after controlling for other variables.

Figure 7.10
Wage differentials between first and second level degree graduates



Having undertaken further education increases a person's human capital and we are interested in to what degree it is reflected in the wages. The regression analyses indicate that having undertaken further education is reflected in the wages. Graduates with first level degree who have completed a second level degree have in general a wage gain of 12 per cent after controlling for among other things whether they are experiencing labour market mismatch. This means that she/he has a wage almost in line with those with a second level degree from 2000 If we do not control for labour market mismatch, the wage gain is smaller (8 per cent) and the originally first level graduates who had achieved a second level degree earn on average 2 per cent less than those with a second level degree from 2000. The reason for the lower wage gain is that those who have completed a second level degree as further education to greater extent

are newcomers in the labour market and exposed to mismatch. Graduates in most countries who have completed a second level degree as further education experience a wage gain when controlled for mismatch. The exceptions are Italy, Austria, United Kingdom and Estonia. Second level degree graduates who have completed a PhD degree have also, when looking at all countries together, a wage gain of 9 per cent after controlling for among other things whether they are experiencing labour market mismatch. This is also the case in Italy, Austria, Finland the Czech Republic and Estonia. The wage gain in these countries varies between 9 and 12 per cent. If we do not control for labour market mismatch, there is in general no wage gain. The reason is that those having completed a PhD even are more newcomers in the labour market than graduates with first level degree who have completed a second level degree.

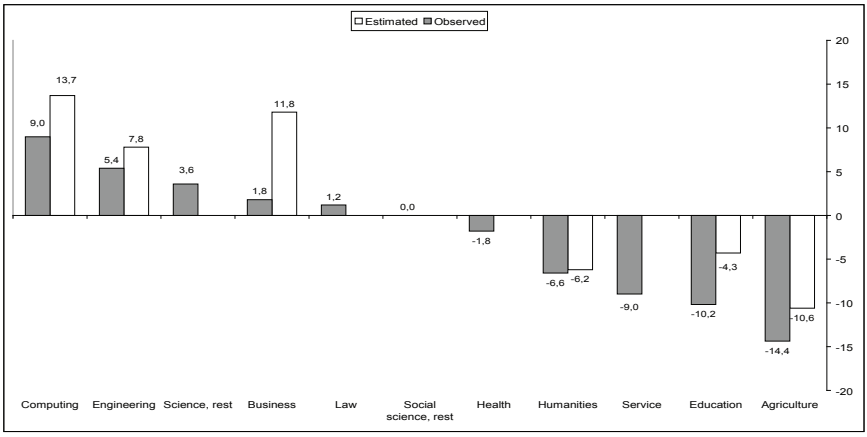
As mentioned earlier, wages differ between different fields of study. Previous research has shown that there is a tendency that professionally oriented fields of study such as Business and Engineering have the highest wages whereas those in "softer" fields of study as Humanities have lower earnings (Finnie and Frenette 2003). We have examined to what extent this is the case for our graduates as well. Again the column "observed" is based on the uncontrolled average wages while the column "estimated" is based on the regression analyses. Only significant results are referred in the "estimated" column.

If we look at the column "observed" in figure 7.11 we see that in general, graduates in Computing, Engineering and Science have the highest average wages compared to graduates in Social science, while graduates in Agriculture, Education and Humanities have the lowest. These results are mainly in line with results from previous research and indicate that graduates in Computing, and Engineering are wage winners and graduates in Agriculture and Education wage losers. However, the results are not universal but vary across countries (see results on the project website, Table W.7.5).

The column "estimated" shows that what field of study a person graduates from, has impact on his/her wage. There are, when looking at all countries together, big wage differences between different fields of study even after controlling for other factors. The wage winners when looking at all countries together are graduates in Business and Computing (they have 12 and 14 per cent higher wages than graduates in Social science) and the losers seem to be graduates in Agriculture and Humanities who have respectively 11 and 6 per cent lower wages. However, the result is not universal as it varies somewhat between different countries which fields of study are wage winners and wage losers.

The regression analyses also indicate that those graduating from a prestigious study programme in general have higher wages than those who are not graduating from such programmes (5 per cent). However this is not the case in Austria, Germany and the Netherlands where there are no significant effect. The wage gain for the rest of the countries varies between 2 and 12 per cent (the Czech Republic and Estonia respectively).

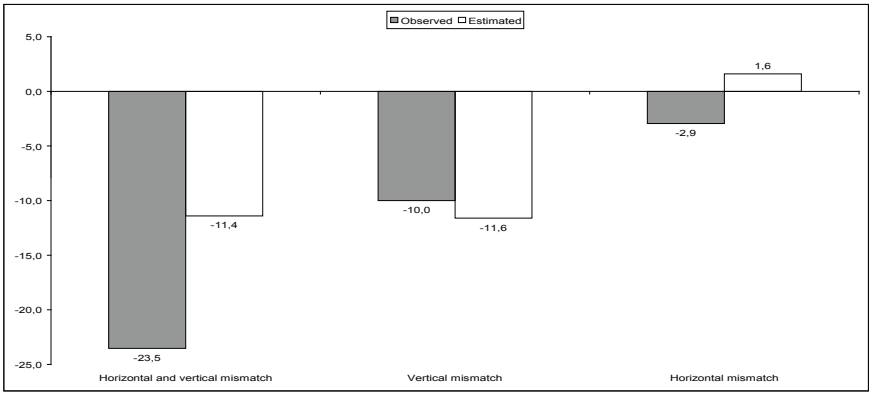
Figure 7.11
Wage differentials between fields of study



7.3.3 Mismatch and wages

One important objective of this chapter is to study whether those experiencing labour market mismatch also are losers on other outcome indicators as for instance wages. Figure 7.12 shows the wage differentials between graduates experiencing labour market mismatch and graduates in relevant work.

Figure 7.12
Wage differentials between mismatched graduates and graduates in relevant work



Those graduates who are *both* horizontally and vertically mismatched seem really to be losers when we look at the uncontrolled average for all countries. They have on average wages that are 24 per cent lower than those in relevant work. After controlling for the other factors that have impact of wages, the wage gap is reduced to 11 per cent, which is still considerable, and about the same as for those who are only vertically mismatched. Both groups can therefore be regarded as losers in this respect.

Interestingly, controlling for other variables makes little difference for those who are only vertically or only horizontally mismatched. The differential is increased slightly in the case of vertical mismatches, and even switches from a small negative to a small positive differential in the case of horizontal mismatches. Consequently, the latter group cannot be regarded as losers in this respect.

The general pattern of effects is replicated in most countries, with some small differences. The lower wages for those being both horizontally and vertically mismatched compared to those in relevant work apply to most countries except for Italy, UK, the Czech Republic, Belgium and Estonia where there is no significant effect. The wage loss for the rest of the countries varies between 8 (Finland) and 19 per cent (Norway). The negative effect on wages of being vertically mismatched applies to all countries except for Italy and Estonia and indicates that vertically mismatched persons in most countries are losers. The wage loss varies between 4 (Switzerland) and 17 (Finland). In some countries like Finland, Norway, the Czech Republic and Switzerland the positive estimated effect of being only horizontally mismatched was substantial, these graduates earning between 4 and 12 per cent more than those not experiencing any kind of mismatch (see Reflex website, Table W.7.5). In contrast, horizontally mismatched graduates earned 8 per cent less than relevantly employed graduates in Spain.

Another simple way to study the relation between being mismatched and wages is to see to what extent the wage distribution depends on the status on the mismatch variable. We have distributed the graduates in each country on three different wage groups, depending on whether they were among the 25 per cent with the lowest wages, among the middle 50 per cent or among the top 25. Table 7.3 shows the simple relation between mismatch and wage group.

Table 7.3
Mismatch and wages (bottom 25 percent, middle 50 per cent and top 25)

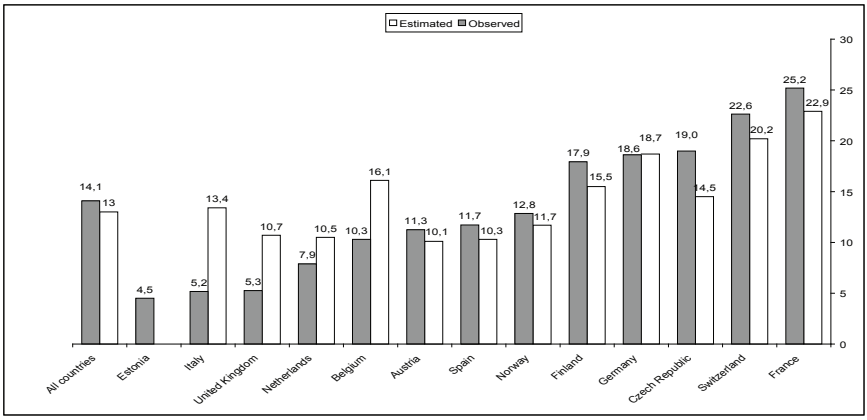
	Total	Bottom 25 per cent	Middle 50 per cent	Top 25 per cent
Horizontal mismatch	100.0	21.3	53.9	25.0
Vertical mismatch	100.0	35.2	47.2	17.6
Horizontal and vertical mismatch	100.0	49.8	41.2	9.0
No mismatch	100.0	22.7	50.8	26.5
Total	100.0	25.4	50.1	24.4

The table shows that half of those being both horizontally and vertically mismatched have wages among the bottom 25 per cent whereas a little above one third of those vertically mismatched fall in the same group. These groups are also less frequent observed among the top 25 per cent. This indicates that the groups are wage losers. Those horizontally mismatched do not deviate much from those who are not mismatched and the results support the conclusion that the horizontally mismatched might not be considered as wage losers.

7.3.4 Temporary jobs and wages

Temporary jobs are often considered to be bad jobs because they tend to pay less and because workers in temporary jobs are less satisfied with their job than workers in permanent jobs (OECD 2002). However, among persons with higher education prestigious jobs as research fellow and researchers are in most countries based on temporary contracts with a moderate wage level, indicating that temporary jobs might be quite heterogeneous and not necessarily bad. Figure 7.13 shows to what extent there are wage differentials between those in temporary and permanent job in our sample. The graph shows that both the uncontrolled ("observed") and controlled ("estimated") wage is higher among those in permanent jobs compared to those in temporary jobs. This is the case in all countries, but the size of the difference differs between countries. The uncontrolled average for all countries shows that those in permanent jobs earn 14 per cent more than those in temporary jobs. The average wage gap is almost unaltered after controlling for other factors that might affect wages, indicating that those in temporary jobs might be considered as wage losers. However, again the differences between countries are somewhat reduced after controlling for other variables. As figure 7.13 shows, the size of the wage differential between those in permanent and temporary jobs varies a lot between countries with no significant wage differences in Estonia to 23 per cent in France.

Figure 7.13
Wage differentials between persons in temporary and permanent jobs. Per cent



7.3.5 Other factors that have impact on wages

Grades above the average increase the wage by 3 per cent, and having graduated from an academically prestigious study programme increase the wage with somewhat above 5 per cent. Having parents with higher education increases the wage with about 2 per cent point, whereas social network seems to have a small negative impact, and vocational oriented study has a rather small positive impact. These are net effects for the total sample after control for all other variables, and the effects vary across countries.

7.4 Work orientations

The fact that there are several dimensions of orientations towards work which determines whether or not one is satisfied with one's situation might be especially important for the graduates in our sample. The reason is that they are educated and live in a part of the world that, according to Inglehart et al. (2004), is characterised as postmodern societies, where the cultural values of the population is more strongly characterised by "self expressions values" than "survival values". This refers to most of the REFLEX country samples. These countries are advanced industrial societies with high and growing material wealth; "which reduces the basic existential constraints on human choices" (Inglehart et al. 2004:8). Further, according to Inglehart et al. (ibid) "the rise of a knowledge-based economy makes people intellectually independent, widening the areas in which people have to rely on their own choices".

Nearly all the countries in our sample belong to the part of the world where "self expression values" *and* secular-rational values (the latter as opposed to traditional values) are highly important. However, there are differences also between our countries, something which may be of interest when we examine the work orientations among the graduates in the REFLEX country samples. Among our 13 country samples all the countries except Estonia and Czech Republic are characterized as high income countries. Norway, Germany, Estonia and Czech Republic are characterized as the countries that are most secular (characterised by secular-rational values) and Spain and Italy the least (Inglehart et al. 2004). The Netherlands, Norway, Austria, Switzerland and UK are the countries that are most characterized by self-expression values; and Estonia the least. Norway and the Netherlands are the two countries that have highest values on both the dimensions taken together and Spain and Italy (especially Spain) the least. This may be due to differences in cultural heritage and, also, to some degree, differences in the country's economic development and situation during the last (preceding) century. The country differences between countries that belong to the high income countries are however not large, because, as Inglehart et al. (2004:13) says, "all high income countries rank relatively high on both dimensions" and " economic development seems to push societies in a predictable common direction, regardless of their cultural heritage".

Another, but corresponding, way of studying work values is through the characterization of the work values as either "extrinsic" or "intrinsic" (Wang 1996, in Farag and Allen 2003). The extrinsic work orientations are connected to survival (pecuniary returns, career prospects, cf. survival values mentioned above), intrinsic values are things that employees seek from their work activities to satisfy their "higher order needs" (Maslow 1954) such as autonomy, interesting work, use of skills and knowledge, variety and social needs (Farag and Allen 2003), cf. the "self-expression values" mentioned above.

Later in this chapter we will see whether such a dichotomization gives meaning when we examine the response to questions of work values in the REFLEX survey, and we will see to what extent these types of values differ between our country samples, and between females and males. We will also investigate the outcome of the work orientation (job characteristics), and finally we will see whether this influences the graduates job satisfaction.

7.4.1 Factor analyses of work values

Work orientations (values) are examined in the REFLEX questionnaire by the use of ten questions, all with scale 1–5 referring to the extent to which the respondent attached importance to the ten items of work orientations (the items are shown in Table 7.4). In additional questions the respondents were asked to what extent these orientations (then understood as job characteristics), apply to current work. This makes 20 questions. Given the fact that we will look at both country and gender differences, we will see how the values may be clustered into a smaller set of items. We have done this by the use of factor analyses, cf. Table 7.4.

Table 7.4
Work values, results of factor analysis

Values	Career (Factor 1)	Professional (Factor 2)	Social values (Fac. 3)
1 Work autonomy	-0,018	**0,565**	0,087
2 Job security	0,384	-0,123	**0,532**
3 Learn new things	0,177	**0,754**	0,088
4 High earnings	**0,820**	0,025	0,067
5 New challenges	0,310	**0,735**	-0,132
6 Good career prospects	**0,743**	0,319	-0,061
7 Leisure activities	0,130	0,010	**0,691**
8 Social status	**0,609**	0,089	0,238
9 Useful for society	-0,121	0,441	**0,515**
10 Combine work with family	0,018	0,092	**0,758**

Note: The Czech sample is not included in the analyses, because of lack of information on some of the items. Only observations with valid response on all the ten items are included.

The factor analysis of work values clearly distinguishes three types of work orientations, that is: Factor 1: Career and status orientation (19 per cent of variance[13]), Factor 2: Professional/innovative (flexible) orientation (17.5 per cent) and Factor 3: Social oriented values (family, security and altruistic values) 17 per cent, which sums up to 53.6 per cent total variance explained.

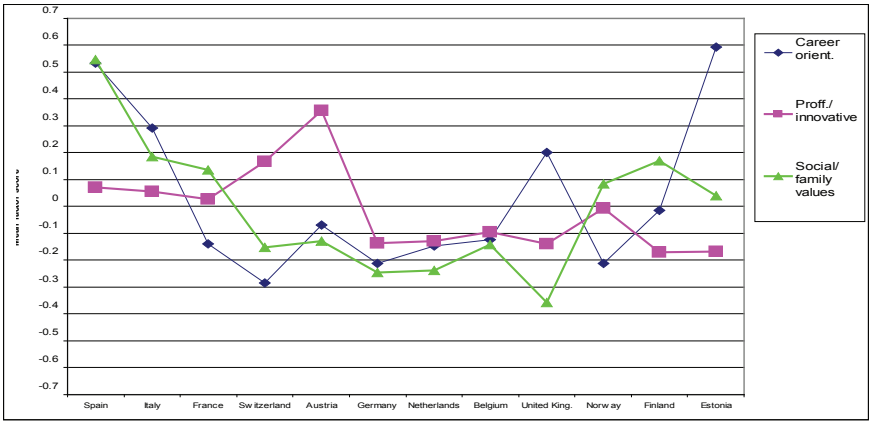
The way the values are clustering fits quite well to the characterization of values based on Inglehart et al. (2004) and Wang (1996) mentioned above. Factor 2 "Innovative/professional" contains the values "work autonomy", "new challenges" and "learn new things" and thus it covers the "self-expression-values"/"intrinsic" values. Factor 1 (earnings, career) is comparable to "survival values"/"extrinsic" values. We see Factor

13. Per cent of variance based on rotation sums of squared loadings.

3 as a combination, whereas "job security" can be labelled as an extrinsic value or a "survival-value"; "combining work and family tasks" and "enough time for leisure activities" as both extrinsic and intrinsic values. "Doing something useful for society" must probably be seen as an intrinsic (self-expression) value. Farag and Allen (2003) regard "combining work and family tasks" and "enough time for leisure activities" as extrinsic values, because they are not directed to work as such. However, these kinds of values may *also* be interpreted as "post-modern self-expression" (and as such intrinsic values) to satisfy "higher order" psychological needs.

Do these values vary between the country samples in the same way as the cultural values described of Inglehart et al. (2004)? We have investigated how the factor scores differ between the countries and males and females (Figures 7.14–7.17). In the graphs value 0 represents the average score for the total sample of 12 countries for each of the three dimensions. Those with positive values score above the average on the dimension in question, those with negative values score below the average.

Figure 7.14
Mean factor scores by country, career orientations, professional/innovative orientations and social/family oriented values



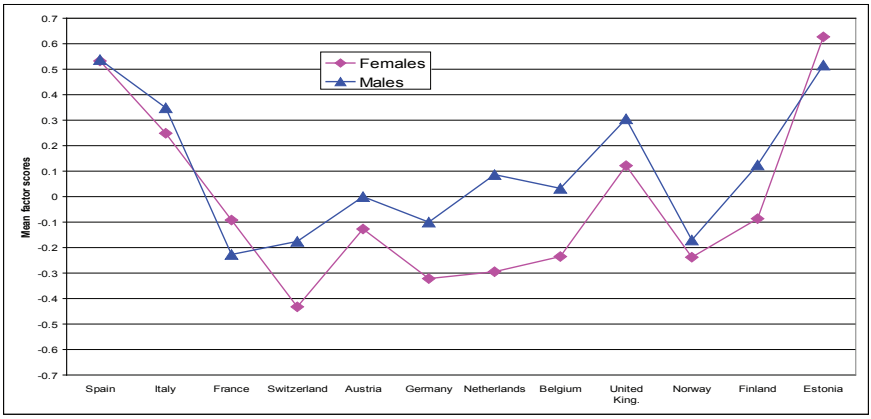
The results show that the Estonian and Spanish samples score far above average on factor 1 (career orientations), and also the Italian sample score above average on this factor. This fits well to the scores of Spain, Estonia and Italy in Inglehart et al.'s (2004) cultural map mentioned in the introduction, and it also fits well to the results in Figure 7.7, which depicted that the graduates from these three countries were among the four country samples with the lowest wages (converted to PPP, se the section on wages above). (The fourth country, Czech Republic with the lowest wages, is as mentioned above, not included in the Figure 7.14.) However, also the British score above average on this factor. The Swiss sample, and next the German sample, the two countries with the highest wages (cf. Figure 7.7) score below the average on the career-factor.

When it comes to Factor 2 (professional/innovative values) the country differences are much smaller; such orientations are common values that seemed to be shared by the vast majority of the respondents. Only the Austrian and Swiss sample score clearly above the average on Factor 2. The results with regard to Factor 2 do not confirm that respondents from (all) the most self-expression countries according to Inglehart et al.'s cultural map score above the other countries, neither do they confirm that Italy and Spain score below. However, Inglehart's cultural map was confirmed by the results concerning career orientations.

What about Social values? The clearest difference in Figure 7.14 is the difference between the Spanish and British samples, the Spanish sample scoring especially high, and the British are scoring rather low. Thus, the Spanish sample distinguishes oneself by high scores on both factor 1 and factor 3. This might be interpreted in the way that the put more weight on the "extrinsic" (survival) values (we asses the social values orientation as a combination of extrinsic and intrinsic values) than the other country samples and thus confirming the cultural map of Inglehart et al. (ibid) mentioned above.

There are gender differences in addition to country differences in work orientations. This will be illustrated below.

Figure7.15
Career orientations. Mean factor scores, males and females by country

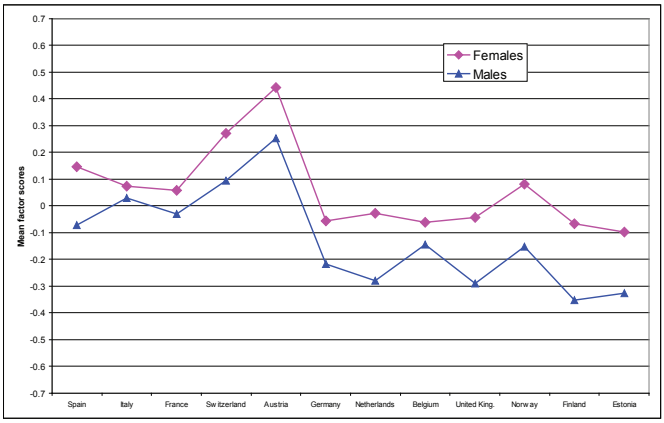


The overall tendency is that that the country differences apply both to males and females. Both males and females in the Estonian, Spanish (and next) Italian samples (low-income countries) score above average on the factor scores for career orientations. In many, but not all countries, the males score above the females. This is clearest

for the Swiss, Dutch and German samples. Interestingly, in France and Estonia males score lower than the females, although the absolute level is very different in both cases. The fact that females score somewhat higher than males in France and Estonia may be a reaction to the large wage differences between males and females in those countries (see Figure 7.9). However, in most countries female graduates score lower on career orientations and earn less than men. It is thus conceivable that the lower weight put on career and earnings by women may contribute to an explanation of the gender wage differentials[14]. We will return to this assumption later in this chapter.

When it comes to Factor 2, professional/innovative orientations, the pattern is again similar for men and women, with women scoring higher in all countries than men (see Figure 7.16). The gender difference is largest in the Finnish, British, Dutch and Estonian samples. The results indicate that males are more driven by extrinsic values than females, and that females are driven more by intrinsic values than males.

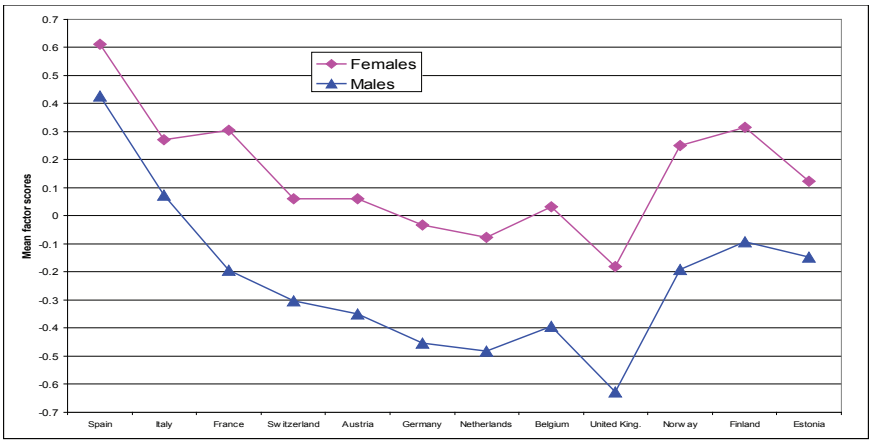
Figure 7.16
Professional/innovative orientations. Mean factor scores, males and females by country



The results for Factor 3 (social/family oriented values) show large gender differences, with females scoring much higher than males in most countries (See Figure 7.17). Despite this, the curves for the country differences are quite similar for males and females.

14. France and Estonia would in that case form exceptions to the rule.

Figure 7.17
Social/family oriented values. Mean factor scores, males and females by country



7.4.2 Three types of "winners" and "losers"

The results of factor analyses concerning work values bring about the questions whether there are three types of winners/losers concerning whether the work values are realized in current job; that is being a winner on the career dimension, the professional/innovative dimension and the social-values dimension. This is investigated by analysing the graduates' response to the corresponding ten items on job characteristics; or in other words, the realization of the work values. To be a winner/loser on one dimension, one must have expressed that the cluster of items is important or very important,[15] and that the items in question have either been realized to a fairly high extent (winners) or hardly or not at all (losers).

Table 7.5
Types and numbers of winners and losers. Per cent of total response

Total, winner Career etc	21.5
Total, winner Social values	29.5
Total, winner Professional/innovative	61.9
Total winner on all three dimensions	7.2
Total winner on two of the dimensions	34.6
Total winner on at least one dimension	73.7
Total loser on all **three** dimensions	0.4
Total loser on **two** dimensions	3.3
Total loser on at least **one** dimension	15.6
Number of observations, weighted*	18885

* Only observations with valid response to all the ten items on both the set of work values questions are included. The results are based on a weight that gives all the country samples the same size (that is 20000 graduates) and N is based on this weight.

15. Most of the respondents found at least one of the items connected to one of these three dimensions important or very important. Of those who had answered all the questions concerning work values, 82 per cent found the career values important (at least one of the career items), 97 per cent found the social values dimension (at least one of the items) important, and 98 per cent found the professional/innovative dimension important. Only 0.2 per cent did not find any of the dimensions important, and 79 per cent found all the three dimensions important.

The precise definition of winners and losers is further explained in Appendix 5. Table 7.5 shows the *total* distribution of the three types of winners and losers.

Almost three quarters of the sample are winners on at least one of the three dimensions according to our definition. Only 7 per cent are winners on all three dimensions. Most of the "winners" are winners on the dimension "professional/innovative" (new challenges, learn new things, work autonomy), while the career dimension (high earnings, good career prospects and social status) has the lowest share (21.5 per cent).

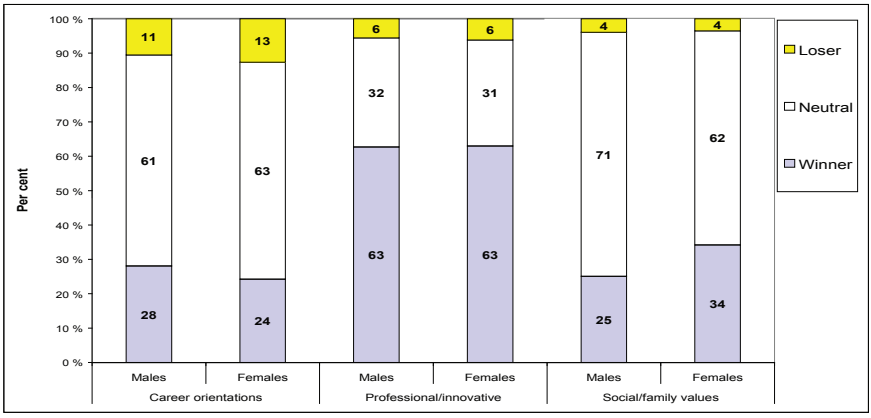
There are few losers; 84 per cent is not in any of the loser groups, and only approximately a half per cent is categorized as belonging to a loser group on all three dimensions. This means that more or less *the total sample* are either winners or "neutrals" on at least one dimension. Those who are neither losers nor winners, are categorized as "neutral", and large proportions of the graduates are in this group; this is depicted in the charts below. Especially on the career-dimension and the social values-dimension, there are large proportions of "neutrals".

7.4.3 Realization of work orientations by gender

The gender distribution of the three groups differs somewhat. There is a clear overweight of females among the winners in the social-values group, and a slight overweight of males among the winners on the career-dimension, se Figure 7.18.[16]

Figure 7.18

Realization of work values. Winners/losers on three dimensions, by gender

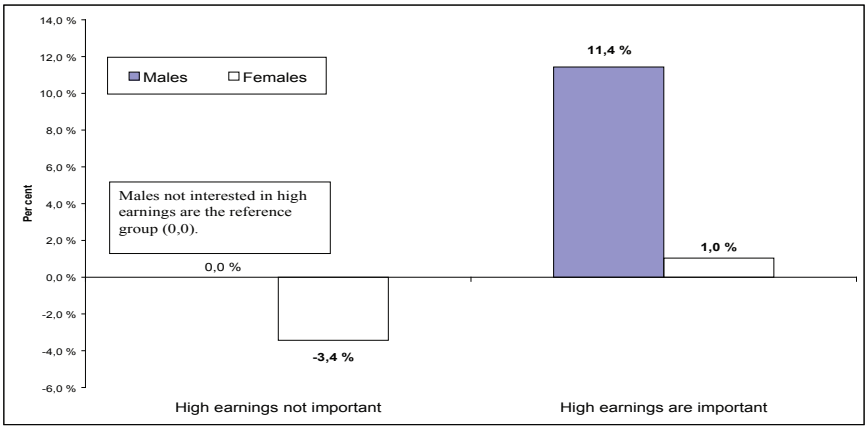


Note: The percentages in each dimension are based on the number of respondents who expressed that one of the items in the dimension was important or very important. This applies to all corresponding graphs below.

16. These gender differences are statistically significant after control for relevant background variables (see Reflex webstie Tables W.7.7-W.7.9, and based on such regressions the probability of being a career-winner is estimated to be 4 per cent point less among females than males (the same as in bivariate relationship in Figure 7.18).

The gender difference realization of career orientation is not very large, but noteworthy since it is measured among respondents who find this dimension important or very important (82 per cent of the respondents). This implies that the large wage differences depicted in Figure 7.9 is probably not due to gender differences in career orientations, although this might be of some importance, but is most probable (among other things) due to discriminatory factors. Another finding that underpins that gender differences in wages is not caused (or at least not only) by gender differences in career orientations, is that such orientations seem to have much larger impact on male graduates' wages than on the wages of the female graduates. This is revealed in additional wage analyses (ref. web-site…) where we have controlled for *the effect on wages of the subjective measure "finding high earnings important or very important"*. The result is illustrated in the graph below.

Figure 7.19
The effect on wages of finding high earnings important, by gender.



The graph indicates that those who are striving for high wages *do* obtain higher wages; among men the wage increase is 11 per cent compared to those who do not answer that high earnings are important. This might of course also be a result of the respondents trying to avoid cognitive dissonance; those who have relatively low wage report that earnings are not important *because* their wages are not high. Anyway, the interesting result is the gender difference. Females seem to gain less than males from striving for high wages. And, we see that the wage difference between males and females who are *not* particularly interested in high earnings is only about 3 per cent, while the wage difference between males and females who *do* find this important is about 10 per cent. The result gives no support to the assumption we suggested earlier in the chapter; that female graduates' work orientations may explain gender differences in wages.

7.4.4 Realization of work orientations by country and field of study

Our next issue is country differences, and then we will have to look at one dimension at the time. We start with country differences when it comes to being a winner/loser on the career-dimension.

Table 7.6
Winners/losers by country. Realization of career orientations, professional orientations and social values orientations.

	ES	IT	FR	CH	AT	DE	NL	BE	UK	NO	FI	EE
Career orientations (N=15680)												
Winner	34	19	22	22	27	20	24	24	31	21	18	43
Neutral	50	60	64	68	61	67	68	69	59	69	68	49
Loser	16	21	15	10	12	13	8	7	10	10	14	8
Professional/innovative orientations (N=18602)												
Winner	56	51	55	67	73	65	60	63	61	68	67	64
Neutral	33	41	38	28	23	30	32	32	33	28	28	32
Loser	11	9	7	5	5	6	7	5	6	4	5	4
Social values orientations (N=18344)												
Winner	36	23	34	24	27	21	33	30	24	40	34	35
Neutral	56	69	62	72	70	76	66	66	73	58	63	62
Loser	8	8	4	4	3	3	1	4	3	2	3	2

Note: Those who did not find the orientation in question important, are excluded from the calculation.

Three of the most career-oriented samples, the Estonian, Spanish and the British samples, have higher shares of winners on the career-dimension than the other country samples although the spanish graduates are more often losers on this dimension than graduates in most other countries (see Table 7.6). As we have seen from Figure 7.7 the Spanish and the Estonians are *not* among the wage winners compared to the other country samples. They might anyhow experience being winners because they compare their situation with the situation of persons in their home country without higher education. A similar effect might apply in the three high income countries Switzerland, Germany and Norway, which do not stand out with high percentages that report being career winners (in fact, the percentages are rather low). Graduates in these countries might compare themselves with other persons in their home country who are making a career in non-academic occupations. Further, the country sample with fewest winners and most losers is the Italian sample.

The country differences concerning the realization of professional/innovative orientations are less striking. We see that the Italian and Spanish samples more often are among the losers also on this dimension, and that the Italian, Spanish and French samples more seldom than the others report being winners on this dimension, while the Austrians are clear winners, followed by the Norwegians, Swiss and Finnish graduates.

The extent to which social/family orientated values are realized differs a lot between the countries. There are really few losers in all the countries on this dimension; however, neither are the winners in a majority (see the strict definition in Appendix 4). Germany has fewest winners, tightly followed by Italy. This implies that the Italian graduates rather seldom are among the winners on all the three dimensions. The Norwegians have the highest share of winners, followed by Spain. This means that the Spanish sample has high shares of winners on the two dimensions where they also scored very high concerning the graduates' values; the career-dimension and the social-values dimension. The Norwegians are also among winners on two of the dimensions where they scored above average when it comes to the worth of the values, (namely) the professional/innovative orientations and the social/family values.

The realization of the work orientations might also differ according to field of study, see Table 7.7.

Table 7.7
Winners/losers by field of study. Realization of career orientations, professional orientations and social values orientations.

	EDU	HUM	SOC Rest	BUS	LAW	SCI Rest	COMPUT	ENG	AGR+VE	HE+WEL	SER	TOT
Career orientations (N=15680)												
Winner	21	21	26	34	31	23	25	26	21	23	26	26
Neutral	63	67	62	57	58	64	65	63	65	65	61	62
Loser	16	13	12	9	11	12	10	11	14	12	13	12
Professional/innovative orientations (N=18602)												
Winner	64	61	64	60	64	67	68	63	61	63	57	63
Neutral	30	32	30	33	31	28	27	32	37	31	36	31
Loser	6	7	6	7	5	5	6	5	3	6	7	6
Social values orientations (N=18344)												
Winner	48	31	31	25	28	27	23	21	26	37	38	30
Neutral	51	66	65	71	67	68	74	74	71	60	59	66
Loser	2	4	4	4	5	5	3	5	3	3	3	4

Note: Those who did not find the orientation in question important, are excluded from the calculation.

The two winner-groups when it comes to career orientations are those educated in Business and in Law. The differences by field of study apply more to the winner- than the loser aspect.

Those educated in Computing are not among the winner groups on the career-dimension. This might have something to do with expectations. According to the wage analyses in the previous section this group is among the wage-winners in almost all the countries.

When it comes to the professional/innovative dimension there are small differences by field of study. The differences by field of study are larger concerning the chance of being a winner or loser on the social/family-values oriented dimension but again, the differences concern the chance of being a winner more than being a loser. Those graduating in Education are more often winners on the "social" dimension than the other groups[17], and those educated in Computing, Engineering and Business are more seldom winners. Graduates in Education (the teachers) obviously have had good possibilities to combine work and family obligations.

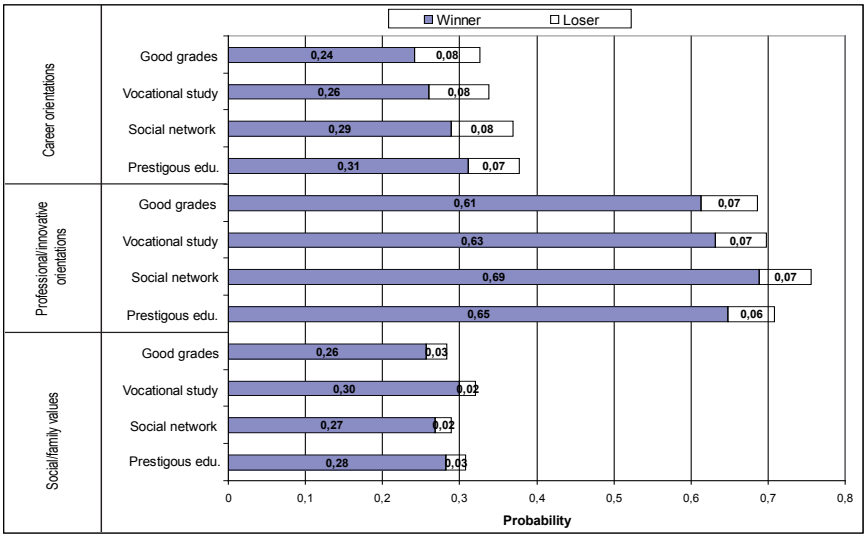
Who are most often/most seldom winners concerning field of study when the three dimensions are taken together? Graduates in *Humanities* and *Agriculture and veterinary* are among those who most seldom are winners on the career dimension, and they are average on the professional/innovative and average or below average on the social-values dimension. In most countries the wages of these two groups are relatively low, and we have also seen that graduates in Humanities have a large risk of experiencing all kinds of mismatch (and those educated in Agriculture/Veterinary are average when it comes to the chance of good match). These two groups are groups that most clearly tend to lose or be in the "neutral" groups, and most seldom among the winners.

7.4.5 Realization of work orientations: which factors increase the probability of being a winner?

The factors predicting success on the career-variable are not always the same as the factors predicting success on the professional/innovative variable or social-values variable, and vice versa, neither are they always the same as those variables that have contributed in predicting education-work match or high wages in the previous analyses. This was shown above when it comes to field of study, and below we will look at other predictors. Overall, this implies that being a winner on the labour market is not one-dimensional, but contains many dimensions. Although; the effects point in the same direction for some of the variables. We will start with commenting on the results of variables measuring characteristics of study programme, grades and whether or not the graduate has a useful social network, cf. Figure 7.20. In this graph and in the two graphs to follow we have omitted the category "neutrals", which therefore constitutes the rest.

17. Additional analysis also shows that the social values dimension is particularly important for this group.

Figure 7.20
The effect of study programme characteristics, grades and social network on the probability of being a winner/loser. Three dimensions of work orientations



The reference group for the estimations in Figure 7.26 is Dutch males with average age, educated in social science, with average grades (first three rows within in each of the three dimensions, in the forth row the graduate has grades above the average). The estimates for the reference groups are not shown in the graph due to lack of space, but is emphasised in the text.

Concerning the probability of being a *career* winner, prestigious education has the largest positive effect, increasing the per cent from *23 per cent (the reference group*), to 31 per cent. Next comes social network, and then vocational study, whereas "grades above the average", which also is significant, has the weakest effect. Having grades above the average increases the probability of being a career winner with only somewhat more than one per cent point. All these variables mainly affect the probability of being a winner, not being a "loser" (relative to being in the "neutral" group). The percentage being a loser in the reference group concerning the career-dimension is *9 per cent*, and having graduated from at prestigious study programme thus decreases the share being a loser by 2 per cent points.

When it comes to the probability of being a winner on the *professional/innovative* dimension, social network has the largest effect, increasing the probability of being a winner from *59 per cent (the reference group)* to 69 per cent. Next comes graduating from a prestigious study programme (65 per cent). Also both good grades and being educated in a vocationally oriented study programmes has positive effects, however not large. And, also for the professional/innovative dimension, these variables mainly affect the probability of being a winner, not the risk of being a loser. The reference percentage for being a loser on the professional/innovative dimension is approxi-

mately *8 per cent,* thus prestigious study programmes decrease the probability of being a loser on this dimension by approximately 2 per cent points.

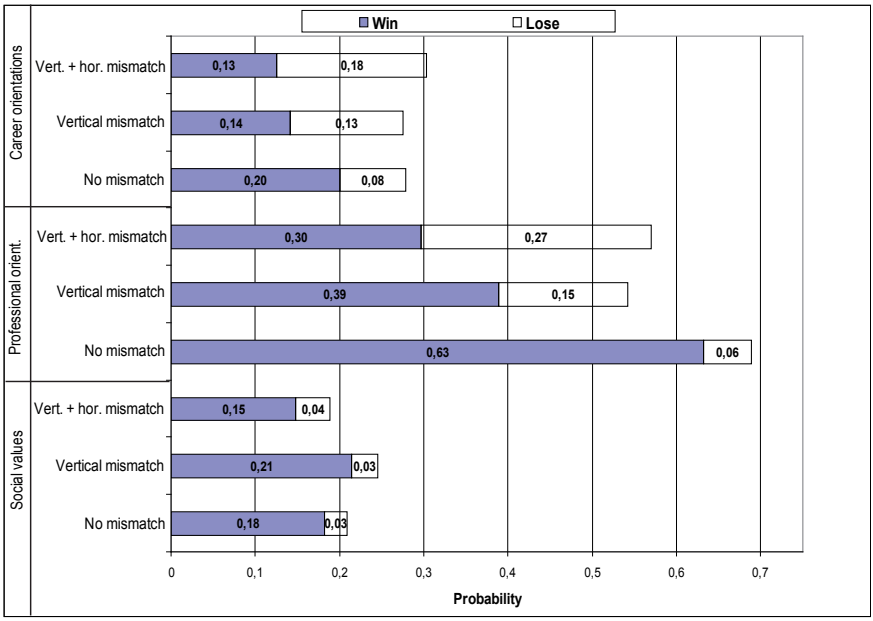
The results regarding the third dimension, *social/family* oriented values, are very different from the first two mentioned. Being graduated from a vocational oriented study is the only study programme characteristic variable that has a significant positive effect on being a winner on this dimension, and the effect is quite small. It increases the probability of being a winner from *27 per cent (the reference group)* to 30 per cent. And none of the variables affect the risk of being a loser on this dimension. The reference percentage for being a loser on the social/family oriented dimension is *2.6 per cent.*

We have also investigated whether *educational level* has an effect. Compared to second level graduates being a first level graduate increases the risk of being a loser on the career dimension but it has no significant effect on the probability of being a winner (relative to belonging to the "neutral" group) on this dimension. The same goes for those who have become PhDs/specialists; they have an increased risk of being loser on the career variable, but there is no significant effect on the chance of being a career-winner (relative to being in the "neutral" group). The results are different for the professional/innovative dimension. Those who have obtained a PhD/specialist degree have, not surprisingly, an increased chance of being a winner on the professional dimension. Correspondingly, those who had obtained a PhD/specialist degree have reduced chance to be a winner on the social/family-values dimension. These graduates will have interesting, demanding work, and, further education to become PhD or a specialist is not easy to combine with family tasks and leisure activities.

7.4.6 Winners and losers by job characteristics and labour market situation

What also might be of importance and interest is whether and how the chances of being a winner/loser on these three dimensions is related to characteristics of the graduates' labour market situation and job characteristics. This is taken into account in additional analyses (see Reflex website, Table W.7.10-W.7.12) and results based on these analyses are presented in Figures 7.21 and 7.22.

Figure 7.21
The effect of mismatch on the probability of being a winner/loser. Three dimensions of work orientations



The reference group for the estimations in Figure 7.21 is Dutch males, educated in social science, with average age and average grades, median wage (14.2 Euro, PPP, per hour), and work in private sector in a permanent job; else the reference person has value O on all the other variables in the equation except the variables shown in the figure. What varies is match/mismatch.

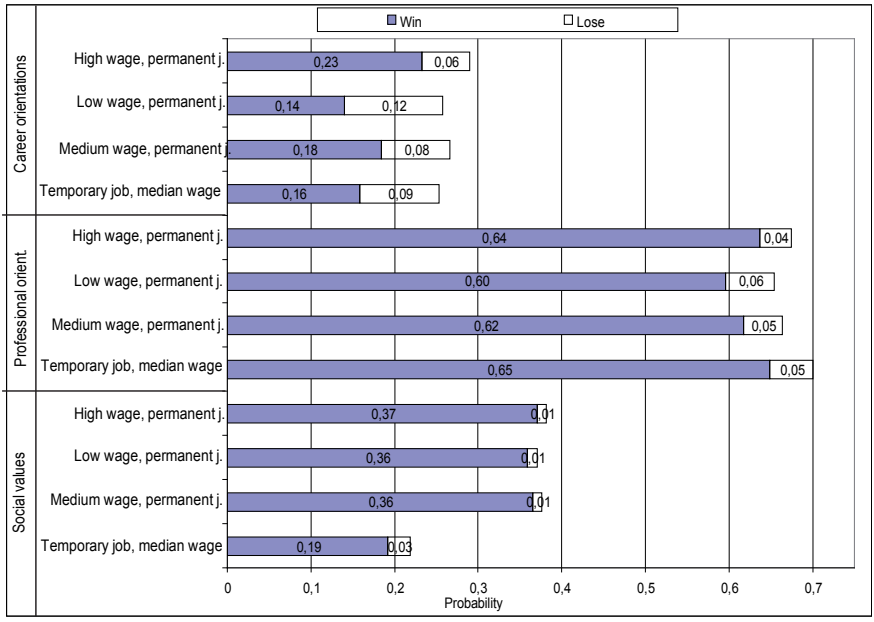
Being both horizontally and vertically mismatched has a large negative effect on the probability of being a winner for *all* the three winner-categories; and a correspondingly positive effect on the risk of being a loser on the career-dimension[18] and the professional-dimension. This reflects that being a "loser" on the objective measures of labour market adaptation, also to a very large extent implies being a "loser" on the subjective indicators.

Also being (only) vertically mismatched strongly reduces the chance of being a career-winner and a winner on the professional dimension. For the third dimension, the social-values dimension, the results differ when it comes to vertical mismatch (over-education). Being vertically mismatched has no negative effect on the probability of being a winner on this dimension, rather a small positive effect. The cause might be that some of these graduates have preferred a less demanding work situation because they find that this makes it easier to combine work with family tasks. The main picture

18. In the regressions on which the estimations in Figure 7.21 are based we have also controlled for wages. This reduces the effect of being mismatched on the career-dimension, but has minor impact on the other two dimensions. The effect of wages is shown in the Figure 7.22.

is that *not* being mismatched according to the objective measures highly increases the probability of success in realizing the graduates' (subjective) work orientations. In the next graph we will look at differences in the probability of being a winner/loser on the three dimensions concerning other aspects of work.

Figure 7.22
The effect of job characteristics on the probability of being a winner/loser. Three dimensions of work orientations



The reference group for the estimations in Figure 7.22 is Dutch males, educated in social science, with average age and average grades, work in public sector and has relevant employment; else the reference person has value 0 on all the other variables in the equation except the variables shown in the figure. What varies is permanent/temporary job, and wages.

The main purpose of Figure 7.22 is to illustrate the effect of wages as well as of having permanent job versus having a temporary job. The graph refers to graduates who all work in *public sector*, and since the preceding graph referred to graduates working in private sector, we also have the possibility to look at the difference between public and private sector, and we will start with this. In the graph above we see that the probability of being a career winner if you have a permanent job with median wage in *public* sector is 18 per cent. Corresponding estimate for a person working in *private* sector is 20 per cent (Figure 7.21), thus working in private sector increases the probability of being a career winner (controlled for wages) with only 2 per cent points (and the risk of being a loser is 8 per cent both in public and private sector). Working in private sector also has a significant effect of being a professional-winner, but the effect is very small (63 per cent versus 62 per cent). When it comes to being a winner

on the social-values dimension, the effect is much greater. Only 18 per cent of those in private sector (median wage, permanent job) are winners on the social-dimension (Figure 7.21), but the share is twice as high (36 per cent) if one works in public sector (Figure 7.22). This reflects, most probably, that public sector offers better possibilities for combining work and family tasks through better arrangements for maternity leaves, flexible/reduced work hours etc.
Wages has a great effect on the probability of belonging to the group that we have defined as being a career-winner based on their response to the questions on realization of career orientations. This is not surprising, what might be surprising is that the effects are not larger. If you belong to the high income group (PPP, that is controlled for country differences in costs of living), the probability of being a career winner is only 23 per cent, and if you belong to the low-income group the probability is 14 per cent. The "low wage-group" in the estimates in Figure 7.22 is assigned the limit for the value for the bottom quartile on the wage distribution (that is 10.6 Euro per hour, ppp) and the "high wage-group" the corresponding value for the top quartile (that is 17.7 Euro). High wage also has some impact on the probability of being a winner/loser on the professional dimension, but not a very large impact, and the impact on the social-values dimension is negligible.

Also having permanent versus temporary job has significant effects (positive for being a career-winner, negative for being a winner on the professional dimension!), but the effects on these dimensions are small compared to the effect on the social-values dimension (the latter: 36 per cent versus 19 per cent).

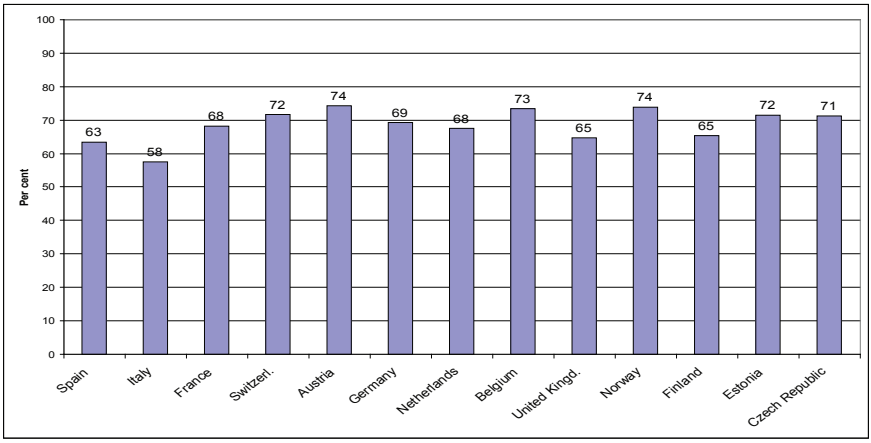
Summing up; the most important thing for being a winner on the professional dimension is not being vertically mismatched or both horizontally and vertically mismatched, and having useful social network. The most important thing for being a winner on the career dimension is wages and prestigious study programme, and the most important for being a winner on the social-values dimension is to work in public sector and hold permanent work. In the next section we will see to what extent such factors have impact on differences regarding *job satisfaction.*

7.5 Job satisfaction

Farag and Allen (2003) point out that "there are a number of factors or dimensions of work orientations and their realisation which may need to be taken into account when looking at the determinants of an individual's job satisfaction". In the section below we will take quite a lot factors into account when we are analysing job satisfaction, with special attention to issues discussed and analysed in previous sections, such as mismatch and work orientations. Farag and Allen compared Japanese and Dutch students. Below graduates from 12 countries are studied, and detailed discussion of which factors are determinant for *each* of the country samples cannot be analysed. But first we will show the bivariate relationship between country and job satisfaction.

Those who are satisfied with their job according to our definition are those have ticked off value 4 or 5 on a five point scale of work satisfaction.

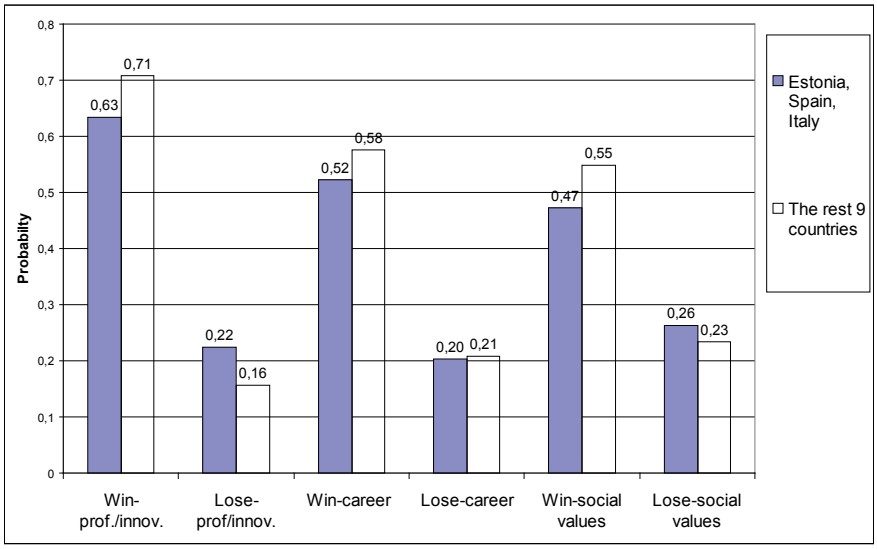
Figure 7.23
Per cent satisfied with their job, by country



In Figure 7.23 Czech Republic is included, but will not be included in the results of analyses shown below, because we will take into account the response to work orientations, and there is a lack of information on these questions in the Czech response. Overall, the per cent reporting job satisfaction was 69, and thus the Czech sample was somewhat above the average, together with Austria, Norway, Belgium, Estonia and Switzerland. Italy and Spain have the lowest shares, the same two country samples which are *not* among the winners neither in the labour market analyses, the wage analyses and the realization of work orientations analyses, with the exception of the Spanish sample being a winner on the subjective social-values-dimension and the career-dimension.

One of Farag and Allen's (2003) findings was that "intrinsic and social orientations were more important as determinants of overall satisfaction than (other) extrinsic orientations". This was in accordance Maslow's hierarchy of needs, which, as Farag and Allen (2003) put it, "leads to the expectation that intrinsically motivated individuals will tend to be more satisfied with their work than extrinsically motivated individuals, since intrinsic motivations will only arise once the (lower order) extrinsic needs have been sufficiently satisfied." Below (Figure 7.24), we will illustrate the effects of being winners/losers on the three dimensions described above on the probability of being satisfied with the job. The graph is based on separate analyses for the three low-income country samples (Estonia, Italy and Spain) and for the nine high or medium income countries. The reason why the countries are separated into two groups is to see *whether the intrinsic values are less important for job satisfaction in the low income countries than in the high/medium income countries.*

Figure 7.24
Estimated probability of being satisfied with the job. Effects of being a winner/loser on the career-dimension, the professional dimension, and the social-values dimension

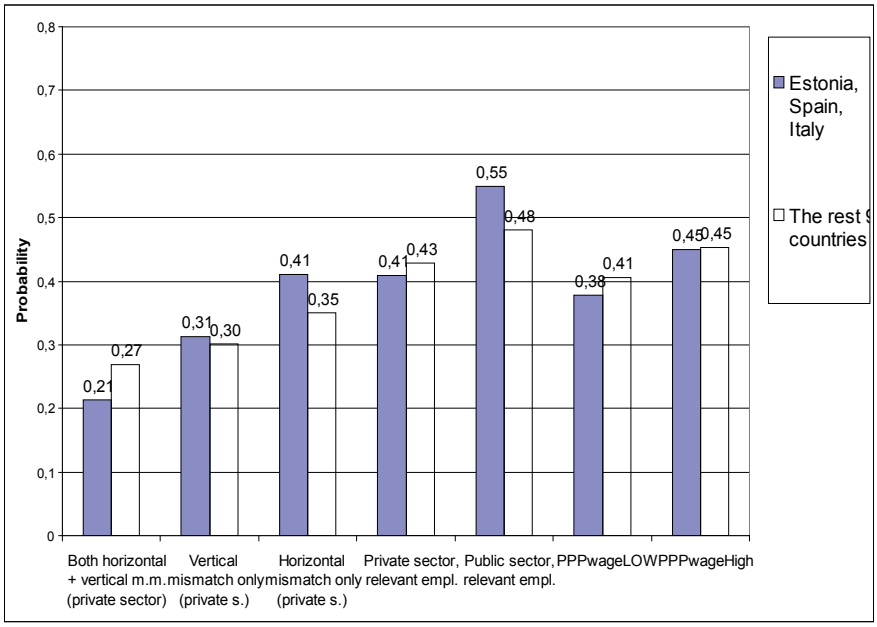


The reference category for the estimates in the graph has relevant work and median income (that is 9.5 and 15.3 Euro per hour (ppp converted) in the low and medium-high income countries respectively) , is a male, Dutch (in high /medium income countries) or Italian (in low income countries) with average age, educated in Law, works in the private sector in a permanent job.

In both type of countries, those who are winners on the professional/innovative dimension are most often satisfied with their job, followed by winners on the career-dimension, and close behind winners on the social-values dimension. However, both the professional dimension and the social values-dimension are more important for job satisfaction in the nine medium or high income countries than in the three low income countries (cf. the difference between the winner and loser categories is largest in the high or medium income countries), whereas winning or losing on the career-dimension has more or less the same effect in the two types of countries. This confirms that the intrinsic values are (somewhat) more important in the high or medium income countries than in the low income countries.

Do we find differences concerning job satisfaction between low and high income countries also when it comes to other aspects of work? This is shown in Figure 7.25.

Figure 7.25
Estimated probability of being satisfied with the job. Effects of job characteristics¨



The reference group are respondents who are not in any winner nor loser category ("neutrals"), and except for the last two categories have median wage. The reference wage in the category "PPPwageLow" is 7.0 Euro for the low income countries and 12.2 Euro in the other nine countries (which represents the limits for the 25 per cent with lowest income in the two types of countries respectively). The reference wage in the last category (high wage) is 12.4 Euro and 18.7 Euro (which represents the limits for the 25 per cent with highest income respectively). The reference group works in private sector (all columns except the column for "public sector, relevant employment"), and is otherwise the same as in Figure 7.25.

We see that wage has larger impact on job satisfaction in the low income countries than in the other nine countries.

Being mismatched has the largest (net) impact, especially being both horizontally and vertically mismatched, and this refers to both types of countries (21 versus 41 per cent in the low income countries, and 27 versus 43 per cent in the high or medium income countries). Also being (only) vertically mismatched has a large negative effect on job satisfaction. Being only horizontally mismatched has a negative effect in the nine high or medium income countries (taken together, 35 versus 43 per cent), but it has no effect in the three low income countries.

Above we have seen that those who work in private sector somewhat more often than those who work in public sector are winners on the career-dimension and the professional-dimension, but as regards the social-values dimension the opposite was the fact. From Figure 7.25 we see that those who work in public sector somewhat more often are satisfied with their work *irrespective* of being a career-winner, professional- or

social values-winner. This refers to both types of countries, but we see *that working in public sector has the largest positive effect on the probability of being satisfied with work in the low income countries*. The cause might be that secure work in public sector is more important in the low income countries than in the high income countries, and another explanation might be that working in private sector results in a wage gain in the high income countries but the opposite seems to be the case in the low income countries (additional analyses indicate this, see Reflex website, Table W.7.14).

Finally, we will return to the country differences (cf. Figure 7.23) with regard to job satisfaction. The country differences depend to a large extent on country differences in labour market situation. The regression analyses (see Reflex website) show that after control for such variables, the country differences are reduced or changed, for instance are the Spanish sample very often satisfied with the job when all other factors are kept constant. However, still the Austrian sample has the largest share being satisfied with their job. Other noteworthy results are that the effect of gender is minor, and that there are no differences between the levels of education, with one exception: PhDs/specialists are more often satisfied with their jobs than first and second level graduates. Also the differences between fields of study are small, with one exception; *graduates in Education are more often satisfied with their work than the other groups*. This applies to both types of countries, but especially in the high or medium income countries graduates in Education are more often than other groups satisfied with their job. Also this can be interpreted as an effect of the importance of the intrinsic values in the high or medium income countries. Graduates in Education are wage-losers compared to graduates in other fields of study. However, since most graduates in the high or medium income countries have *relatively* high wages (also those in Education), the intrinsic orientations are rather important for job satisfaction in these countries, and social values (like family values, doing something useful for society) is of special importance for graduates in Education.

Overall, both the subjective measures of being a winner/loser on the three dimensions of work orientations and the objective measures of labour market situation and returns to education and (over-education/mismatch; wages) are highly relevant for job satisfaction in both types of countries. However, wages are less important and intrinsic values more important in the high or medium income countries than in the low income countries.

7.6 Summary and conclusions

In the table below we have summarized the result of the different regression analyses.

Only when it comes to wages there is a clear and quite large gender difference, in favour of males. Else we see that no fields of study are clear winners or losers on all dimensions, but graduates in Education are winners when it comes to job satisfac-

tion and are also winners on other parameters except wages and career orientations. There is also a tendency that winners on career orientations and/or wages (Business, Computing and Engineering) are *not* winners on other, more subjective dimensions. Those fields of study that most seldom win and more often than other fields tend to lose on several dimensions are Humanities and Agriculture and veterinary.

We have also found that the human capital related factors are significant both for the objective measures (mismatch/match and wages) and for the subjective measures of realization of work orientations, except for being a winner on the social-values dimension.

"State dependence" (previous unemployment experiences) has a clear effect on the risk of being mismatched five–six years after graduation, and given the fact that mismatch has a clear negative effect on the job satisfaction and the chance of being a winner on two of the dimensions for work orientation, the transition problems seem to have lasting negative effects for a considerable group of graduates. The table above does not show the size of the effects, and it should be mentioned that the different predictors has different impact on the various dimensions:

- *The most important thing for being a winner on the professional dimension is not being vertically mismatched, and having useful social network.*
- *The most important thing for being a winner on the career dimension is wages and prestigious study programme*
- *The most important for being a winner on the social-values dimension is to work in public sector and hold permanent work*

Another general finding is that although we see groups that are successful on some indicators and less successful on others there is a clear relationship between the objective and the subjective indicators. Those who experience failures on the objective indicators are quite often *not* successful on the subjective indicators.

The effects of belonging to the different country samples are not included in the table above, and the reason is that the country differences to a large extent refer to macro economic conditions and to differences in the transition phase; and the country differences is highly influenced by the type and number of control variables included in the regressions. However, the country differences may be summarized like this: The Italian sample is most seldom among the winners on all the parameters; both the objective and the subjective indicators. The same is the case for the Spanish sample concerning the objective measures, but they are among the winners on the some of the subjective indicators. The Norwegian sample is the one being successful on most of the parameters, specifically the objective measures, but overall also on the subjective measures, and also the Swiss and Austrian samples scores high on several indicators, the Swiss especially on wages and labour market match, the Austrian on job satisfaction and the realization of professional/innovative work values.

Table 7.8
Effects of various predictors on the six dependent variables

	Relevant work	Wages	Win-career	Win-professional	Win-social-values	Job satisfaction
Level and further education						
First level vs. (originally) second level		–			+	
Second level as further education, (versus originally second level)	–	(-)		+	(–)	
PhD as further education (vs. second level)	–			+	–	+
Other further education	(+)	(+)				
Field of study (vs. social science, rest)						
Education	+	–	–		+	+
Humanities	–	–	–			
Computing	+	+	–		–	
Science, rest	+		–		(–)	
Engineering	+	+	(–)		–	
Agriculture and veterinary		–	–	–	–	
Health and welfare	+			–		
Service	(-)			–		
Law	+			–		
Business and management		+	+	–	–	
Females (vs. males)	(–)	–	–	(+)	+	(+)
Grades above average	+	+	+	+	(–)	.
Vocational oriented study	+	(+)	(+)	+	(+)	.
Graduated from a prestigious education	+	+	+	+		.
Parents HE		+		(–)		.
Social network	(+)	(-)	+	+		.
Relevant work during study	+	+				.
Work experience after graduation	+	+	.	.	.	.
Unemployment spells	–	.	.	.	.	.
Duration of unemployment spells	–	.	.	.	.	.
Mismatch (versus relevant work)						
Horizontal mismatch	.	(+) **				–
Vertical mismatch	.	– **	–	–	+	–
Horizontal and vertical mismatch	.	– **	–	–	–	––
Public sector (vs. private)	.	.	–	–	+	+
Permanent job (vs. temporary)	.	+ **	+	–	+	
Wage per hours (PPP)	.	.	+	+		+
Realization of work orientations						
Win-career	.	.	.	.	.	+
Win-professional	.	.	.	.	.	++
Win-social values	.	.	.	.	.	+
Lose-career	.	.	.	.	.	–
Lose-professional	.	.	.	.	.	–
Lose-social-values	.	.	.	.	.	–

Empty cell means not significant; + means increased probability; – means decreased (in brackets, only small effects); . (dot) means not included in the model. Results marked ** based on Model 2, all other results on Model 1 of Table W.7.5 on the Reflex website.

Wages are less important and "intrinsic"/"self-expression" values more important for job satisfaction in the high or medium income countries than in the low income countries. However, overall, both the subjective measures of being a winner/loser on the three dimensions of work orientations and the objective measures of labour market situation and returns to education and (over-education/mismatch; wages) are highly relevant for job satisfaction in both low income countries and in high/medium income countries.

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Chapter 8
Conclusions and policy implications

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8.1 General conclusions

In general one may say that higher education graduates in most of the European countries fare well in the labour market (see Chapters 1 and 7). Despite the deep-rooted differences between the national higher education systems, similarities in outcomes are more striking than differences. Although only a small proportion of graduates end up in an elite position, the majority fulfil a role in jobs that require generalist or specialist tertiary-level training. A high proportion of the human capital that is produced in higher education appears to be put to good use in the world of work. The unemployment rate is generally low, and almost three quarters of all graduates indicate that their knowledge and skills are sufficiently used. That said, there is still some room for improvement, particularly for the more than one out of four working graduates who indicate that their competences are insufficiently used. Apparently, employers do not make fully use of the human capital that is at their disposal. Moreover, there are countries and fields of study where graduates find it especially difficult to find a good position. Of course part of the variation across countries and fields of study is due to different national economic conditions or differences in the demand for graduates in specific fields of study, but this is not always the case. Apart from the 'usual suspects' (humanities, Southern-European countries), the UK stands out as a country where graduates - even five years after graduation - find it difficult to get a job in which their skills are fully utilised. This might be related to the fact that the UK higher education system is much less linked to the world of work than many continental higher education systems.

Most studies of the transition from higher education to work look at objective outcomes, such as employment chances, wages, type of work contract etc. However, graduates may have very different goals to strive for: high earnings may be important for some, but others may place more value on jobs that are challenging and give the opportunity to develop one's skills. In this report we looked at subjective indicators – the extent to which graduates realized the things that they themselves find important in work – in addition to objective indicators of success. It is interesting to note that the same factors that determine objective success often also affect subjective success (see Chapter 7). Winners on different dimensions often have above average grades, have access to a good social network, have acquired relevant experience during higher

education and have graduated from demanding, vocationally oriented and academically prestigious programs. Males are generally more likely to be winners than females, and graduates from fields like humanities and agriculture did less well in most respects. Graduates who experienced difficulties in the early transition were often still lagging behind on the different success dimensions five years later. The main exception to the general pattern was the social values dimension of success, which appeared to depend on quite different things than success on the career and professional dimensions.

How is this professional success of graduates related to the competences they need to possess? We started our analysis with the identification of three trends in the world of work relevant for higher education graduates: the growing importance of human capital, the growing importance of flexibility and the importance of globalisation). These three trends result in five demands put on higher education graduates. In our view higher education graduates are expected to be more or less competent in at least the following five areas: professional expertise, functional flexibility, innovation and knowledge management, mobilisation of human resources and international orientation.

An important conclusion of this report is the dominant role of professional expertise as determinant of labour market success. In many debates the role of professional knowledge and skills is undervalued, often with reference to rapid technological developments which are expected to render occupation-specific skills obsolete. This has sometimes resulted in strong pleas to focus on generic skills, such as problem solving or learning-to-learn. However, it is doubtful whether such generic skills can be developed without the context of a specific field. Problem solving abilities or learning abilities cannot be developed without some relation to content and it is this content that constitutes the heart of a specific discipline or field of study. Training in a specific field of knowledge serves in this view as the carrier through which generic skills may be developed. In line with this, we note that professional expertise is very important for labour market outcomes. It is positively related to wages, to the utilisation of skills and to job satisfaction (see Chapters 1 and 7).Although the data do not allow to infer about a direct causal link (the effects may actually be related to characteristics of the job rather than the worker), we do find the results consistent and convincing. Professional expertise seems important not only for the 'old professions' but for the new ones as well (see Chapter 2). Moreover, it promotes success not only for those working inside their own domain, but also when one is working outside one's own field of study (see Chapter 5). This suggests that a good education in a particular field not only provides graduates with the skills that are needed in jobs that match that field, but also provides a basis for the development of more general analytical skills that can be applied in other areas as well.

It is important to note that the role of the professional has changed, and that many characteristics of the 'old professions' like medicine and law are not applicable to many of the 'new professions' in areas like engineering and business (see Chapter 2).

Although most graduate jobs require that one has been educated in a certain area of study, strict exclusivity in this respect is only the norm in the case of the 'old professions'. Moreover, most professionals nowadays are no longer fully autonomous in their work, but typically work in organisations in which they are mutually dependent on others. Even the 'old professionals' rarely have complete control over their own activities in the sense of being self-employed and/or free of supervision. This highlights the importance of the second most important core competence that graduates need to possess: the ability to mobilise one's own and other's human resources.

The mobilization of human resources is important in all kinds of professions (see Chapter 2) and is after professional expertise the second most important core competence in terms of predicting success in the labour market. It increases the chance of finding employment – essential if one is to mobilise any human resources at all -, and has a positive impact on the wages (see Chapter 1). When discussing the mobilization of human resources, it is important to make a distinction between mobilising one's own resources and mobilising the resources of others (see Chapter 5). Most higher education graduates have been rather successful in mobilising their own human resources: most are employed in a more or less fulltime capacity and are able to utilise most of their skills, even when working in a job that does not require a higher education degree. Not surprisingly, less graduates play a direct role in mobilising the human resources of others. Nonetheless, a considerable proportion of graduates do play such a role, for example by supervising and or assessing others or bearing strategic and/or decision-making authority for their organisation.

The role of flexibility as a core competence seems to be less clear. Although higher education graduates are exposed to some forms of external flexibility like job mobility, unemployment spells, temporary employment contracts (see Chapter 3), this seems to be mainly a temporary phenomenon in the initial transition from higher education to work. Although unemployment spells clearly have a negative effect on the later career, other forms of external flexibility may often be more an opportunity than a threat. Most graduates have reached a stable and satisfactory position within 5-6 years after leaving education (see Chapter 7), and the small group that is still in temporary employment consists not only of 'losers' in the labour market, but also contains the privileged and well-trained group of graduates working in Ph.D. or equivalent specialist trainee programs. In this sense, we find little evidence that the labour market for higher education graduates is very insecure or precarious.

However, this only refers to external flexibility. The opposite is true for internal or functional flexibility. Functional flexibility - the ability to cope with changes in the work environment - does play an important role in the professional life of graduates. Many graduates have already been faced with important changes in their work tasks or with changes in their work environment (see Chapter 3). Competences related to functional flexibility do not appear to be directly rewarded in the labour market, but they do play a role in protecting graduates when coping with changes at work. Being

very flexible in the sense of being prepared to take on work outside one's own specific area of training can in fact hamper the possibility to fully utilise all of one's skills as – by definition – only a part of these skills will be put to use in any job.

The fourth core competence that we distinguished – that of innovation and knowledge management - also plays a somewhat fuzzy role. Although innovation and knowledge management are generally considered key factors driving economic growth, possessing innovative skills does not always lead to labour market success. In fact, such skills are negatively related to employment chances and have no effect on earnings (see Chapter 1). In contrast, being engaged in innovative activities (as opposed to possessing a high level of innovative skills) is clearly rewarded (see Chapter 4). Apparently, innovative competences are only rewarded when they are directly linked with actual innovative activities. Although innovation as such takes place more often in large organisations, higher education graduates working in small organisations are more likely to actually play a role in introducing such innovations. A certain amount of autonomy is needed to create an environment in which innovation can take place. Being engaged in innovative activities is not only related to the typical innovative competences, but also with other competences like communication skills.

The analysis in chapter 4 makes clear that innovation is not solely related to the typical hard-core R&D jobs in the private sector, but is important in other jobs and other sectors as well. For example, teachers play an important role in the innovation of knowledge and methods, even though most would probably not think of them as core innovators. Innovation can thus be seen as important and widespread.

International experiences are widespread (Chapter 6). More than a quarter of the graduates reported that they spent some time abroad for study or work, and even more indicate that they work in an organization with an international scope of operations and/or require a high level of foreign language proficiency. Given this high exposure to international influences, it is worrying that foreign language proficiency is most often cited as one of the weak points of the study program. Spending time abroad for study or work during or after higher education has a positive effect on the transition to the labour market. It not only has a positive impact on the chance of being internationally mobile after graduation and the chance of obtaining work that requires international competences (see Chapter 6), but is related to higher wages in general (Chapter 1).

In our survey, we found evidence that the demands in the areas of professional expertise, functional flexibility, innovation and knowledge management, and mobilisation of human resources are more or less universal (Chapter 1). The required level is relatively high, with little difference in general between the different competences, although there are some differences between the countries. Although the supply of competences in these areas is also rather high, at an individual level supply does not always match demand. Some 10% of the graduates indicate that their own compe-

tence level is lower than what is required of them in the job and around 15% that their competence level exceeds the requirements. Although these percentages may seem low, we should note that they may have serious consequences. Shortages can make it more difficult for graduates to adequately perform their job, while surpluses may be indicative of work situations that fail to get the most out of graduates.

When looking at the extent to which higher education prepares graduates well for the world of work, it is important to distinguish between the shorter and longer term. In the short term goal, we expect higher education to provide graduates with a good basis for starting work. In the longer term, higher education should provide a basis to acquire additional knowledge and skills on the job, and for career development in general. With respect to both the short and long term goals, only 50 to 60% of the graduates indicated that their study program clearly succeeded in providing a good basis, while 15-20% indicated that their study program clearly failed to do so. This is particularly worrying as providing a good basis to start working and to develop your career may be considered as key goals of higher education.

Interestingly, graduates were most satisfied over higher education in terms providing a good basis for personal development (70% on average). In contrast, only 20% indicated that their higher education program provided a good basis for developing entrepreneurial skills. Clearly, developing entrepreneurial skills is one of the weak points of the higher education system all over Europe.

Given that many graduates are less than satisfied about the preparation they have received in higher education, the important question is what it might do to improve this. Higher education in general is not considered to be very demanding. Only slightly more than half of graduates indicate that their higher education program was very demanding. This failure to provide students with a challenge is probably one of the reasons why so few graduates (36%) indicated that they did more work than was strictly required to pass the exams. Especially the Netherlands stands out as a country where students have an 'easy life': less than a third of Dutch graduates indicated that their study program was demanding.

What can higher education do to give their students a better start in the world of work? What are the characteristics of the programs that are successful in this respect? In analyzing this we can distinguish between two different functions of education: the skills production function (the role of education in providing their students with relevant competences) and the allocation function (the role of education in ensuring that graduates find appropriate work). Although both goals are clearly connected, they are by no means the same, nor are the characteristics that make programs efficient in achieving either one of these two goals. Graduates may have a high level of competence and still find it difficult to find a job in which they can fully utilize these competences. Moreover, some higher education characteristics may help graduates to

find relevant work, although they do not in themselves have an effect on the acquisition of skills.

It is clear that following a demanding program is good for developing competences, but it does not necessarily lead to a strong position on the labour market. Following a program with which employers are familiar mainly has a strong effect on allocation, but only a weak effect on the development of professional expertise and no effect on the development of competences in the other areas. This means that these programs do not necessarily produce or select more competent graduates, but they are by far the best in ensuring that they find a good job. The effect of following academically prestigious programs is related to both functions: they select or produce more competent graduates, but they also serve as a signal to future employers, thus helping to have a smooth transition and enter elite positions. Vocationally oriented programs are good for developing professional expertise and are very strong in providing a good basis to enter the labour market and develop the career.

Modes of teaching and learning also play a role. The level of competence in all core areas is most strongly related with stressing theories and paradigms. Written assignments and oral presentations are also related to higher levels of competence in all four areas. Group work and participation in research is related to somewhat higher levels of competence in all areas except professional expertise, while project and problem based learning is related to a higher level of innovation and knowledge management. Most of these characteristics also affect the evaluation of the program. Stressing facts and practical knowledge, stressing theories, internships, giving lectures all help to prepare students for the working life, mainly because they provide an important means to acquire professional expertise.

Apart from experiences in higher education, other learning experiences are just as relevant. Time spent on relevant work experience has a positive effect on competence development and all labour market outcomes. The same holds for having a position in a student or voluntary organisation and for experience abroad. However time spent on non-relevant work experience has no effect at all, apart from increasing the chance to find a job.

Having a high relative grade has a pronounced effect on helping people to get into better jobs, and serves as a clear signal to future employers. Surprisingly, indicators of study behaviour (like working hard and study hours) hardly affect these outcomes or sometimes even have an adverse effect. This is in line with the effects we noted earlier on following a demanding program. Although working hard is probably one of the best ways to develop your competences, we see no direct reward in the labour market. Working hard is not rewarded in itself, but signalling this in the form of higher grades is.

8.2 Policy implications

When it comes to policy implications we would like to distinguish the following main stakeholders: the European commission, national governments, employers, higher education institutions and students.

European commission

International graduate surveys offer important insights into the changing European higher education systems: they should be repeated at 5-year intervals
The analyses in this report make clear that a wealth of information can be extracted from surveys like REFLEX and its predecessor CHEERS. In many respects country differences are not always as large as is often assumed, especially given the fact that the population comprises graduates of the pre-Bologna regime. Nonetheless, there are some deep-rooted differences, both between systems of higher education and between types of study program within systems that are clearly related to the effectiveness of higher education programs in preparing graduates for the labour market. The results in this report highlight these differences, and provide an indication of their relation with quality. Building on insights obtained in the first international survey CHEERS carried out in 1999, the REFLEX project has developed the methodology and instruments needed for repeating these surveys on a more regular basis. This enables the monitoring and evaluation of the outcomes of the Bologna process and other reforms with respect to the labour market. We recommend that the European Commission takes the lead in fostering such follow-ups.

Although higher education is increasingly internationally oriented, this does not keep pace with the even more rapid trend toward globalisation
Many graduates work in an environment that is strongly internationally oriented. Despite the fact that many students have followed part of their study program abroad, higher education graduates all over Europe indicate that foreign language proficiency is one of the weak points of their study program. The European commission should do more to foster international exchange in higher education, as well as activities designed to strengthen foreign language proficiency, e.g. by co-financing study programs offered in a foreign language.

National governments

Strengthen the core orientations in higher education
The results seem to suggest that both vocationally and academically oriented higher education have their own distinct value in preparing graduates for the labour market. In fact, the more higher education study programs emphasize the development of professional expertise in either of these orientations, the more successful they are.

National policies should aim to strengthen both academic and vocational higher education.

Different national solutions are needed to solve problems
It is interesting to see that despite the many differences that existed in the European higher education systems (recall that the graduates in the REFLEX survey were not affected by the Bologna reforms), the overall impression is that the country differences in terms of outcomes are not overwhelmingly great. This suggests that different national equilibriums may exist and that solutions that work in one country cannot simply be exported to another. This does not mean that there are no countries in the danger zone. Italy, France and Estonia represent countries where a relatively large share of the graduates experiences some serious shortages in their competences. Many French graduates also experience a surplus of competences, indicating that in that country many graduates are either over- or under-qualified.
Noteworthy is that apart from the Southern-European countries, the UK stands out as a country where graduates find it difficult to find a job that fully utilises their skills. Although five years after graduation, the unemployment rate of the UK graduates is average, their share of holding a lower level job and/or a job in which they cannot fully utilize their knowledge and skills is much higher than in most of the other countries. It is not clear whether this is caused by the weaker link between higher education programs and specific areas of employment in the UK or with the fact that most UK higher education graduates have followed programs that are much shorter in duration than most programs in continental Europe. But the fact that UK graduates have not been able to catch up in the first 5 years after graduation and more often indicate that their study program did not provide a good basis to start working, to learn on the job or to perform current work tasks deserves serious attention.

Encourage relevant rather than non-relevant work experience during higher education
It is clear that from a macro perspective spending time on non-relevant work during higher education should be discouraged. It distracts students from their study and confers no benefits at all in the long term. From an individual point of view, non-relevant work may be needed to cover costs of living while studying. The policy implication is that the national systems of student grants/loans should be such that students can pay enough time to their study.

External flexibility is not always bad
Being exposed to external flexibility in the form of multiple changes of employer is often regarded as undesirable. The analyses in this report make clear that where this is accompanied by spells of unemployment, this can have some damaging effects on the later career, but that external flexibility per se is not harmful, and can even be a source of further skill development. Having a temporary contract in the first job is not harmful, and mobility can often better be regarded as an opportunity than a threat. National policy should foremost be focused on promoting a smooth transition

between jobs, and encouraging graduates to choose employment – even on a temporary basis – above unemployment.

Employers

Employers should be aware of the large reserves of underutilized human capital at their disposal

One out four graduates indicates that their knowledge and skills are not optimally used in their work. This seems particularly true for competences in the area of innovation and knowledge management. Especially in the private sector and in firms operating in an unstable market, employers do not make optimal use of the human capital at their disposal. Interestingly, organisations that are considered to be at the forefront of innovation make better use of the potential of the graduates. We also found evidence that a certain amount of autonomy is needed to create an environment in which innovation activities can take place. Reaching the Lisbon goals may be more attainable if employers more fully exploit their highly educated employees' potential.

Employers should develop better policies to accommodate the feminization of the graduate labour market

In the past 20 years females have rapidly increased their shares in higher education, taking the lead in many fields of study that used to be dominated by males, such as medicine. However, after graduation, women are more often unemployed and earn considerable lower wages than men. This is not a result of self-selection, as even women who place a high value on having a successful career find it more difficult to be a winner in this respect than men. The disadvantages are exacerbated by having children, which has an additional negative effect on women's careers but a positive effect on that of men. Given the shortages of labour in most European countries due to the ageing population, employers simply can not afford not to make full use of the growing supply of higher educated women. This means that good policies must be developed to attract and retain women, also in top positions.

Employers should look for better signals of quality

Our results show that graduating from a program with which employers are familiar is highly rewarding, even though these programs do not necessarily produce better graduates. The same applies for some other traditional 'signals', such as the prestige of the program, grades or having followed an internship, which are not necessarily related to the competence level of the graduates. It seems that employers heavily rely on these signals to reduce uncertainty. However, this strategy does not necessarily result in hiring the best graduate and there may be a need for more diversity in the hiring process.

Higher education institutes

Study programs should be more demanding
One of the prime goals of higher education should be to optimally develop the talents of students. As 'time on task' is the best predictor of learning outcomes, this implies increasing the study load and creating a culture in which hard work and striving for excellence is valued and rewarded. The results show that only slightly more than half of the graduates indicated that their program was (highly) demanding. This percentage differs strongly between the different countries. Especially the Netherlands stand out as a country where students often indicate that their study program was not very demanding.

Study programs should focus on strengthening professional expertise
In the past decade we have seen a shift from stressing specific competences to focus more strongly on generic competences. However, developing professional expertise provides the main basis for entering the world of work and developing one's career, even when working in jobs outside the domain of the field of study. A basic rationale for higher education is to impart professional expertise, and given the relatively low percentage of graduates indicating that this is a strong point of their study program, higher education institutes should strengthen this further.

Student-centred methods may work, but don't ignore the value of knowledge
We saw that student-centred methods like project and problem based learning have a positive effect on providing graduates with a good basis to enter the labour market, their further career and – interestingly – they seem to be the modes of teaching most associated with developing entrepreneurial skills. However, there is no clear relation with developing high levels of competence in most areas (except the area of innovation and knowledge management). Our preliminary conclusion is that new methods may work, but old methods should not be forgotten. There is a tendency in education to think that knowledge in itself is not important anymore, as technological developments seem to render knowledge and skills obsolete soon after graduates have left higher education. However, theories, facts and practical knowledge are essential components to develop expertise in any area, and it is this professional expertise that is most clearly associated with labour market success.

Assessment drives learning as well
The design of the curriculum and the modes of teaching are not the only ways to affect learning. As educational research makes clear, assessment drives learning as well. In this respect, using written assignments or oral presentations are a better way to develop competences and provide a good basis for entering the labour market and developing a professional career, than using multiple choice exams which merely seems a good way to test the short-term memory capacities of students rather than a way to develop deep-rooted insight.

Give credits for relevant work experience
Work experience closely related to the field of study or holding positions in student or other organisations clearly has a positive effect on the development of relevant skills. Higher education institutes could foster this by giving credit points to students who perform such relevant work. This would encourage students to engage in relevant work instead of non-relevant work activities.

Don't overestimate the positive effect of internships and work placements
Graduates who followed a program that stressed internship or work placement were more positive in their evaluation of the program providing a good basis to start working. However, we found no effect on the development of competences, nor did we find any effect on current employment chances or earnings. This seems to indicate that its role is mainly in providing a smooth allocation to jobs, rather than in developing professional expertise.

Students

Follow your interest and talent
Although graduates from some fields of study (such as Humanities and Agriculture and veterinary) find it more difficult to enter the labour market and acquire a good job, this by no means indicates that these fields of study should be avoided. For all fields of study we find that two thirds (or more) of the graduates are satisfied with their job, and this also applies to the two fields mentioned (Humanities and Agriculture and veterinary studies). Moreover, we find only small differences between fields of study in the percentages of graduates who regret the choice of their program. In our view, students should primarily follow their own interest and talent when choosing a study program in higher education. Information about labour market prospects can of course play a secondary role in helping students choose between programmes they are equally interested in.

Acquire relevant experience outside higher education
Our findings show that acquiring work experience that is related to the study program is beneficial for the later labour outcomes. The same holds for holding a position in student or other voluntary organisations (e.g. chair, committee member) or spending time abroad for study and/or work. These experiences have a positive effect on the development of skills and serve as a signal to future employers. Although many students are engaged in non-relevant work to cover the costs of living, it is far better to focus on relevant work experience. Non-relevant work does not pay off in the long run, and – if it leads to an extension of the study duration - it might be better to rely on study loans.

The relevance of a good network

Having a good social network helps one find a job that matches one's education. This network does not only relate to family, friends and teachers but extends to other contacts as well for example contacts acquired through work experience. Especially these professional contacts may play a role in providing information about job opportunities and support in finding a job.

Appendix 1

First and second level programmes per country

	First level	Second level
Italy	Diploma universitario	Laurea
Spain	Diplomatura	Licenciatura
France	Licence	DEA
	Maîtrise	DESS
	Diplôme d'école spécialisée (santé, art, architecture, journalisme, infirmier, etc.)	Diplôme d'école d'ingénieurs
		Diplôme d'école supérieure de commerce
		Certificat de la fonction publique (ex: CAPES, etc.)
		Diplôme d'Etat de docteur en médecine, pharmacie ou odontolo
Austria	Mag./Mag.a oder Dipl.Ing./Dipl.Ing.in (FHS)	Mag./Mag.a oder Dipl.Ing./Dipl.Ing.in (Univ.)
		Dr./Dr.in
Germany	Diplom Fachhochschule, Diplom I an Gesamthochschule	Diplom Universität, Diplom II an Gesamthochschule
	Bachelor	Magister
		LA Grund- und Hauptschulen
		LA Realschulen
		LA Gymnasien
		LA Sonderschulen
		LA Berufliche Schule
		LA Sontiges
		Sonstiges Staatsexamen
		Kirchlicher Abschluss
		Künstlerischer/musischer Abschluss
		Master
The Netherlands	HBO	WO doctoraal (drs., mr. of ir.)
		WO opleiding tot basisarts, tandarts of apotheker
The United Kingdom	Bachelor	Master
Finland	AMK-tutkinto	Masterintutkinto tai vastaava
Norway	3-4 års hogskoleutdanning	Hovedfag/høyere grads embetseksamen
The Czech Republic	Bachelor	Master
Switzerland	Masters Fachhochschule	Masters University
Belgium-Flanders	Hoger onderwijs van cycli (lange type)	Universitair onderwijs - licentiaat of ingenieur
		Universitair onderwijs - arts
Estonia	Bakalaureuseõpe	Arsti-, hambaarstiõpe
	Rakenduskõrgkooli ja ülikooli diplomiõpe	Integreeritud õpe (proviisor, loomaarst jne.)
		Kõrghar. eeldav -a. õpetajakoolitus, interniõpe
		Magistriõpe, kutsemagister
		Magistriõpe, teadusmagister

Appendix 2

Typology of Professions as used in Chapter 2

1 Non professionals	2 Business and social science	3 Science and technology professionals	4 Semi professions	5 Traditional professionals	6 Managers
400 Clerks 500 Service workers and shop and market sales workers 600 700 Craft and related trades workers 800 Plant and machine operators and assemblers 900 Elementary occupations	200 Professionals 240 Other professionals 241 Business professionals 243 Archivists, librarians and related information professionals 244 Social science and related professionals 245 Writers and creative or performing artists 246 Religious professionals 247 Public service administrative professionals 340 Other associate professionals 341 Finance and sales associate professionals 342 Business services agents and trade brokers 343 Administrative associate professionals 344 Customs, tax and related government associate professionals 345 Police inspectors and detectives 346 Social work associate professionals 347 Artistic, entertainment and sports associate professionals 348 Religious associate professionals 11 Armed forces	210 Physical, mathematical and engineering science professionals 211 Physicists, chemists and related professionals 212 Mathematicians, statisticians and related professionals 213 Computing professionals 214 Architects, engineers and related professionals 220 Life science and health professionals 221 Life science professionals 300 Technicians and associate professionals 310 Physical and engineering science associate professionals 311 Physical and engineering science technicians 312 Computer associate professionals 313 Optical and electronic equipment operators 314 Ship and aircraft controllers and technicians 315 Safety and quality inspectors 320 Life science and health associate professionals	223 Nursing and midwifery professionals 230 Teaching professionals 231 College, university and higher education teaching professionals 232 Secondary education teaching professionals 233 Primary and pre-primary education teaching professionals 234 Special education teaching professionals 235 Other teaching professionals 243 Archivists, librarians and related information professionals 322 Health associate professionals (except nursing) 323 Nursing and midwifery associate professionals 330 Teaching associate professionals 331 Primary education teaching associate professionals 332 Pre-primary education teaching associate professionals 333 Special education teaching associate professionals 334 Other teaching associate professionals	222 Health professionals (except nursing) 242 Legal professionals 246 Religious professionals	100 Legislators, senior officials and managers 110 Legislators and senior officials 111 Legislators and senior government officials 114 Senior officials of special-interest organisations 120 Corporate managers 121 Directors and chief executives 122 Production and operations managers 123 Other specialist managers 130

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Appendix 3

To what extent innovative activities are related to a specific working environment?

	Role in innovation of product			Role in innovation of technology			Role in innovation of knowledge		
Dependent variable: innovation index	B	S.E.	Signif.	B	S.E.	Signif.	B	S.E.	Signif.
Are you responsible for:setting goals for your own work	0,297	0,019	0,000	0,208	0,020	0,000	0,357	0,018	0,000
Are you responsible for:deciding how you do your own job	0,191	0,021	0,000	0,164	0,022	0,000	0,219	0,021	0,170
How closely is your performance monitored by your own supervisor	0,012	0,011	0,252	-0,018	0,011	0,107	0,015	0,011	0,014
To what extent does your current work demand more knowledge and skills than you can actually offer	0,025	0,015	0,089	0,058	0,016	0,000	0,039	0,016	0,000
To what extent are knowledge and skills utilized in your current work?	0,153	0,017	0,000	0,197	0,018	0,000	0,276	0,017	0,316
Public sector	-0,336	0,033	0,000	-0,196	0,034	0,000	0,034	0,034	0,000
Female	-0,327	0,032	0,000	-0,756	0,033	0,000	-0,324	0,033	0,102
Italy	0,046	0,073	0,531	0,398	0,076	0,000	0,124	0,075	0,828
Spain	-0,313	0,073	0,000	0,281	0,077	0,000	0,016	0,075	0,021
France	-0,262	0,078	0,001	0,288	0,082	0,000	0,185	0,080	0,000
Austria	-0,293	0,076	0,000	-0,182	0,082	0,026	-0,311	0,079	0,000
Germany	-0,338	0,073	0,000	-0,412	0,080	0,000	-0,308	0,074	0,642
United Kingdom	-0,084	0,076	0,270	0,053	0,081	0,513	0,037	0,079	0,019
Finland	0,205	0,071	0,004	0,468	0,074	0,000	0,176	0,075	0,017
Norway	0,195	0,070	0,005	0,104	0,074	0,161	0,175	0,073	0,000
Czech Republic	0,044	0,070	0,537	0,510	0,073	0,000	0,560	0,077	0,003
Switzerland	-0,200	0,073	0,006	-0,077	0,078	0,323	-0,225	0,075	0,486
Belgium	-0,303	0,078	0,000	0,075	0,082	0,363	-0,056	0,080	0,000
Estonia	0,214	0,088	0,015	0,492	0,091	0,000	0,399	0,096	0,000
Ref: Netherlands									
Intercept	-2,46	0,119	0,000	-2,69	0,127	0,000	-2,99	0,121	
Statistics		Cox & Snell R^2	Nagelkerke R^2		Cox & Snell R^2	Nagelkerke R^2		Cox & Snell R^2	Nagelkerke R^2
1		0,071	0,095	22280	0,075	0,103		0,099	0,135

Appendix 4

Definition of mismatch as used in Chapter 7

1. *Employed with relevant work;* that is person not belonging to one of the four groups below.
2. *Horizontally mismatched* (and not vertically mismatched). This refers to persons who gave an answer to the question "*What field of study do you feel is most appropriate for this work*?" that indicated that their work did not correspond to their own or a related field.
3. *Vertically mismatched* (and not horizontally mismatched). This group is *over-educated* (over-qualified) and the definition refers to those who gave an answer to the question "*What type of education do you feel is most appropriate for this work?*" ("type" is referring to "*level*" according to the response options in the questionnaire) that indicated a level below their educational level. We have taken into account the fact that some have acquired a higher educational level after their graduation in 1999/2000 (as masters/second level graduates or PhDs/specialists). First level graduate/bachelors who had taken further education and have become masters/second degree graduates and hold a job that corresponds to the first level/bachelor level are regarded as vertically mismatched, and vice versa for master /second degree graduates who have obtained a PhD/specialist degree.
4. *Both vertically and horizontally mismatched.*
5. *Unemployed*. This refers to respondents who answered that they were not currently employed and who reported that they actively had tried to obtain paid work in the past 4 weeks, or who reported that they were awaiting the results of earlier job applications.

Appendix 5

Definition of winners and losers according to the graduates' response to the questions on work values and job characteristics (realization of work values), as used in Chapter 7

1. For all the ten work values items a variable was created according to whether or not the item was important for the respondent. Value 4 (important) + 5 (very important) on a scale from 1–5 were recoded as important (assigned value 1, else 0).
2. Losers- and winners-variables were created for each of the ten items of job characteristics (to what extent the work values apply to current work). If the respondent had value 1 on the variable mentioned above, that is finds the item important, and value 1 or 2 on corresponding item for job characteristics, he/she was coded as a loser on this variable. If the respondent finds the item important and value 4 or 5 on corresponding item for job characteristics, he/she was coded as a winner on this variable.

From the results of the factor analyses of work values we knew that the work values clustered into three dimensions, allowing us to identify three groups that are career-oriented, professional-oriented and "social values"-oriented. The next step was then:

3. Three new variables were created "lose/win-career", "lose/win-innovative", and "lose/win-social", all with three values; value 1=lose, value 2=win, value 9=neutral, the latter as the reference category to be used in multinomial regression. These variables were created according to the following:
   - Based on step 1 and 2 a respondent was categorized as a winner on the "*lose/win-career*"-variable if she/he had value 1 on (at least) two of the three job-characteristic variables "win-earnings", "win-career-prospects" or "win-social-status", and she/he was categorized as "loser" on the "*lose/win-career*"variable if he/she had value 1 on (at least) two of the variables "lose-earnings", "lose-career-prospects" or "lose-social-status". Else, the respondent was categorized as neutral.
   - Like verse values were assigned on the "*lose/win-innovative*"-variable according to the response to the three job-characteristic variables that concern autonomy, new-challenges or learn-new-things.
   - Finally, values were assigned in the same way on the "*lose/win-social*"-variable according to the respondent's answers to the four job-characteristic variables that concern job security, leisure activities, do something useful for society and combine work and family. (The coding of "*lose/win-social*"-variable was based on the respondent being a winner/loser respectively on three of the *four* items covered by this dimension.)

Multinomial logistic regressions for each of the three winner-situations (dimensions) were run. For each of the regressions respondents who found one of the three (four) items connected to the particular dimension important were selected.

Appendix 6

The effect on wages of gender, grades, level of education, field of study, mismatch and type of job contract. Per cent. **See next page>>**

The effect on wages of gender, grades, level of education, field of study, mismatch and type of job contract. Per cent.

	All countries	Italy	Spain	France	Austria	Germany	Netherlands	UK	Finland	Norway	Czech rep.	Switzerland	Belgium	Estonia
Gender														
Females/males	-9.6	-11.9	-7.3	-12.4	-10.5	-10.7	-4.2	-10.4	-10.3	-9.9	-10.4	-4.8	-7.5	-15.0
Grades														
Grades above average/aver. And below	3.1	3.7	8.7	3.4	3.6	3.8	1.7	7.8	-0.3	4.4	1.5	2.2	-1.1	7.5
Level of education														
First level/second level	-10.3	-3.6	-14.1	-15.5	6.2	-8.1	-16.8	-2.9	-19.8	-16.4	-8.1	-5.3	-6.1	-2.5
Field of study														
Edu/social science	-4.3	-10.2	8.4	-4.4	-5.5	-5.2	-6.5	0.8	1.4	-9.1	-14.7	3.4	-11.9	-8.0
Human/social science	-6.2	-3.5	-1.1	3.8	-10.4	-9.6	-9.2	-6.7	-1.4	-15.1	-20.9	-2.9	-10.4	-8.7
Law/social science	-0.1	-12.1	-1.2	6.8	-4.7	-13.7	8.7	2.4	24.8	-7.3	-0.3	4.0	0.9	21.8
Business/social science	11.8	7.0	2.7	21.0	16.7	26.4	7.1	15.2	9.3	18.5	5.8	8.6	3.9	26.4
Computing/social science	13.7	11.2	11.6	4.2	21.1	10.2	8.7	-5.8	20.5	4.0	8.4	0.0	2.8	27.4
Science rest/social science	1.0	6.5	-1.6	13.1	4.0	5.0	-5.4	8.2	-1.8	-7.2	-12.0	-4.1	0.4	-8.9
Engineering/social science	7.8	9.6	15.6	22.3	8.7	11.7	1.5	10.0	16.1	0.6	-5.8	-2.9	1.5	19.1
Agriculture/social science	-10.6	-28.3	0.2	-5.0	-1.2	-4.6	-2.6	-18.6	-5.6	-16.6	-21.4	-9.3	-7.5	-25.2
Health/social science	-0.3	8.2	7.3	7.4	7.9	4.7	-0.9	12.5	2.0	-4.2	-12.7	-4.8	-1.1	-9.7
Service/social science	0.7	15.5	16.2	13.9	-8.3	5.2	1.3	-0.9	4.8	-7.5	-7.2	-18.5	-18.0	-9.0
Graduated from a prestigious education	5.4	5.4	4.1	7.5	-0.6	3.3	0.0	8.7	2.7	5.4	2.1	2.6	5.5	11.9
Further education														
Master as further education	12.1	0.5	11.7	16.2	-0.2	19.1	15.6	3.7	27.7	13.1	6.0	9.0	9.1	5.8
PhD as further education	8.7	11.3	0.2	9.1	11.9	7.3	4.9	4.5	11.1	6.1	9.2	1.6	11.5	6.1
Other further education	1.7	-0.4	2.3	1.7	1.8	5.7	1.2	5.7	0.5	-0.3	-0.5	2.7	0.7	5.1
Mismatch														
Horizontal mism./relev. job	1.6	-0.4	-7.6	-2.7	3.6	1.4	2.2	-0.5	5.4	11.9	5.0	3.8	-1.1	7.5
Vertical mism. /relevant job	-11.6	-3.9	-14.7	-12.6	-11.8	-6.8	-13.3	-15.8	-17.0	-6.2	-13.2	-4.0	-11.3	-3.6
Horizontal and vertical mism. /relevant job	-11.4	-6.3	-9.3	-12.1	-10.4	-17.1	-10.3	-9.7	-8.1	-18.5	0.7	-10.4	-0.5	7.0
Type of contract														
Permanent job /temp. job	13.0	13.4	10.3	22.9	10.1	18.7	10.5	10.7	15.5	11.7	14.5	20.2	16.1	-1.6
Country (compared to the Netherlands)		-38.1	-30.8	-9.1	-8.9	14.4	Ref. cat.	4.3	-8.7	8.3	-48.7	21.9	2.7	-38.6

Coefficients in bold are significant at 0.1-level or below.