EUROGRADUATE Pilot Survey

Design and implementation of a pilot European graduate survey

Education and Training

EUROPEAN COMMISSION

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Design and implementation of a pilot European graduate survey

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2020 Directorate-General for Education, Youth, Sport and Culture EN

Luxembourg: Publications Office of the European Union, 2020

Print ISBN 978-92-76-17881-1 doi: 10.2766/149071 NC-02-20-242-EN-C
PDF ISBN 978-92-76-17882-8 doi: 10.2766/629271 NC-02-20-242-EN-N

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0 Executive Summary

The world of work is transforming very rapidly, and this trend is expected to be accelerated after the COVID-19 pandemic. Most jobs will disappear by 2040 and will be replaced by new ones. Demand for highly skilled, socially engaged people is both increasing and changing. Education and culture are key to build cohesive societies and to strengthen European identity. The EU's New Strategic Agenda 2019-2024 seeks to step up investment in education and skills. It is even more important now than ever. It needs to be underpinned by a single European learning space as envisaged in the **European Education Area** by 2025. To reach this ambitious objective, there is a need to improve data availability to help policy makers in addressing higher education challenges, as described in the renewed EU Agenda for Higher Education [1], and ensure efficient investment. The **recommendation of the EU Council of Education Ministers on tracking graduates**[2] highlights that limitations of existing cross-country data make it difficult to draw conclusions from country differences and limits mutual learning.

As a response, the European Commission launched a **pilot survey in eight countries** (Austria, Czechia, Croatia, Germany, Greece, Lithuania, Malta and Norway) with the intention to lay the ground for sustainable European wide graduate research. The results of the survey are presented here in a comparative study, which is complemented with eight national reports focusing on specificities in the surveyed countries.

The pilot survey in these eight countries comprises surveys of four distinct types of higher education graduates carried out over the period October 2018 – February 2019. Close to 21.000 **Bachelor-level** graduates and **Master-level** graduates from two graduation cohorts were interviewed – the academic years of **2012/13**[3] and **2016/17**.

Unlike most graduate tracking surveys, the EUROGRADUATE survey covers all three different aspects higher education prepares graduates for: **sustainable employment**, their **personal skills development** and **active citizenship**[4]. It provides information on the way graduates were taught during their higher education studies, their **mobility experience and spatial relocation patterns**, their self-perceived skills level and how much they use those skills in their jobs. This allows for a new type of analysis, so far not possible in existing graduate surveys: which educational experiences lead to the best results on the labour market, and best prepare graduates to become active citizens? What are the country differences in labour market outcomes?

[1] EC (2017), COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on a renewed EU agenda for higher education
COM/2017/0247 final

[2] EC (2017), Council Recommendation of 20 November 2017 on tracking graduates (Text with EEA relevance.)

[3] For Germany, the cohort 2012/13 was covered by a sub-sample of the national graduate survey. Therefore, not all aspects were covered in it.

[4] Promoting the relevance of higher education (DG EAC, 2019)

Fig. 1 Key aspects of relevance of higher education analysed

This study provides a unique opportunity to compare graduates' journeys from education to the labour market and active life as citizens in different European countries. It gives a **European perspective** on the relevance of higher education forpolicy makers, the wide public and researchers.

0.1 Summary of the main findings

1. Preparing graduates for the labour market

A central aim of higher education is to prepare students for a successful transition to the labour market, adequate employment and career development.

i. Participation in the labour market

Labour market participation and performance on the labour market depends a lot on the situation in the different countries. **Youth unemployment rates** were, at the time of the study, highest in Greece (39.9%) and Croatia (23.8%) and lowest in Germany (6.2%) and Czechia (6.7%). Nevertheless, the **clear majority** of graduates surveyed are **present on the labour market** in all countries.

Fig. 2a Bachelor studies provided a good basis for…. (%)

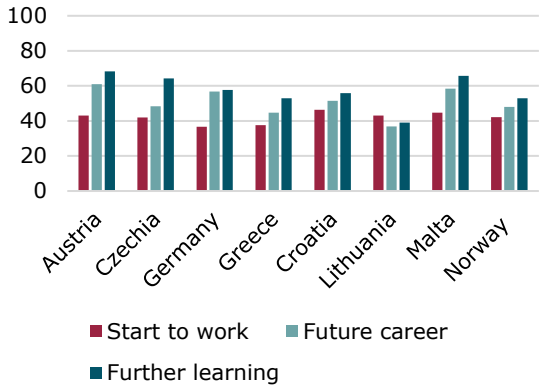
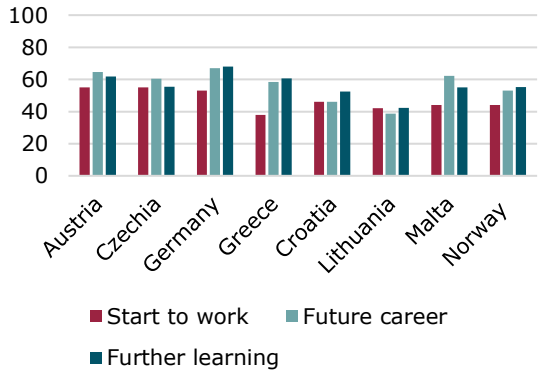


Fig. 2b Master studies provided a good basis for… (%)



Graduates' decisions on **whether to enter to the labour market or continue studying** depend only partially on the general labour market prospects. It also depends on how they assess their study programme, whether they feel well prepared to start working. Most graduates believe that their studies prepare better for their future career, so they expect better labour market outcomes on a mid-term perspective.

In Austria, Czechia and Germany, **Master graduates felt better prepared** (more than 12% higher) for the labour market than Bachelor students. There are also clear differences between the **fields of study**: *Technology and engineering* graduates and *Natural sciences and health* graduates are the ones mostly satisfied with the adequacy of their study programme with the world of work, as compared to other fields(40% and 20% higher, respectively).

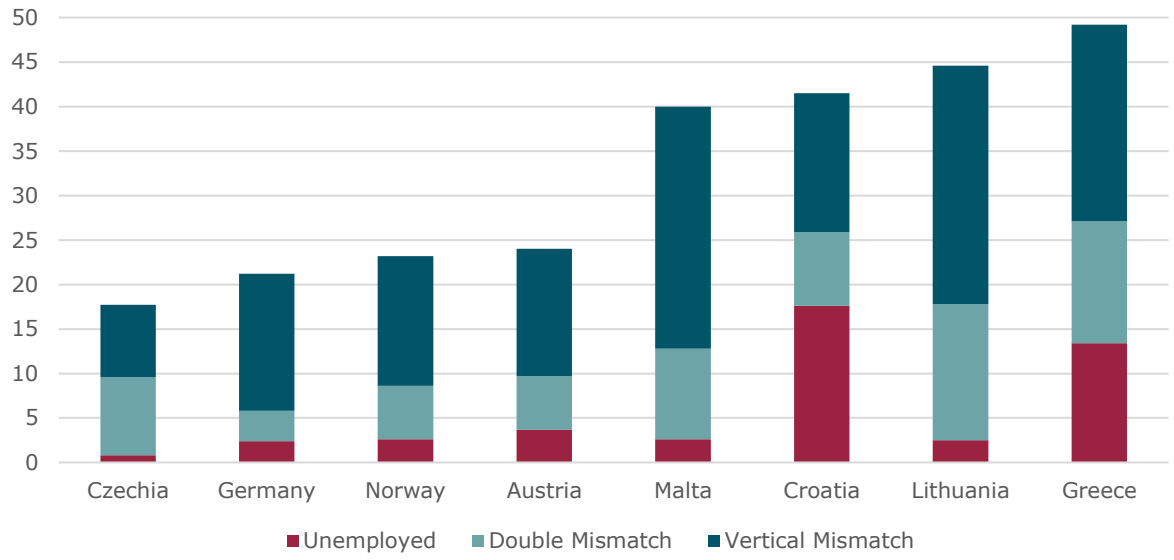
The **way knowledge was acquired** also matters in preparation for the labour market. Graduates who were confronted with an **activating learning environment** (e.g. problem-based or project-based learning environment) were four times more satisfied with the way their study programmes prepared them to start to work than those who were left to study alone. Graduates studying in **work-related learning environment** (e.g. internships or work experience as formal part of the curriculum) also felt better prepared for the labour market (their satisfaction rate was 50% higher).

Graduates are most satisfied with higher education preparing them for entry into the labour market when:	- they studied in an activating learning environment or were exposed to work-based learning
	- they have a degree in technology, engineering, natural sciences or health

ii. Finding matching jobs

When graduates enter the labour market, it is important that they find a job that matches their qualifications. Graduates who are unemployed or employed in a position that **does not require higher education qualifications** (vertical mismatch) or are employed **below their qualification and in a different field** (double mismatch) are considered to be in a particularly difficult situation. **They face skills depreciation and they earn significantly less** (according to survey data, graduates earn 13% less in a vertical mismatch situation, and 18% less in a double mismatch situation, compared to those who are employed at their degree level and in their field of study).

Fig. 3 Graduates at risk, MA-level graduates, cohort 2016/17 (%)



More than 40% of graduates are in a difficult position in **Malta, Croatia, Lithuania and Greece** one year after graduation. **Five years after graduation** (cohort 2012/13), it is still the same countries where graduates are most at risk, although in most countries **the situation is improved**: less graduates are unemployed or employed below their degree qualifications (by approximately 10%) with the exception of Greece, where unemployment decreases while mismatched jobs increase.

Among personal characteristics, coming from a disadvantaged background (i.e. no higher educated parent) increases the chance of not having a matching job after graduation (20% higher). The effect is stronger in Croatia and strongest in Lithuania and Germany. This finding implies that **social inequality in skill mismatch is not equal across countries**. It is much more likely for graduates in Germany, Lithuania and Croatia to depend – aside from their own abilities, their field of study, their study-related work experiences etc. – on their parents' support in order to find employment that meets their qualification level.

Further analysis of the data confirms that graduates from ***Technology and engineering***, ***Natural sciences and health*** fields are more than 20% less likely to be in a weak position. **Study-related work experience** also decreases almost by 50% the probability that a graduate end up in a problematic work-related situation after graduation.

Having a job that matches education level and field is mostly influenced by:	The labour market of the country
	Studying STEM-related fields
	Having study-related work and activating learning experience during studies
	Having higher educated parents

iii. Employment quality and earnings

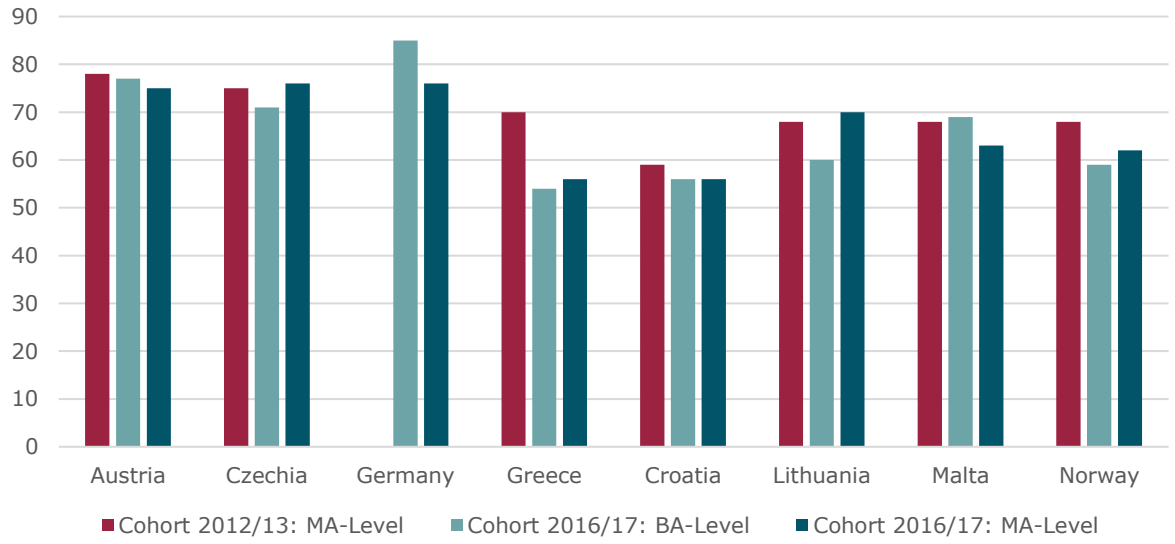
Quality employment also means satisfactory working conditions and earnings. About **4 in 5** graduates in each country have a **permanent contract** five years after graduation. This is a significant increase compared to one year after graduation in Croatia (less than 50%), Germany and Austria (less than 60%). Apart from country differences, the highest share of permanent contracts are among graduates of ***Business, administration and law*** and ***Technology and engineering***. **Male graduates** are generally more likely to have permanent contracts than female graduates (difference varies between 1% in Norway and 21% in Germany).

Earnings differ significantly by country (with graduates working in Germany and Norway registering double the gross earnings than those in Croatia). **Master graduates** record higher earning than Bachelor graduates (except in Germany, where Bachelor graduates earn 4.5% more one year after graduation), with the highest premium recorded in **Greece** for MA studies (53%). In all countries, one year after graduation, the **highest** earnings are paid to ***Technology and Engineering*** graduates and the **lowest** to ***Education, arts and humanities*** graduates (the average difference is more than 20%). The hourly earnings of **male graduates is significantly higher**: between 10% (Germany and Norway) up to 50% (Lithuania). Previous **study-related work experience** has a positive effect with an increase in wage premium of 8%.

Having satisfactory income is mostly influenced by:	The labour market of the country
	Having a job that matches the qualification
	Having a Master degree
	Study-related work experience
	Gender: female graduates earn less

The survey also permitted the collection of information on **general job satisfaction**. The highest job satisfaction is observed in **Austria, Czechia and Germany** with shares above 70%. In most countries, the job satisfaction only **marginally differs between male and female graduates** (cohort 2016/17) with the highest differences in Austria (male graduates +8%-points) and Norway (female graduates +8%-points).

Fig. 4 Job satisfaction: % of (very) satisfied



When analysing the characteristics that have an impact on job satisfaction, **50% of graduates report being unsatisfied with earnings**. With respect to **career prospects** and a **good work-life balance**, **40%** of graduate are unsatisfied. After five years into the labour market, only in two countries (Malta and Norway) close to half of the employed MA-level graduates report that their job gives them good career prospects. In contrast to that, in Austria, Czechia, Greece and Lithuania, less than 40% report good career prospects. A good work-life balance seems to be present in most countries in around 50% of the jobs. An exceptional low percentage of jobs with a good work-life balance is found in the MA-level cohort of 2016/17 in Greece. From this group of graduates, only around one in three graduates report that a good work-life balance applies to a (very) high extent to their current job. For all the three aspects - earnings, career prospects and work-life balance - , the dissatisfaction reported is **larger among female graduates** than among male graduates. Female graduates are more likely to feel that **they are doing something useful for the society**. The jobs held by female graduates in generally score in all countries higher with respect to this character with an even staggering difference in 33%-points (Male: 48% / Female: 73%) in Germany. Relative high differences are also found in Czechia, Lithuania and Malta.. The strongest negative effect on job satisfaction, however, is lack of **possibilities to learn new things** and lack of **new challenges**; if these factors are missing, graduates are **50% less likely** to report high job satisfaction.

What other quality aspects affect job satisfaction?	Having a permanent contract is most common for Business, Law and Technology graduates and for male graduates
	A stimulating working environment (opportunity to learn more, facing new challenges) matters clearly more for high satisfaction than earning or career prospect.

2. Developing high level skills and competencies for the future

The EUROGRADUATE survey provides a unique opportunity to analyse the links between the **skills acquired by graduates and the type of their studies** and observe how these skills are **used on the labour market**. Graduates were asked if they received a higher education that provided a good basis to develop their **advanced literacy**, **numeracy** and **digital skills**, as well as **social**, **entrepreneurial** and **managerial skills**. With few exceptions, in all countries, **less than half** of graduates report that their higher education provided a very good basis for the development of these skills. The few exceptions are advanced literacy skills in Austria and Malta, advanced numeracy skills in Germany, and social skills in Croatia and Lithuania: here, graduates were more satisfied.

i. What influences the development of these skills?

The **type of the institution** matters: graduates of research universities are more positive about the basis provided for numeracy and ICT skills, while non-research university graduates are more positive about social skills, entrepreneurial and management skills.

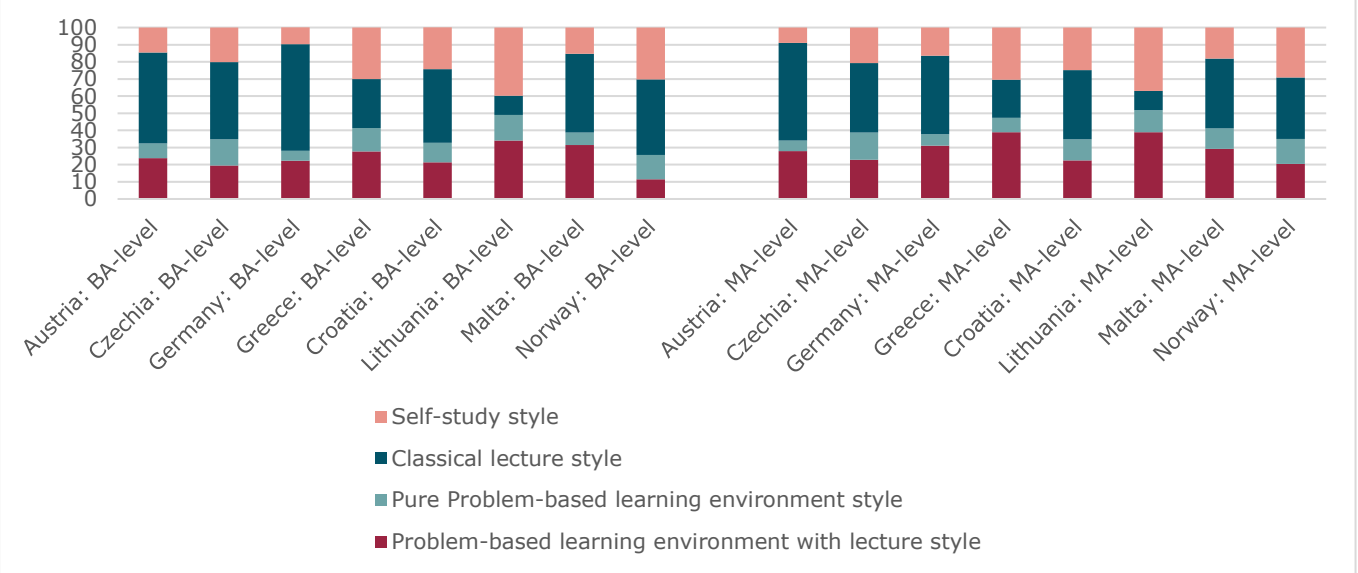
The **learning environment**[5] graduates were faced with during their studies also seems to have a significant effect on their skills development. **Activating learning environments** with mixed instruction styles (which use problem/project based learning intensively, in which the teacher has the role of instructor, not only a process manager) clearly outperforms all other learning environment types for skills development. Graduates who reported activating learning to be the dominant type of learning were twice as likely to report advanced numerical skills, four times more likely to report a high level of literacy skills and five times more likely to report high social skills.

Work-related learning environments (internships, or work placements as part of the study programme) also proved to be useful especially for the development of entrepreneurial and social skills.

In all countries, less than 50% of graduates reported being exposed to activating learning environments, with MA graduates reporting it more often than BA graduates. In contrast, work-related learning environments were more prevalent for Bachelor studies, but again less than 50% (with the exception of Lithuania).

[5] The survey requested graduates to assess the learning environment of their higher education institutions. Based on the answers, four types of learning environment were identified: self-study style (when the institution provided relatively little support for learning), the classical lecture style (when the teacher talks and student listens), the problem/project-based learning style (when the role of the teacher is more process- than content-oriented), and the mixed style, which relies equally on lectures and problem/project based learning.

Fig. 5 Activating learning environments (%) for cohort 2016/2017



Study attitudes also have an effect on skill development: graduates that follow their personal study interest (i.e. thanks to a student-centred learning approach) rather than the standard curriculum are more positive about the basis provided by the study programme with respect to Managerial/leadership skills, Personal development and Building a social network.

What influences skills development at higher education?	Activating learning environments have a clear advantage for skill development
	Study-related work experience improves entrepreneurial and social skills
	Research universities prepare graduates better for ICT and advanced numerical skills, while universites of applied sciences present advantages in social and entrepreneurial skill development.
	Graduates who followed curricula less strictly report a higher level of managerial and social skills

ii. Skills and competencies required by employers

According to the surveyed graduates, **field-specific skills, communication skills, team working skills, learning and planning skills** and **problem-solving skills** were required in their professional occupations by at least **two third** of employed graduates to a high extent. On the other hand, **foreign language skills** and **customer handling skills** are required by only about **half** of employers at a high level, and **advanced ICT skills**

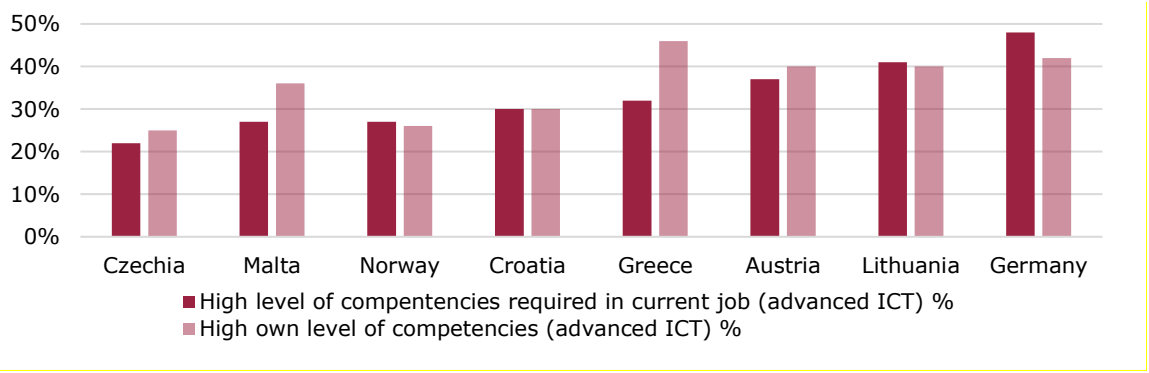
(skills going beyond the everyday use of IT, like using professional software) were reported to be required by roughly **one third** of respondents.

iii. Self-assessment of four key skill domains: Advanced ICT skills, field-specific skills, problem-solving skills and communication skills

Respondents were asked to assess the level of their own skills to see if they matched the requirements of employers. Self-assessment of competencies is to some extent subject to general **cultural differences**, so simple comparison among countries may be misleading (Norwegian graduates tend to assess their own skills lower, while Austrian graduates assess theirs higher). **Male graduates** report higher levels of competencies across all competency domains, in line with prior research stating that men rate their own abilities higher than women do.

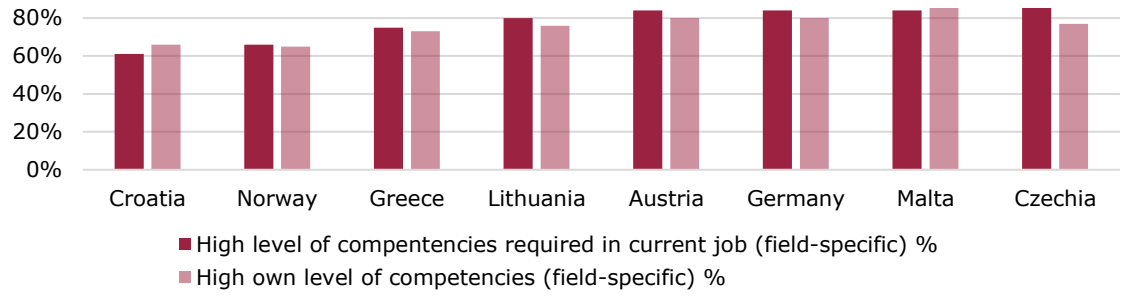
ICT skills represent the only competence category in which a **negative assessment of own abilities** is more likely than a positive assessment. Attending a study programme at a **research university** increases the level of ICT skills. Graduates from the fields of *Social Sciences, Health* and *Welfare and Service* report significantly lower ICT skills compared to graduates from *Engineering* or *Natural Sciences*.

Fig. 6 Share of graduates reporting high level ICT skills and high level required in the current job, cohort 2016/17



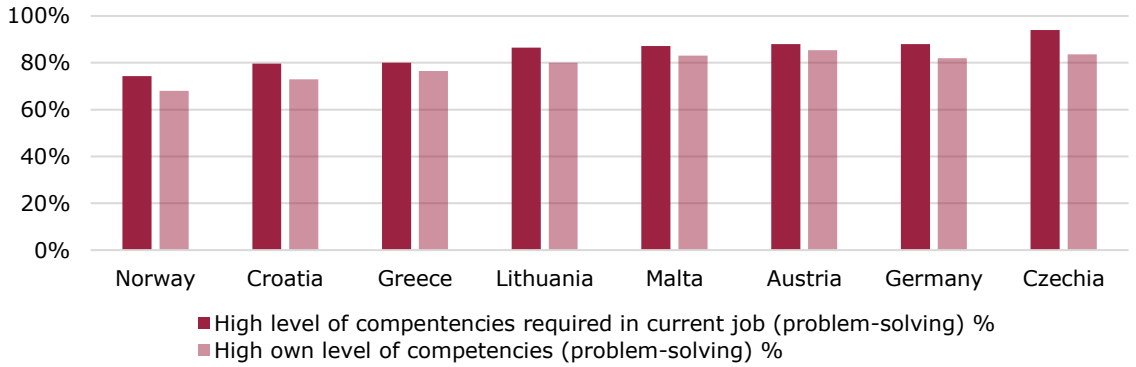
Overall, graduates from different fields of study rate their own abilities rather similarly, which means the overall level of **field-specific skills** is considered equally high across different higher education programmes. **Internships** and **study abroad experiences** during the study period increase the level of field-specific skills. The younger cohort reports much lower field-specific competencies compared to the older, which may be related to less experience on the job. In addition, a significant effect of study programmes that are designed in a more **problem-based learning** and teaching style can be observed: it increases the share of respondents who report high level competencies by 2%.

Fig. 7 Share of graduates reporting high level field-specific skills and high level skills required in the current job, cohort 2016/17



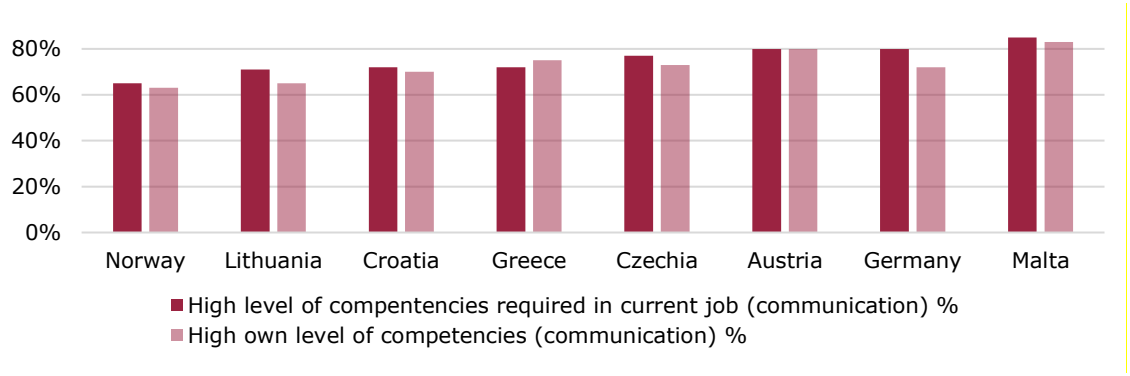
The assessment of **problem solving skills** most required by employers shows some clear study-field differences. Graduates from the field of ***Education, Natural Sciences and ICT*** report an acquired level of problem-solving skills that are **above average**. Beyond differences related to fields of study, **experiences abroad** during the study period increase the level of reported own problem-solving skills.

Fig. 8 Share of graduates reporting high level problem solving skills and high level required in the current job, cohort 2016/17



Communication skills are not at all influenced by field of study, but the **length of the studies undertaken** matters: the longer the study duration, the higher the share of graduates with a high level of communication skills. A study programme that is taught in a **language other than then the country language** also increases communication abilities. The influence of **social background** is stronger compared to the other domains: graduates from **non-academic** and **immigrant background** rate their communication skills higher. The **younger cohort** reports much lower communication skills.

Fig. 9 Share of graduates reporting high level communication skills and high level required in the current job, cohort 2016/17



iv. Matching skills with the needs of employers

The majority of graduates report a **match between the required and acquired competencies**, with reported mismatch (over- or under-qualification) in **less than 15%** of the cases. The degree of **under-qualification is higher in the younger cohort** compared to graduates who have already been on the labour market for five years. In most countries the reported mismatch **five years after graduation** is smaller than 3 percentage points. In **Greece**, the difference is much bigger: the degree of over-qualification is 9 percentage points higher five years after graduation, while there is a 2 percentage point difference of reported under-qualification one year after graduation. This can be interpreted as a direct consequence of the economic crisis: graduates in Greece were unable to find jobs matching their skills.

Graduates from a **non-academic background** have a greater chance of being employed below their level of **field-specific**, **ICT**, **communication** as well as **problem-solving competencies**. Thus, social status matters significantly when finding the most suitable employment. The findings on **over-skilling** in **problem-solving skills** reveal strong differences between fields of study; graduates from ***Social Sciences***, ***Natural Sciences*** and ***Agriculture*** report an approximately 1.5 higher chance of having problem-solving skills above the required level compared to the reference category *Engineering*.

What influences acquisition of high level competences?	Advanced ICT skills are mostly influenced by the field of study (with STEM graduates having an advantage), and the type of institution (with research university graduates reporting higher skill levels).
	Exposure to foreign languages and cultures increase problem solving skills
	Social background influences communication skills, but longer study programmes and studying in a foreign language increases abilities.
	Field specific skills are improved significantly if they are taught with a problem/project based method.

3. International mobility

An important benefit of a comparable European graduate survey is that it can provide information on those **graduates who leave the country** after graduation. Therefore, the EUROGRADUATE survey covered mobility patterns, whether before, during or after graduation, within and outside the country.

i. Learning mobility

In total, 13% of the respondents had a study abroad experience. In all countries, apart from Norway, it was through **participation in an EU mobility programme**. The **lowest participation** in any mobility program was in **Greece and Croatia**. Graduates who **financed their studies** themselves reported much **less participation** in mobility programmes, while both parental and grant support increased the chance of studying abroad. The **teaching language** is overall one of the strongest influencing factors in predicting the chance of studying abroad: if courses in the home country were taught in another language than the home-country's (mostly English), the chance of studying abroad is almost 3-times higher for EU mobility programmes and more than 3-times higher for other programmes.

Fig. 10 Study experiences abroad, BA level, 2016/17

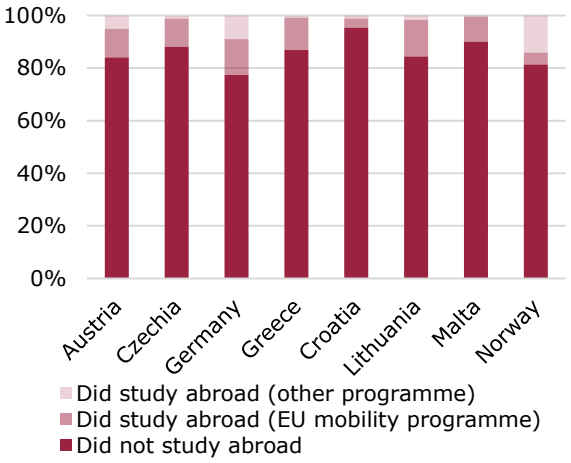
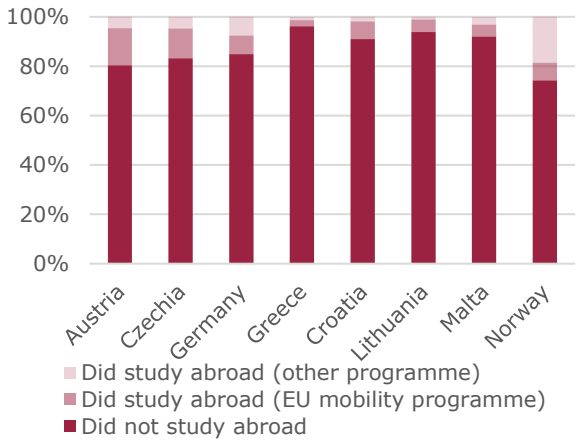


Fig. 11 Study experiences abroad, MA level, 2016/17

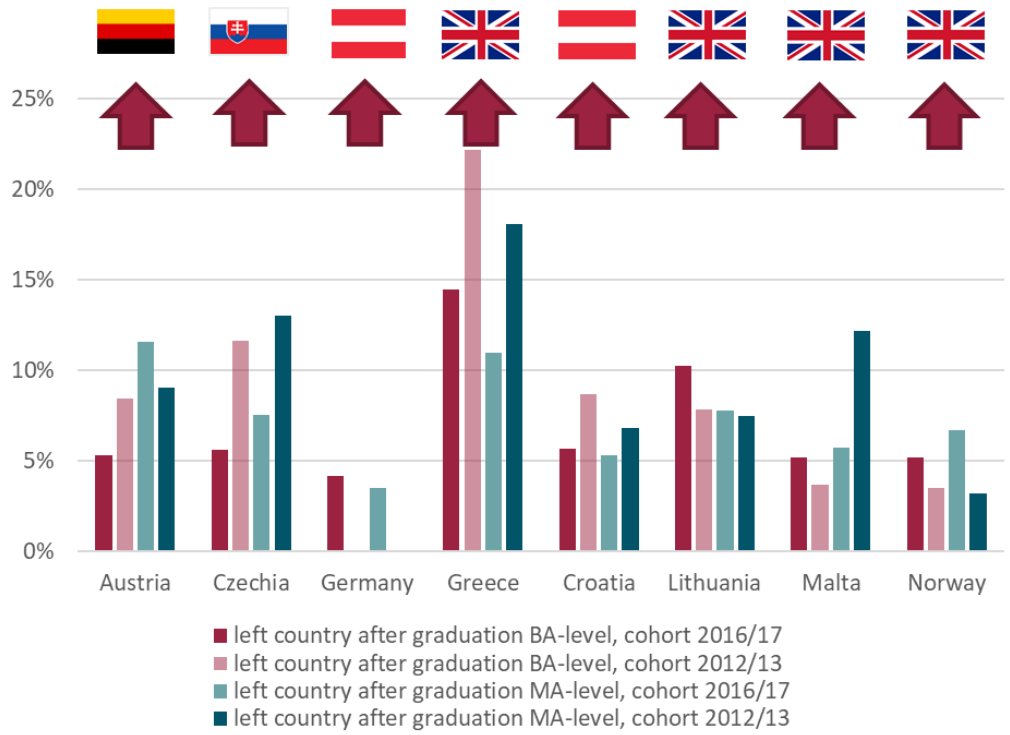


Moving to study abroad for **another degree** (after acquiring a Bachelor degree) was highest for **Croatian and Greek** graduates. For a Greek BA graduate, the chance to continue studies in another country is 9 times higher than for an Austrian BA graduate. Obtaining a degree from a **research university** (3 times higher) and having a **study period abroad experience** (2 times higher) also increases the chance to do a Master programme abroad.

ii. Labour mobility

There is a clear tendency of leaving from the **not so well-off economic countries** – with **Greece** being the country from which the most people moved abroad. In Greece, graduates of the 2012/13 cohort **were more likely** to leave the country than the younger cohort, which coincides with the peak of the economic crisis. **Germany and Norway** are the countries with the **lowest share** of graduates who moved abroad after graduation.

Fig. 12 Percentage of graduates moving abroad and main country of destination



Graduates who had **negative labour market experiences** (e.g., experiences unemployment or where employed in vertical mismatched positions) were at least 15% more likely to leave. If respondents report having experienced (a phase of) unemployment since graduation, their likelihood of moving abroad is 1.6-times higher for the cohort of 2016/17 and even **3-times higher** for the 2012/13 cohort.

On average, **graduates working outside of the country of graduation earn nearly 30% more** than those who stay in the country. The data shows that moving **within the country**, compared to not moving at all increases the average earnings of graduates only in **Malta** by approximately 500 Euros per month. In other countries, earning differences for moving within the country were not observed. The **highest benefit from being mobile** by leaving the country of study is for **Greek graduates**. They earn on average 2000 euros more per month if they leave Greece. The opposite effect is observed for **Norwegian graduates**; they **lose almost 2000 euros** of earnings per months by not living in Norway. Except for Germany, where graduates seems to move only if they find a higher quality job, **mobile graduates tend to work at a lower level** than their studies. The analysis confirmed that the main reason of finding a job in a foreign country is labour-market related: study abroad experience during studies is lowest for Greece and Croatia, while graduates of these countries have the highest proportion for degree mobility and, eventually, for finding a job abroad.

What are the main causes of mobility?	Students who received support (family or grant) during studies and those who already had foreign language courses were more likely to do a mobility period abroad during their studies. Greek and Croatian students were the least mobile.
	Greek and Croatian graduates were more than twice as likely to move to other countries for a full degree than other graduates. Previous mobility experience also doubled the chance.
	The most important cause of labour mobility is the labour market situation in the country: mobile graduates earn, on average, 30% more, even in a lower level job.

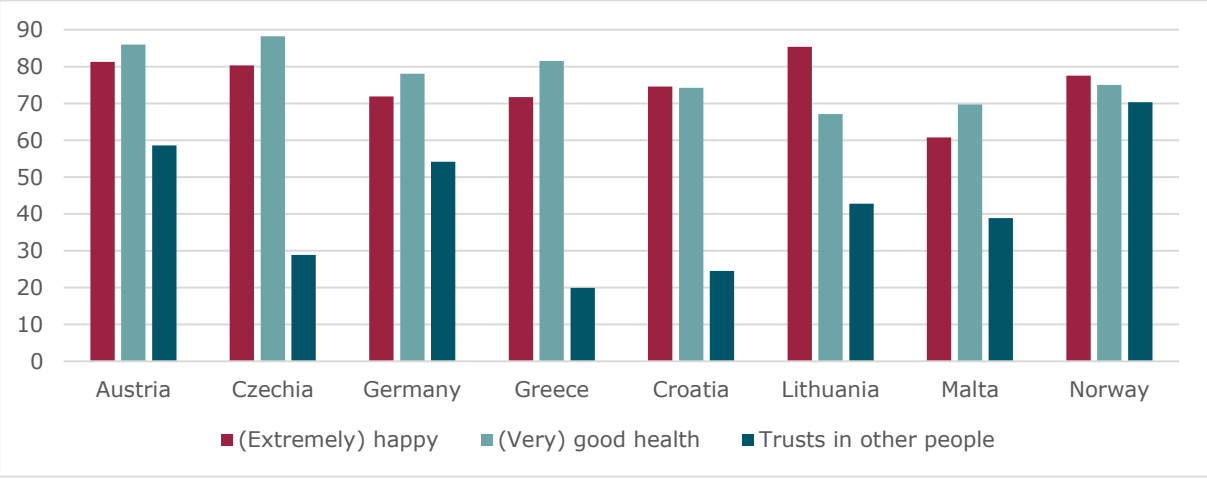
4. Democratic values and engaged citizenship

Besides high-level skills, higher education is expected to contribute to graduates becoming active citizens of healthy democracies. Analysing the data shows that **characteristics of higher education** are in fact significantly connected with social trust, democratic values, political interest, and political participation.

i. Personal satisfaction

Graduates in all countries report satisfaction with their personal situation. There are, however, **significant differences among countries on how much graduates trust other people**.

Fig. 13 Personal attitudes and values (%) MA level, cohort 2016/17



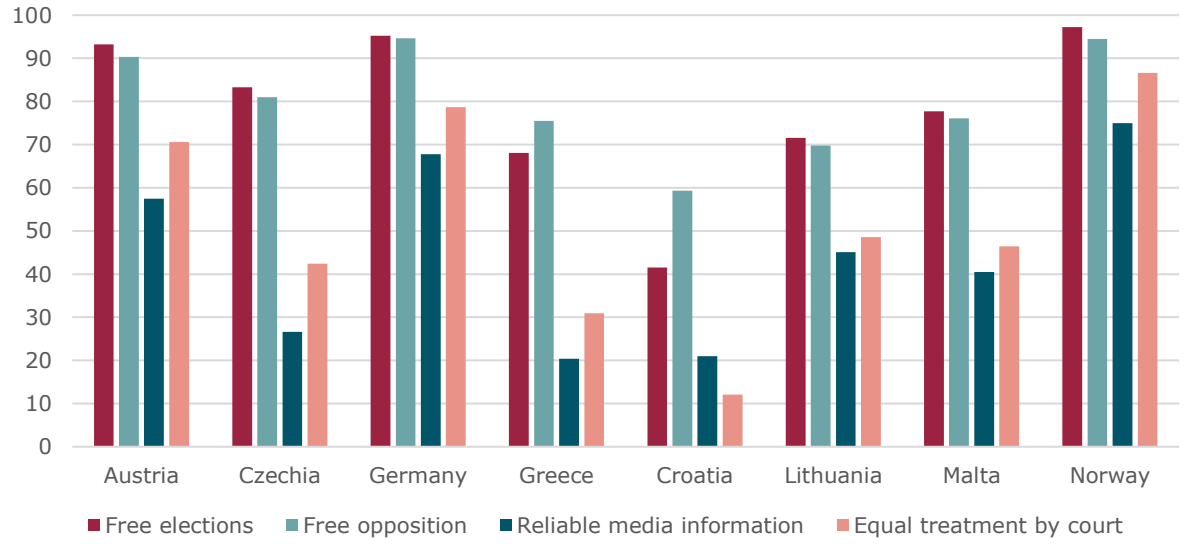
The results show that **male graduates are generally less happy** than female graduates are. With age, we observe, that trust given to others grows and graduates with **no higher educated parents are less likely to trust** others. Those that are **unemployed** or are working in a job that fits neither their degree level nor their field of study (**double mismatch**) are significantly **less likely to be happy** (the likelihood of being happy is half of the graduates in a matching job), **to be healthy** and significantly **less likely trust**

others. They are also more **negative about immigration** and about the **European Union**.

ii. Democratic citizenship

With respect to the **importance for democracy**, in all countries, and for both cohorts, at least **80%** (and in most cases even more than 90%) of the graduates state that 'free elections, 'free opposition', 'reliable media information' and 'equal treatment by courts' are crucial for democracy in general. However, there are significant country level differences in the opinions of graduates on how **much these apply** to their country of graduation.

Fig. 14 Application of democratic aspects (%) in their country of graduation - cohort 2012/13



Graduates from study programmes such as *Social sciences and journalism*, *Education, arts and humanities* tend to report significantly higher levels of democratic engagement compared to graduates of other fields. **Activating learning environments** and **international mobility** are associated with **more political participation**, and **higher levels of trust in democratic values**.

Next to higher education characteristics, differences are found associated with the **social background** of graduates. Individuals from lower socioeconomic backgrounds report lower levels of trust and less political participation. Fostering activities such as **internships, voluntary activities** or **international mobility** among students with a non-academic background could potentially balance existing inequalities in the empowerment of graduates becoming active citizens.

What affects personal and social outcomes of graduates?	Unemployed graduates and graduates who are employed below their level are less happy, less healthy and trust others less.
	Humanities and social sciences graduates, graduates who were mobile or exposed to activating learning methods are more democratically engaged.
	Graduates with disadvantaged backgrounds report less trust in others, and less democratic engagement. Paricipation in voluntary activites or international mobility seems to balance out this negative effect.

5. A look into the future of EUROGRADUATE

The EUROGRADUATE pilot survey aimed at laying the ground for a sustainable European-wide graduate survey. For this end, pilot surveys have been conducted in the eight countries Austria, Czechia, Croatia, Germany, Greece, Lithuania, Malta and Norway. For evaluating the prospects of a full rollout of European graduate survey, the data collection conditions in the Erasmus+ countries have further been investigated.

Main outcomes and steps forward?	The EUROGRADUATE comparative report exemplifies that it was possible to collect comparable data on higher education graduates across eight European countries yielding interesting results relevant to policy agendas.
	The feasibility assessment has shown that a full roll-out of a European graduate survey would be feasible in a clear majority of the Erasmus+ systems with available information.
	The results of the EUROGRADUATE comparative report lead to the conclusion that a European graduate survey could be initiated and also that it should be initiated in order to address the interests of many Erasmus+ countries in enhancing their graduate tracking capacities by a comparative dimension.

1. Introduction

Much is expected of higher education in addressing the challenges that policy makers are currently facing. The EU's new strategic agenda 2019 – 2024 geared towards stepping up investment in education and skills must be underpinned by a single European learning space as envisaged in the European Education Area by 2025. Achieving this requires a leap forward in Europe's higher education so that it can serve a changing society and economy. More equitable, accessible, diverse, student focused, innovative and interconnected should become the standard features of European higher education, while interdisciplinary problem-based cooperation, technology-powered teaching and learning, as well as continuous learning should become the new norm across the sector. The employability of graduates leaving education and training is in this sense a matter of many EU Member States, in particular because the employment rate of recent higher education graduates in the Union has not fully recovered after the 2008 financial crisis (EC, 2017a). In this context, 'skills are a pathway to employability and prosperity. With the right skills, people are equipped for good-quality jobs and can fulfil their potential as confident, active citizens. In a fast-changing global economy, skills will largely determine competitiveness and the capacity to drive innovation. They are a pull factor for investment and a catalyst in the virtuous circle of job creation and growth. They are key to social cohesion' (EC, 2016).

Against this background, higher education institutions aim at equipping their students with competencies and qualifications required to successfully enter a volatile labour market, and more importantly to maintain their employability throughout their working lives. Higher education graduates are expected to set a positive impulse to European economies and societies in terms of creativity, innovation, and entrepreneurship that is essential in order to ensure economic stabilisation and growth, to boost the innovative capacities of societies, and to keep up with the rapid changes in knowledge and technology. Beyond that, higher education is aimed at promoting active citizenship, such as tolerance, openness and critical thinking, and thus contribute to social cohesion and social trust. In recent years, international mobility is regarded a powerful mean to add to intercultural understanding, but also to expand competencies and work options of graduates, and to achieve a better allocation of highly skilled labour across the EU.

For many decades now, there has been a strong awareness of the need to invest in education and training in order to maintain and improve deployable skills in the population. An effective system of higher education is one of the crucial requirements in achieving this objective. In many countries, this has been a motivation for developing a national system for tracking and tracing higher education graduates, in order to monitor the degree to which graduates are prepared for the labour market and to assess how their career development in different higher educational systems evolves. However, existing tracking and tracing studies do not yield data that is comparable across countries, due to differences in, among other things, the definition of graduates, the sampling strategies and the measurement of certain indicators. Although this does not diminish the high value of national graduate studies, the focus on only national data limits the conclusions that can be drawn in an international and specifically European perspective. Following a recent communication from the EC that pointed out, 'many parts of the EU are experiencing shortages in certain high skill professions, both in terms of qualifications and the quality of the associated skills' (EC, 2017b), this European perspective on higher education graduates

is becoming more important than ever. Especially the increasing focus of prospective students to find a most optimal study place as well as higher education graduates to find (most optimal) employment and employers to find well-suited employees across national borders makes a comparative perspective indispensable.

Against this background, a recently published feasibility study of the EUROGRADUATE project (Muehleck et al. 2016) confirmed that there is considerable demand for an EU-wide graduate study. Stakeholders including policymakers, higher education institutions, students, employer organisations, and labour unions at both the national and the European level expressed their interest a pan-European survey. The feasibility study and subsequent research sketched the contours of a research proposal for a sustainable European graduate study designed to increase the transparency of European higher education, and to provide decision makers and stakeholders with relevant information to evaluate and improve higher education institutions and higher education systems throughout Europe (EC, 2017a).

The most important step to achieve these policy goals is the availability of high-quality data that allows for conclusions and recommendations in a comparative perspective. Such data needs to shed light on a range of aspects and outcomes of higher education, such as unemployment, the quality of the education-job match, career development and prospects, skills and competencies, international experiences of graduates as well as the values and attitudes of graduates. The data should also contain an extensive repository of potential explanatory factors, particularly with respect to the field of study, the curriculum, specific teaching and learning modes, extracurricular experience and available support and resources. Moreover, individual characteristics such as age, gender and social and ethnic background are important to be covered.

The EUROGRADUATE pilot survey project, starting in 2018, tries to address these challenges by providing first insights on the possibilities of what a full pan-European graduate survey could be able to provide. Thereby the project provides also clear and precise guidelines for how a full rollout can provide data of the highest attainable quality that is fully comparable across all participating countries. The latter target is addressed in the *Technical Report*[6]. The former target is the focus of the current report. To do so, this report presents the outcomes of the EUROGRADUATE pilot survey that took place from October 2018 to February 2019 in eight pilot countries: *Austria, Czechia, Germany, Greece, Lithuania, Malta and Norway*. The pilot survey in these eight countries comprises surveys of four distinct types of higher education graduates, namely Bachelor-level (BA-level) graduates and Master-level (MA-level) graduates from two graduation cohorts – the academic year of 2012/13 and the academic year 2016/17[7]. This allows analysing and discussing differences between BA-level and MA-level graduates as well as differences over time and between graduates with different labour market experiences. It is important to emphasize that the EUROGRADUATE pilot survey is designed to be a pilot project with the intention to pave the way for a potential full rollout across the all EU and EEA countries.

The setup of the report is as follows:

[6] See EC (forthcoming), Technical assessment of the EUROGRADUATE pilot survey and feasibility of a full rollout

[7] See Chapter 2 for more detailed information.

Chapter 2: The EUROGRADUATE Pilot Survey

This chapter provides insight into some of the core aspects underlying the reliability of the results presented throughout this report. Thereafter, we present the response rates, the data weighting procedure, the minimum standards for this report and the clustering of level, type and field of study distinguished throughout the report.

Chapter 3: Pilot countries and their Higher education systems

The aim of Chapter 3 is providing contextual information for the results of the EUROGRADUATE pilot survey presented in this report. The Chapter comprises background information on all eight pilot countries, their population composition, and their higher education programmes. This chapter is relevant in order to understand the framework in which the findings from EUROGRADUTE can be interpreted.

Chapter 4: Outcome dimensions of higher education in a comparative perspective

In this chapter, the basic outcome dimensions of higher education are introduced. Higher education institutions are expected to equip graduates with necessary competencies to successfully enter a volatile labour market, and more importantly to maintain their employability. Higher education graduates are next particularly expected to provide a positive impulse on the European economies and societies in terms of creativity, innovation, and entrepreneurship. Higher education should also promote engaged citizenship and democratic values, such as tolerance, openness and critical thinking, and thus contribute to higher levels of social cohesion and trust. This chapter provides a first comparative picture on these outcomes by analysing the extent to which the study programmes in the eight pilot countries have provided their graduates with a good basis for these different dimensions.

Chapter 5: The student journey

In line with the setup of the questionnaire, the subsequent chapters are ordered chronologically. The thematic focus of Chapter 5 is on experiences during the time of study. The focus is on issues such as financing the study period, the language(s) of instruction, experiences abroad (e.g. work or study within the EU mobility framework), work experiences, learning environments and graduates' attitudes towards studying and learning.

Chapter 6: Labour market outcomes

In Chapter 6 a comprehensive overview of labour market outcomes is presented. This chapter presents one of the key issues of EUROGRADUATE. After discussing graduates' labour force participation and their chances in seeking for employment against the background of country-speific labour market conditions job, the chapter deals with relevant aspects of graduates' current job. Beyond that, the development of graduates' labour market careers is analysed by means of examining the extent to which the labour market situation one year after graduation influences the labour market situation five years after graduation .

Chapter 7: Social outcomes

There is growing interest by policy makers and educational practitioners to looking beyond the economic returns to higher education such as income, employment and GDP per capita. Non-economic aspects such as well-being but also social integration, life satisfaction, civic engagement and health are of increasing relevance (OECD, 2011). This is especially the case in terms of higher education. Thus, this chapter provides and overview of different dimensions of social outcomes related to personal attitudes and values, voluntary work, democratic values, view on immigration and attitudes toward Europe.

Chapter 8: Further studies and continous learning

Graduating from a higher education programme does ideally not represent the end of the learning journey. Questions such as 'Do I continue (directly) to study at a higher education institution? Do I enter the labour market and upskill through learning opportunities in practice such as further on-the-job training? Will I re-enter higher education after a period in employment?' are addressed in detail this chapter.

Chapter 9: Mobility

Since the establishment of the Eramus+ programme, which provides grants for a wide range of actions including the opportunitiy to study abroad and obtain work experience abroad a growing body of higher education students is actively encouraged to collect abroad experiences. More than 10 Mio. individuals have participated in the Erasmus program. EUROGRADUATE provides interesting insights on study and work abroad experiences of students, which will be focused on in this chapter. Beyond that, the chapter will address the overall mobility behaviour of higher education graduates.

Chapter 10: Thematic chapter I: Skills and skill mismatch in the Labour Market – Comparing eight European countries

The comparative report on the EUROGRADUATE pilot survey provides two thematic chapters, in which in-depth analyses of core topics of higher education research are presented and discussed. The first thematic chapter concentrates on the acquisition of skills and the usage of skills on the labour market. The acquisition of skills is among the most important functions of education, especially of higher education. The EUROGRADUATE pilot survey provides detailed data on types of skills and on mismatch between the acquired and the required types and levels of skills that the graduates are equipped with in the eight countries that are observed.

Chapter 11: Thematic chapter II: How could higher education contribute to social trust, democratic values and political participation?

In the second thematic chapter, the focus is on the relation between higher education and social outcomes such as democratic values and political participation. Among the social outcomes covered by the EUROGRADUATE pilot survey the chapter focuses on *social trust, democratic values, and political participation*, since they receive particularly high attention among policy makers. While there is some empirical research on the social outcomes of education, the topic has received much less attention than economic and labour market outcomes. The mechanisms of *how* higher education contributes to social outcomes are

not very well understood. This thematic chapter aims at adding to this understanding by analysing how different characteristics of higher education are interrelated with trust, political values, and political participation.

2. The EUROGRADUATE pilot survey

The EUROGRADUATE pilot survey is a unique survey of recent graduates in eight European countries that was launched with the intention to lay the ground for a sustainable European-wide graduate research. The EUROGRADUATE pilot survey countries were Austria, Czechia, Croatia, Germany, Greece, Lithuania, Malta and Norway. In this chapter, we briefly address some of the core aspects underlying the results presented in this report. We start by the selection of the eight pilot countries and with a discussion of the definition of the graduate that are at the core of the report. Thereafter, we present the response rates, the data weighting procedure, the minimum standards for this report and the clustering of graduates with respect to country and type, level and field of study distinguished throughout the report.

2.1 Selection of countries

Twenty countries applied to the EC for becoming a pilot country of the EUROGRADUATE Pilot survey. These countries were Austria, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, and Slovenia. With the resources of the EU-funded pilot project, surveys in eight countries could be carried out. One aim of the EUROGRADUATE pilot project was to develop recommendations for a full rollout of a graduate survey among all ERASMUS+ countries. Therefore, the pilot survey considered as many different context conditions as possible to get a broad overview of all potential challenges for a full rollout[8]. Context conditions that can result in different challenges for a graduate survey relate, for example, to the higher education system, the labour market and technical factors.

Based on the set of context conditions, the following eight pilot countries have been selected for participation in the EUROGRADAUTE pilot survey: *Austria, Czechia, Croatia, Germany, Greece, Lithuania, Malta and Norway*.

2.2 Definition of the target group

A clear definition of the target group (graduates) is essential, especially since EUROGRADUATE is an internationally comparative study. The target group has been defined as follows:

- Graduates from the academic year 2012/13 and the academic year 2016/17. Given that the pilot survey took place in autumn 2018, the report covers therefore graduates one and five years after graduation.

[8] See Appendix 2.1 of this chapter for an overview of the conditions considered.

- The pilot survey includes all graduates on the basis of the ISCED classification of 2011 on the ISCED 6 level (BA) and the ISCED 7 level (MA or long degree programmes)[9].
- Graduates are not defined by nationalities but by the country in which they graduated from a higher education programme in the academic years 2012/13 and 2016/17. This is regardless of their current place of residence (in or outside of the country) and regardless of place of residence prior to the study programme (in or outside of the country).
- In principle, all institutions (public and private) in a pilot country offering programmes on ISCED level 6 or 7 were included. However, institutions at which students are employed and that are run by an employer were excluded. That might be the case with "corporate universities" but also with military or police universities.

2.3 Response rates

The fieldwork period of the EUROGRADAUTE pilot survey lasted from October 2018 to December 2018. Due to technical challenges in contacting graduates[10], the start of the fieldwork was delayed in some countries and the fieldwork period was finally extended until the first half of February 2019.

Table 2.1 presents an overview of the final number of respondents that are included in analyses of this comparative report. The final number of respondents is based on a data cleaning process that took place centrally and guaranteed a high quality of data cleaning standards for all eight pilot countries. A valid case is defined as any case that has only valid values (non-missing information) in the following variables[11]:

- ISCED 2011 level
- ISCED 2013 field
- Type of Higher Education Institution

[9] ISCED 5 programmes (short courses) are very heterogeneous between countries. Thus, ISCED 5 programmes were only included in the pilot survey if they are part of the higher education programme in the respective country, they are offered by institutions, which are also offering at least ISCED 6 programmes and these short courses play a significant role in the higher education system of a country (i.e. have a minimum number of graduates per year). Out of the eight pilot countries, only Malta fulfilled these criteria. However, ISCED 5 graduates are not part of this report.

[10] For a more detailed discussion of the fieldwork and the related challenges, see Technical assessment of the EUROGRADUATE pilot survey and feasibility of a full rollout.

[11] Several countries could link register data or the used sampling frames to the survey data. This enabled to control for plausibility and accuracy of the collected data. In most cases register and survey data were identical. A relevant number of discrepancies between the linked data and the responses of graduates occurred in regard to the ISCED level. As expected, a part of the respondents provided information on a study programme they graduated from either before or after the one, they were actually selected for. As this would have led to a reduction of quality and reliability of the data, cases that reported a higher ISCED level than the one they were selected for were defined as invalid. In case of other differences, a correction was performed based on other variables (e.g., study duration, start date and other obtained degrees).

- Sex
- Year of birth[12]
- Enrolment status (where applicable)

[12] Or, allowing for an approximation, year of highest secondary degree.

Table 2.1 Number of respondents and response rate

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13								
Sample size	7,104	5,914	7,792	*	10,467	11,882	4,167	5,058
Opt-in accepted	1,302	1,286	4,998	616	1,483	878	635	1,322
Gross response rate (%)	18.3	21.7	64.1	*	14.2	7.4	15.2	26.1
Number of respondents included in analyses	1,054	745	4,910	446	919	640	457	1,124
Net response rate (%)	14.8	12.6	63.0	n.a.	8.8	5.4	11.0	22.2
Cohort 2016/17								
Sample size	6,667	6,350	5,474	*	22,868	12,507	4,492	5,287
Opt-in accepted	1,313	1,547	1,083	1,204	5,676	1,542	705	1,538
Gross response rate (%)	19.7	24.4	19.8	*	24.8	12.3	15.7	29.1
Number of respondents included in analyses	1,120	1,015	914	866	4,278	1,164	506	1,160
Net response rate (%)	16.8	16.0	16.7	n.a.	18.7	9.3	11.3	21.9

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, * not known.

Box 2.1 EUROGRADUATE: The case of Germany

The EUROGRADUATE pilot study surveys graduates one year and five years after graduation to cover the short- and mid-term perspective and to test this design for a potential full rollout of the EUROGRADUATE study. EUROGRADUATE envisages using a panel design, i.e. surveying the same respondents one, five and possibly nine years after graduation thus picturing more closely individual trajectories and careers.

Unlike the other pilot countries, Germany already uses a similar panel approach for the last 30 years. The target cohorts of the EUROGRADUATE pilot survey, the graduates of the academic years 2016/17 and 2012/13, are at the same time target cohorts of the regular German graduate panel conducted by the German Centre for Higher Education Research and Science Studies (DZHW). Surveys of both cohorts started in Autumn/Winter 2018. For the cohort 2012/13 this was the second panel wave.

For the 2016/17 cohort, it was possible to draw an additional sample in Germany within the framework of EUROGRADUATE. For the 2012/13 cohort for several reasons this was not possible. As a consequence, Germany did only carry out a full-fledged EUROGRADUATE pilot survey for the cohort of 2016/17. For the 2012/13 cohort, this report will rely on the DZHW Graduate panel data. Where the comparability between the DZHW Graduate panel and the EUROGRADUATE survey could not fully been established, no results of the German cohort 2012/13 will be presented.

It is important to note that the final results on the German cohort 2012/13 will be published by the DZHW. For calculating the final results it is envisaged to additionally use data of the KOAB study, the second large German graduate survey. The KOAB data was not yet available when this report was layed down. Thus the final results on the German cohort 2012/13 published by the DZHW might diverge from the results published in the EUROGRADUATE reports.

The minimum samples of approached graduates were 5,000 from the cohort 2012/2013 and 5,000 from the cohort 2016/17[13]. The pilot countries were allowed to increase the number of graduates, which was in particularly used in Croatia and Lithuania. Table 2.1 shows that the final sample sizes[14] for the 2012/13 cohort varies between 4,167 in Malta (equal to a 100% approach strategy) and 11,882 in Lithuania. For the 2016/17 cohort, the sample sizes range between 4,492 in Malta (equal to a 100% approach strategy) to 22,868 in Croatia. The share of approached graduates that entered the questionnaire and opted in by accepting the privacy statement varies for the 2012/13 cohort between 7.4% in Lithuania and 26.1% Norway. In the 2016/17 cohort the gross response rate varies between 12.3% in Lithuania and 29.1% in Norway. Due to the length of the questionnaire, a significant share of respondents that opted in did not complete the questionnaire and was not included in the final data set. The number of respondents on which the analyses in this report are based varies for the 2012/13 cohort between 446 in Greece and 1,124 in

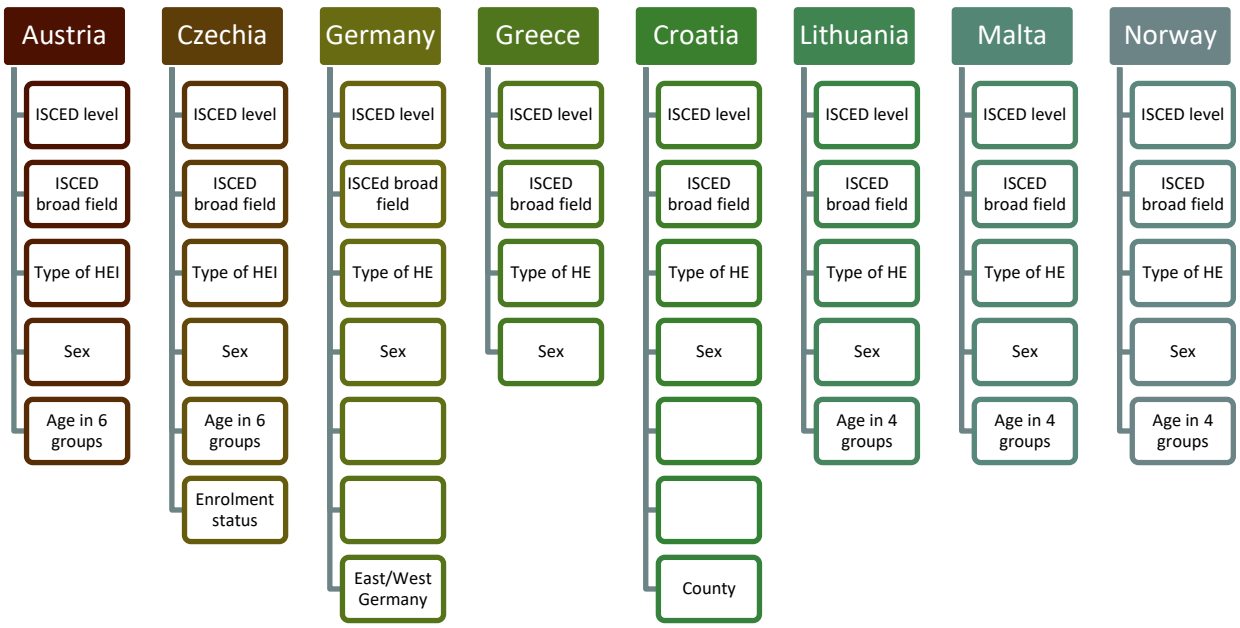
[13] This does not hold for the German survey of the cohort 2012/13. See Box 2.1.

[14] In Greece, the final technical approach required to conduct the fieldwork does not allow to define precisely the sample size.

Norway. For the 2016/17 cohort, the numbers vary between 506 in Malta and 4,278 in Croatia.

2.4 Weighted data

Survey data is generally weighted based on population data to ensure the representativeness of the study if it is suspected that the sample is biased for whatever reason, or that certain groups are more likely to participate in the survey than others are. This is a necessity with almost all surveys and a common quality standard. The EUROGRADUATE Pilot Study considered and tested several weighting methods for each country before deciding to use the so-called "raking procedure" in all countries to guarantee comparability. The results presented in this report are, unless explicitly stated, based on the raking procedure considering the following variables:



Extensive checks of the results of various weighting procedures were carried out. The final solution gives reliable results in all countries for the core analyses presented in this report.

2.5 Minimum standard for presentation

To guarantee minimum data standards and reliable outcomes, results in this report are only presented if at least 30 respondents filled out the question under consideration.

2.6 Main split variables

Throughout this report, results will be presented in particularly along four main split variables with respect to the higher education programme graduated from:

- Country
- Master (MA-Level) versus Bachelor (BA-level)
- Field of study
- Type of Higher Education Institution

With respect to *Country*, unless explicitly stated, the results in this report always refer to the country graduated in. In other words, terms such as e.g. 'graduates from Austria' or 'Austrian graduates', refer always to all EUROGRADUATE respondents that graduated from a higher education institution in Austria and the outcomes are not limited to graduates with Austrian nationality nor to the outcomes of graduates living in Austria.

With respect to the *level of degree*, unless explicitly stated, the results in this report always refer to the degree level graduated from in the specific academic year (2012/13 or 2016/17). The reader has to keep in mind that, in particular BA-level graduates of the academic year 2012/13 might at time of survey (autumn 2018) have gained a degree from a higher degree level (MA-level).

With respect to *field of study*, to guarantee reliable and between the eight pilot countries comparable results, the report distinguishes 5 broad fields of study:

- Education, Arts and Humanities
- Social Sciences and Journalism
- Business, Administration, Law and Services
- Natural Sciences (including Mathematics) and Health
- Technology and Engineering

Appendix 2.2 of this chapter shows the ISCED-F narrow study programmes clustered in these five broad fields of study.

With respect to *Type of Higher Education Institution,* the report divides graduates in general into two groups. Those that graduated from a 'research university' and those that graduated from a non-research university'. In general, (Fach)Hochschulen (Germany), Fachhochschulen and Pedagogische Hochschulen (Austria), Colleges (Czechia), College of Arts, Science and Technology (Malta), Institutes of Technology (Greece), Høgskolen (Norway), Colleges (Lithuania) and Higher Education Institutions of professional higher education (Croatia[15]) form the core of the non-research university institutions.

[15] In Croatia, depending on the degree and the precise study, also some graduates from research universities are clustered under non-research university graduates.

2.7 Appendix: Country selection criteria

Appendix 2.1: Country selection criteria

- *Regional spread*: Applying countries were clustered into four major regions to reflect the regional variety of the ERASMUS+ countries.
- *Size of the higher education system*: Large and small higher education systems set different challenges for a graduate survey. Countries were arranged according to the number of graduates in ISCED 6 and 7.
- *Employment rate of higher education graduates*: The employability of graduates is one of the core topics of EUROGRADUATE. Consequently, countries with high and low employment rates of graduates were considered for the pilot.
- *Youth unemployment rate*: The higher education system and its graduates do not operate in a vacuum, therefore, the overall situation of the labour market was considered as well.
- *Existing graduate survey with planned repetition*: It makes a difference, if a country already has a graduate survey in place, because then experiences (e.g. how to contact the graduates, updating of addresses, return rates) are available. At the same time, countries with an existing survey were of crucial interest in the current pilot to investigate manners how EUROGRADUATE can be included in or coordinated with regular national graduate surveys.
- *High share of professional BA programs*: The more differentiated a higher education system is the higher is the required effort to achieve a representative sample. A common differentiation in this sense is between a more academically oriented (university) track and a more professionally oriented (non-university) track.
- *Proportion of international students*: The most important criterion to be able to carry out a reliable graduate survey is good (in the sense of complete and undistorted) contact data of the graduates. This is even more difficult to achieve if many graduates leave the country after graduation.
- *Non-Latin alphabet*: For technical reasons when implementing the online questionnaire, it was considered helpful to test the questionnaire in a non-Latin Alphabet language.

Based on the set of presented indicators, the following eight pilot countries have been selected for participation in the EUROGRADAUTE pilot survey: *Austria, Czechia, Croatia, Germany, Greece, Lithuania, Malta and Norway*.

Appendix 2.2: Fields of study - Clustering

Education, arts and humanities	Social sciences and journalism	Business, administration, law and services	Natural sciences (incl. mathematics) and health	Technology and engineering
Literacy and numeracy	Social and behavioural sciences	Business and administration	Natural sciences, mathematics and statistics (not specified)	Information and Communication Technologies (ICTs)
Education	Journalism and information	Law	Biological and related sciences	Interdisciplinary programmes and qualifications involving Information and Communication
Interdisciplinary programmes and qualifications involving Education	Interdisciplinary programmes and qualifications involving Social sciences, journalism	Interdisciplinary programmes and qualifications involving Business, administration	Environment	Engineering, manufacturing and construction (not specified)
Arts		Services (not specified)	Physical sciences	Engineering and engineering trades
Humanities		Personal services	Mathematics and statistics	Manufacturing and processing

	Languages		Hygiene and occupational health services	Interdisciplinary programmes and qualifications involving Natural sciences, math	Architecture and construction
	Interdisciplinary programmes and qualifications involving Arts and humanities		Security services	Natural sciences, mathematics and statistics (other)	Interdisciplinary programmes and qualifications involving Engineering, manufacturing
	Arts and humanities (other)		Transport services	Agriculture	
			Interdisciplinary programmes and qualifications involving Services	Forestry	
				Fisheries	
				Veterinary	
				Interdisciplinary programmes and qualifications involving Agriculture, forestry,	
				Agriculture, forestry,	

			fisheries and veterinary (other)	
			Health	
			Welfare	
			Interdisciplinary programmes and qualifications involving Health and welfare	

Source: EUROGRADUATE pilot survey 2018.

3. The Pilot countries' higher education systems

3.1 Introduction

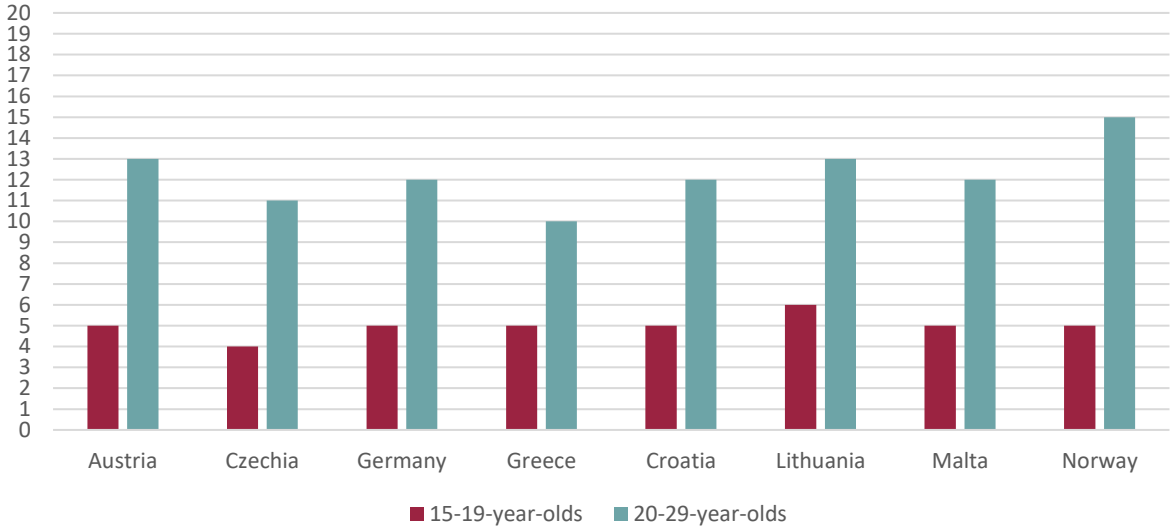
The aim of this chapter is to embed the results of the EUROGRADUATE pilot survey in their national contexts. The chapter provides a background against which the results from the survey can be interpreted. In order to do so, data from OECD and ETER (European Tertiary Education Register)[16] is used for the years 2012 to 2017 to characterise and describe the respective countries. This coincides with the period in which most of the EUROGRADAUTE pilot survey respondents graduated and entered the labour market.

3.2 Share of population with higher education

Figure 3.1 shows the percentages of 15 to 19 and 20 to 29-year-olds in the population. The number of young people in a population has an impact on both, the renewal of labour force qualifications and the amount of resources a country invests in its educational system (OECD, 2000). In this sense, the share of 15 to 19-year-olds gives an indication of the size of the future cohort of potential higher education graduates. Figure 3.1 indicates that there are marginal differences with respect to the share of 15 to 19-year-olds in the countries participating in the EUROGRADUATE pilot survey. The differences between the countries are slightly larger if one considers the 20 to 29-year olds – the typical age band for higher education. In Norway, this group of young adults represents 15% of the population, whereas in Greece this represent only 10%. Hence, Norwegians meet relatively more competitors when entering the labour market than young adults in Greece do.

[16] https://www.eter-project.com/#/home.

Figure 3.1 Share of population between the age of 15 and 19 and between the age of 20 and 29 in the year 2018 (%)



Source: OECD 2018, https://stats.oecd.org/#.

Moreover, the share of higher education graduates in the relevant age cohort is of importance since it shows how competitive the environment, in which the EUROGRADUATE graduates live in, is. Thus, in Table 3.1 this relation is displayed.

Table 3.1 Share of population between the age of 25 and 34 with tertiary education degree, in the year 2010 and 2017 (%)

	25-34-year-old with tertiary education degree (2010)	25-34-year-old with tertiary education degree (2017)
Austria	33.9	40.3
Czechia	22.6*	33.8
Germany	26.1*	31.3
Greece	31.2*	42.5
Croatia	n.a.	n.a
Lithuania	46.3*	55.6
Malta	n.a	n.a.
Norway	47.3	48.3

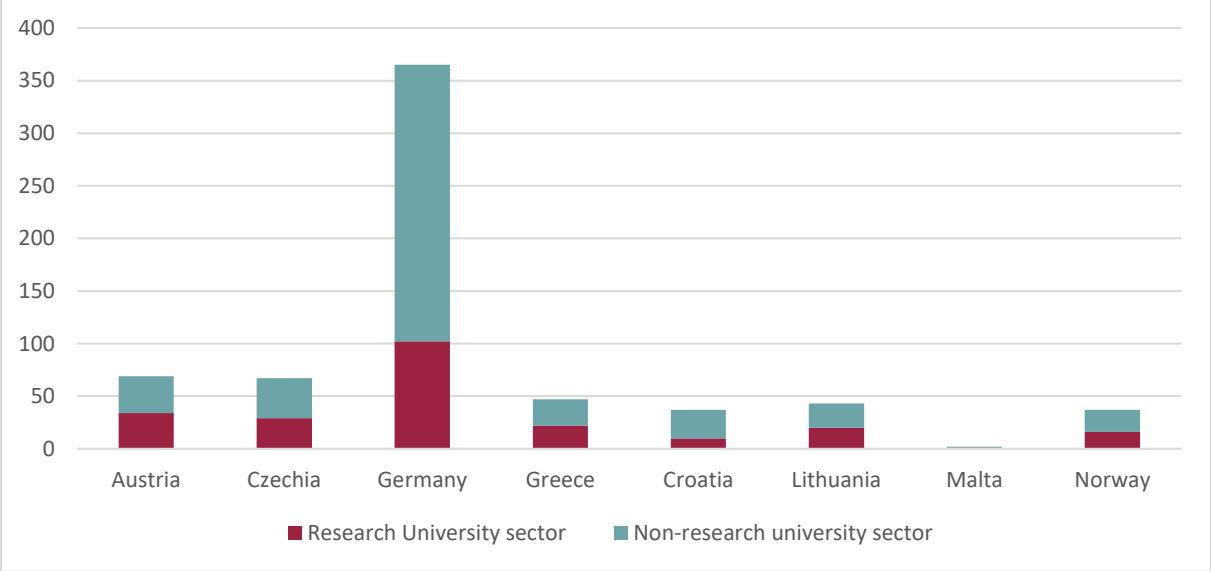
Source: OECD 2018, https://stats.oecd.org/#, * series break, n.a. = not available in OECD database.

EUROGRADUATE graduates have the least competition in Czechia and Germany where the proportion of tertiary education graduates in 2010 lies below 30% and just above 30% in 2017. In contrast, around half of the considered population holds a tertiary education degree in Norway (48%) and Lithuania (56%). Thus, obtaining a tertiary education degree might provide a smaller comparative advantage in Lithuania and Norway compared to Germany and Czechia, which also has to do with the strong vocational training system (e.g. in Germany).

3.3 Differentiation within tertiary education

Information on whether a country has a binary or a unitary tertiary education system is provided in the following. Although, the definitions for unitary and binary systems are not entirely consistent across the countries, the section intends to provide a general distinction between the countries. To do so, it is aimed at differentiating between tertiary education that is organised at the more scientifically oriented university sector and tertiary education at the more vocationally oriented education sector. Along this line, all EUROGRADUATE pilot countries can be classified as having a binary system. Figure 3.2 provides an overview of the number of tertiary education institutions. Where Greece, Austria and Lithuania have a rather balanced relation between non-research and research universities, Germany and Croatia have a much stronger focus higher education institutions that are organised more scientifically.

Figure 3.2 Number of higher education institutions in different sectors



Source: ETER-Database of July 2019, Germany without 'Verwaltungsfachhochschulen'. Note: ETER-database does not include all higher education institutions. It considers – as far as we are informed – only those HEI with at least 30 FTE academic personnel and at least 200 students. For the underlying figures, see Table A3.1 in Appendix 3.1 of this chapter.

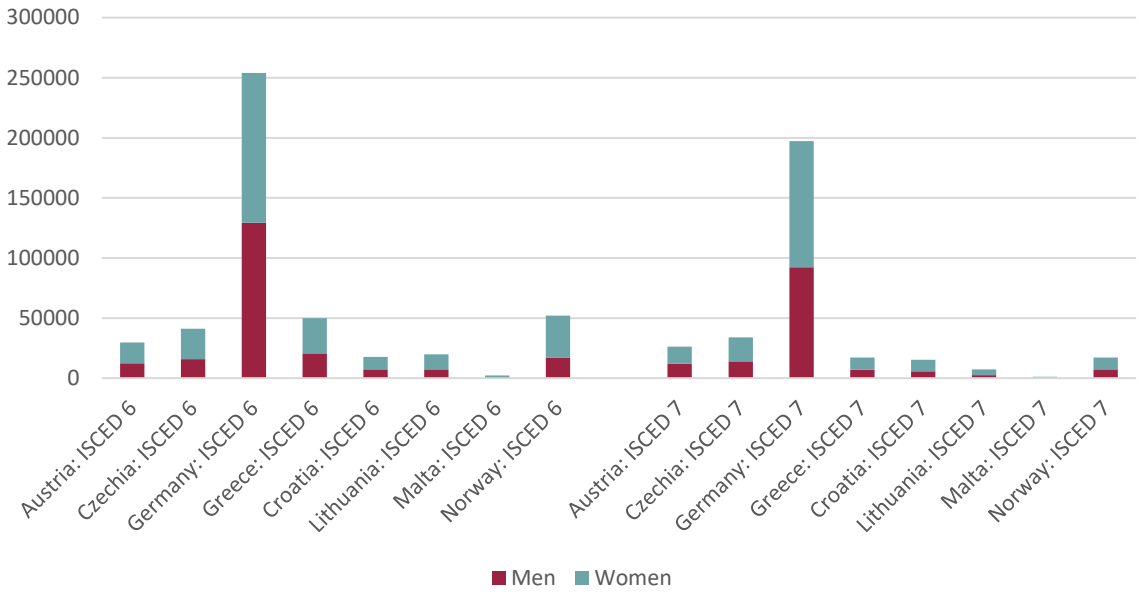
3.4 Number of tertiary education graduates

Finally, the number of graduates in tertiary education, the distribution of graduates by field of study and – based on EUROGRADUATE – the distribution by the types of tertiary education institutions, by sex and average age at graduation is displayed against the background of population averages. Figure 3.3 presents the number of graduates per ISCED level in the EUROGRADUATE pilot survey and Figure 3.4 presents the distribution of graduates of ISCED 7 level programmes by field of study.

The total number of ISCED 6 graduates in 2016 varies from 2,300 in Malta to up to 250,000 in Germany. In the remaining six countries, the variation is much smaller and ranges from

just below 18,000 in Croatia up to nearly 52,000 graduates in Norway. The number of ISECD 7 graduates is in all countries smaller than the number of ISCED 6 graduates and Malta (1,154) and Germany (197,292) are again clear outliers. In the other countries, the number of ISCED 7 graduates ranges from just above 7,000 in Lithuania to around 34,000 in Czechia. Across countries, most graduates are female. The share of female graduates is thereby lowest in Germany (ISCED 6: 49% and ISCED 7: 53%) and among ISCED 6 graduates highest in Norway (67%) and among ISCED 7 graduates in Lithuania (66%).

Figure 3.3 Number of graduates by ISCED-level and sex in 2016

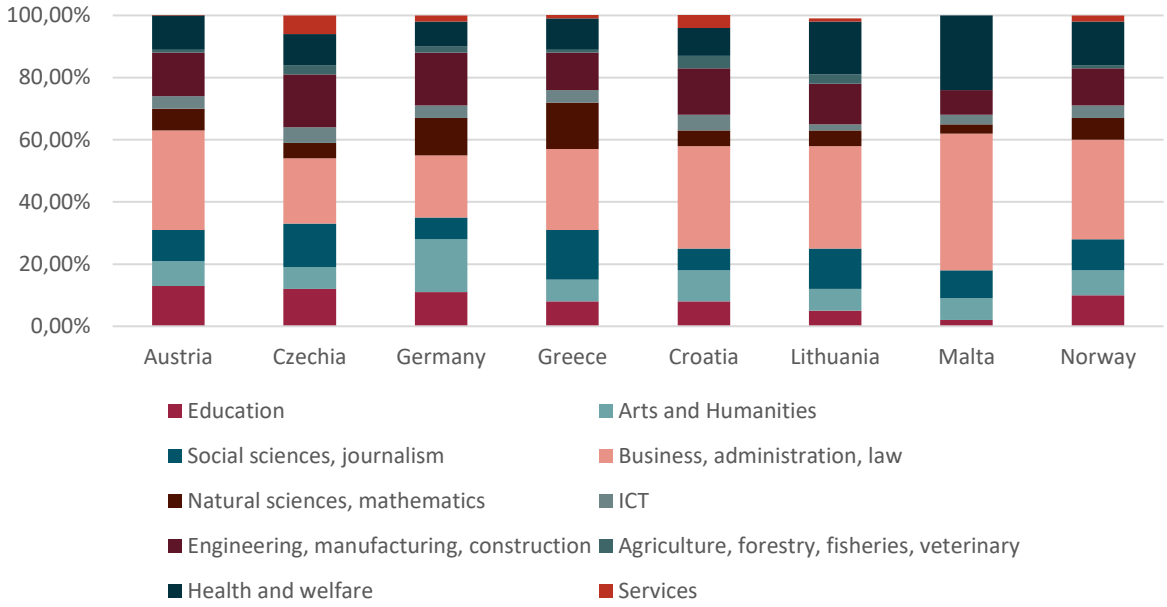


Source: ETER-Database of July 2019, Germany without 'Verwaltungsfachhochschulen'. For the underlying figures, see Table A3.2 in Appendix 3.2 of this chapter.

The field *Business, administration and law* represents in all countries participating in EUROGRADAUTE the largest share of graduates. In Czechia and Germany, the field *Business, administration and law* is relatively small with around 20% of the graduates obtaining their ISCED 7 degree in this field. In contrast, in Malta nearly half of the graduates obtain their degree in the field *Business, administration and law.* With the exception of Malta, the data shows that more than 10% (ranging from 12% in Greece and Norway to 17% in Czechia) of the graduates obtain a degree in the field *Engineering, manufacturing and construction.* The share of graduates in the field of *Agriculture, forestry, fisheries and veterinary* is in all countries smallest. Finally, there are some mentionable differences between the eight countries, such as:

- The share of degrees in the field of *Education* is small in Lithuania and Malta,
- The share of degrees in the field of *Arts and Humanities* is relatively large in Germany,
- The share of graduates in the field *Social sciences and journalism* is relatively large in Greece, Czechia and Lithuania,
- The share of graduates in the field *Natural sciences and mathematics* is relatively large in Germany and Greece,
- The share of graduates in the field *Health* is relatively large in Lithuania and Malta.

Figure 3.4 Distribution of ISCED 7 (incl. long degree) graduates by field of study in 2016



Source: ETER-Database of July 2019, Germany without 'Verwaltungsfachhochschulen', ICT: Information and Communication Technologies.

Table 3.2 and Table 3.3 refer to the exceptional situation in Malta, which is the only pilot country with ISCED 5 level graduates. The tables display that the share of BA-level graduates in the weighted EUROGRADUATE data is larger than the share of MA-level graduates in all countries. With the latter varying in the 2012/13 cohort between 15% in Greece and 47% in Croatia (and 48% in the DZHW graduate panel) and in the 2016/17 cohort between 26% in Greece and 47% in Croatia. The share of MA-level graduates is – except for Greece – strongly comparable between the two cohorts.

With the exception of Norway, a clear majority of graduates received their degree at a research university. Ranging in the 2016/17 cohort from 61% in Germany up to 91% in Czechia. In Norway, around 50% graduated from a research university and 50% from a non-research university. On the MA-level as well as on the BA-level, female graduates form the majority. The exception is Greece with only around 40% of female graduates.

Table 3.2 Share of graduates by level of degree, type of higher education institution, sex (on BA-level and MA-level), age at graduation (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Level of Degree								
ISCED 5 level							16.8	
ISCED 6 level (BA-level)	54.1	56.8	52.0	84.7	53.3	81.3	56.8	66.9
ISCED 7 level (Ma-level)	45.9	43.2	48.0	15.3	46.7	18.7	26.4	33.1
Type of HE								
Research university	69.4	88.1	72.4	67.6	68.9	71.1	79.8	44.2
Non-research university	30.6	11.9	27.6	32.4	31.1	28.9	20.2	55.8
Sex: BA-level								
Male	40.2	38.0	43.7	59.1	42.1	37.5	41.2	36.4
Female	59.8	62.0	56.3	40.9	57.9	62.5	58.8	63.6
Sex: MA-level								
Male	43.1	38.9	45.2	59.0	39.4	34.5	43.0	43.6
Female	56.9	61.1	54.8	41.0	60.6	65.5	57.0	56.4
Average age at time of graduation								
BA-level	24.0	25.2	25.3	23.5	24.8	24.3	22.9	26.7
MA-level	27.1	26.7	26.9	29.7	24.2	26.1	28.8	30.7

Source: EUROGRADUATE pilot survey 2018, Cohort 2012/13, Germany: DZHW graduate panel.

The data shows that BA-level graduates in both cohorts are on average around 24 years old at time of graduation, ranging in the 2016/17 cohort from 23.1 years in Malta to 26.4 years in Norway. MA-level graduates in the 2016/17 cohort are on average 27 years old, ranging from 23.9 years in Czechia, up to 30.5 years in Greece and Norway. With respect to MA-level graduates, two particularly interesting results are visible. In both Austria and Czechia, the average age of MA-level graduates is around 2.5 years younger in the 2016/17 cohort compared to the 2012/13 cohort. In addition, in Czechia MA-level graduates in the 2016/17 cohort are as old as BA-level graduates are.

Table 3.3 Share of graduates by level of degree, type of higher education institution, sex, age at graduation (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Level of Degree								
ISCED 5 level							23.8	
ISCED 6 level (BA-level)	57.6	53.1	57.4	74.5	54.8	74.0	46.0	66.2
ISCED 7 level (Ma-level)	42.4	46.9	42.6	25.5	45.2	26.0	30.2	33.8
Type of HE								
Research university	64.3	91.0	60.7	72.3	69.8	70.7	80.3	50.1
Non-research university	35.7	9.0	39.3	27.7	30.2	29.3	19.7	49.9
Sex: BA-level								
Male	41.4	38.2	50.6	58.8	42.1	39.0	44.3	38.2
Female	58.6	61.8	49.4	41.2	57.9	61.0	55.7	61.8
Sex: MA-level								
Male	45.4	40.3	48.0	58.3	38.2	36.8	42.2	43.6
Female	54.6	59.7	52.0	41.7	61.8	63.2	57.8	56.4
Average age at time of graduation								
BA-level	23.7	24.0	20.9	24.0	23.5	24.1	23.1	26.4
MA-level	24.6	23.9	25.7	30.5	25.0	25.6	28.2	30.4

Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17.

3.5 Appendix

Appendix 3.1

Table A3.1 Number of higher education institutions in different sectors

	Number of tertiary education institutions		
	Research University sector	Non-research university sector	Total
Austria	34	35	69
Czechia	29	38	67
Germany	102	263	365
Greece	22	25	47
Croatia	10	27	37
Lithuania	20	23	43
Malta	1	1	2
Norway	16	21	37

Source: ETER-Database of July 2019, Germany without 'Verwaltungsfachhochschulen'. Note: ETER-database does not include all higher education institutions. It considers – as far as we are informed – only those HEI with at least 30 FTE academic personnel and at least 200 students.

Appendix 3.2

TABLE A3.2NUMBER OF GRADUATES BY ISCED-LEVEL AND SEX IN 2016

	ISCED 6				ISCED 7 (incl. long degree)			
	Men	women	Total	% of women	men	women	Total	% of women
Austria	12,350	17,438	29,788	59%	12,025	14,211	26,236	54%
Czechia	15,794	25,271	41,070	62%	13,937	20,108	34,053	59%
Germany	129,242	124,801	254,051	49%	92,319	104,895	197,292	53%
Greece	20,491	29,370	49,866	59%	7,128	9,984	17,122	58%
Croatia	7,418	10,365	17,787	58%	5,796	9,464	15,270	62%
Lithuania	7,368	12,358	19,726	63%	2,474	4,866	7,348	66%
Malta	979	1,347	2,326	58%	509	645	1,154	56%
Norway	17,139	34,799	51,938	67%	7,227	9,841	17,083	58%

Source: ETER-Database of July 2019, Germany without 'Verwaltungsfachhochschulen'.

Appendix 3.3

TABLE A3.3 DISTRIBUTION OF ISCED 7 (INCL. LONG DEGREE) GRADUATES BY FIELD OF STUDY IN 2016

	Education	Arts and Humanities	Social sciences, journalism	Business, administration, law	Natural sciences, mathematics	ICT	Engineering, manufacturing, construction	Agriculture, forestry, fisheries, veterinary	Health and welfare	Services	Total
Austria	13 %	8%	10%	32%	7%	4%	14%	1%	11%	1%	100 %
Czechia	12 %	7%	14%	21%	5%	5%	17%	3%	10%	6%	100 %
Germany	11 %	17%	7%	20%	12%	4%	17%	2%	8%	2%	100 %
Greece	8%	7%	16%	26%	15%	4%	12%	1%	10%	2%	100 %
Croatia	8%	10%	7%	33%	5%	5%	15%	4%	9%	5%	100 %
Lithuania	5%	7%	13%	33%	5%	2%	13%	3%	17%	1%	100 %
Malta	2%	7%	9%	44%	3%	3%	8%	0%	24%	0%	100 %
Norway	10 %	8%	10%	32%	7%	4%	12%	1%	14%	2%	100 %

Source: ETER-Database of July 2019, Germany without 'Verwaltungsfachhochschulen', ICT: Information and Communication Technologies.

4. Output dimensions of higher education in a comparative perspective

4.1 Introduction

In this chapter, the basic output dimensions of higher education are introduced. Moreover, a discussion on how EUROGRADUATE surveys these basic functions is provided. Higher education institutions are expected to equip graduates with necessary competencies to successfully enter a volatile labour market, and more importantly to maintain their employability. Higher education graduates are particularly expected to provide a positive impulse on the European economies and societies in terms of creativity, innovation, and entrepreneurship. Higher education should also promote engaged citizenship and democratic values, such as tolerance, openness and critical thinking, and thus contribute to higher levels of social cohesion and trust. Additionally, higher education is more and more being called on to increase its transparency in order to enhance young adults' ability to make effective educational choices, and to promote international mobility. Mobility aims at adding to intercultural understanding, but also to expand competencies and work options of graduates.

Figure 4.1 Output dimensions of higher education

In order to enhance the individual as well as societal relevance of higher education, this report distinguishes four main dimensions, addressing crucial goals of the political agenda as formulated by European policy makers at national and European level, and all tying in to the core theme of relevance of higher education to individual and societal needs (see Figure 4.1):

1. Innovation, entrepreneurship and adequate skills, e.g. creative skills, entrepreneurial skills, professional expertise, transversal skills,
2. Labour market prospects, e.g. successful transition to the labour market, adequate employment, career development and job security,
3. International mobility during and after studies,
4. Democratic values and engaged citizenship, embodied in such things as critical thinking, tolerance, attitudes towards democracy, political participation and civic engagement.

These dimensions reflect crucial ways in which higher education contributes to modern economies and societies. They are interrelated, in the sense that they can mutually reinforce each other but can also compete with each other. For example, critical thinking contributes to innovation and creativity, and at the same time can be regarded a key pillar of democratic values and engaged citizenship, as well as contributing to employability. Similarly, international mobility is often perceived as improving the allocation of skilled labour across the European labour market, increasing individual labour market opportunities, enhancing intercultural tolerance, and promoting the development and spread of innovations and creativity. At the other hand, a focus on the short-term transition to the labour market might compete with a more long-term focus on providing a strong basis for lifelong learning.

Throughout this report, the different dimensions of higher education will be discussed in separate chapters in detail. In a first step, a summary of these different dimensions is provided by addressing the extent to which higher education graduates, in the eight pilot countries, report that their study programmes provided them with a good basis for relevant outcomes.

Box 4.1: Graduates at the core in this chapter:

The focus in this chapter is on the EUROGRADUATE respondents that graduated in the *academic year 2016/17*. This is because these graduates completed their study programme most recently and are thus, more likely to be able to assess the degree to which the study programme represents a good basis for several relevant outcomes. Results are presented for both, the BA-level and the MA-level.

4.2 Labour market prospects

A key task of higher education is to prepare young adults to fulfil qualified roles in the labour market. Hence, higher education needs to provide both a good basis for successfully starting a working career as well as a good basis on which graduates can continue to learn and to acquire skills and knowledge.

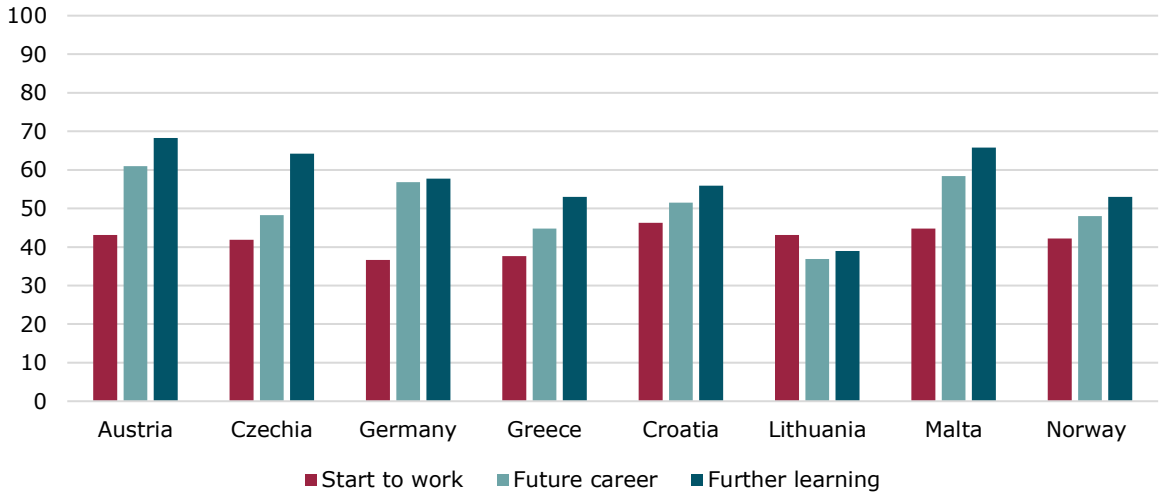
These first two sub-dimensions of higher education are captured in the EUROGRADUATE survey by three indicators with which the respondents are asked to judge retro-

prospectively on their study programme with respect to the basis the study programme provided for[17]:

- Starting to work
- The future career
- Further learning

Figure 4.2 for BA-level graduates (cohort 2016/17) and Figure 4.3 for the MA-level graduates (cohort 2016/17) presents the share of the graduates that indicate that the study programme provided a (very) good basis for the specific outcome.[18]

Figure 4.2 BA program provided (very) good basis for … (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, BA-level graduates, cohort 2016/17. For the underlying figures, see Appendix 4.1.

Basis to start working:

Between 37% (Germany) and 46% (Croatia) of the BA-level graduates indicate that the study programme they graduated from in the academic year 2016/17 provided them with a (very) good basis to start to work. In other words, in all countries less than 50% of the BA-level graduates are (very) satisfied with the basis the study programme provided to start to work. Among MA-level graduates of the academic year 2016/17, the share indicating that the study programme provided them with a (very) good basis to start to work ranges between 38% (Greece) and 55% (Austria, Czechia). In Austria, Czechia and Germany, the share of MA-level graduates that are (very) satisfied is thereby clearly higher than the share of BA-level graduates[19]. In all other countries, no difference between BA-

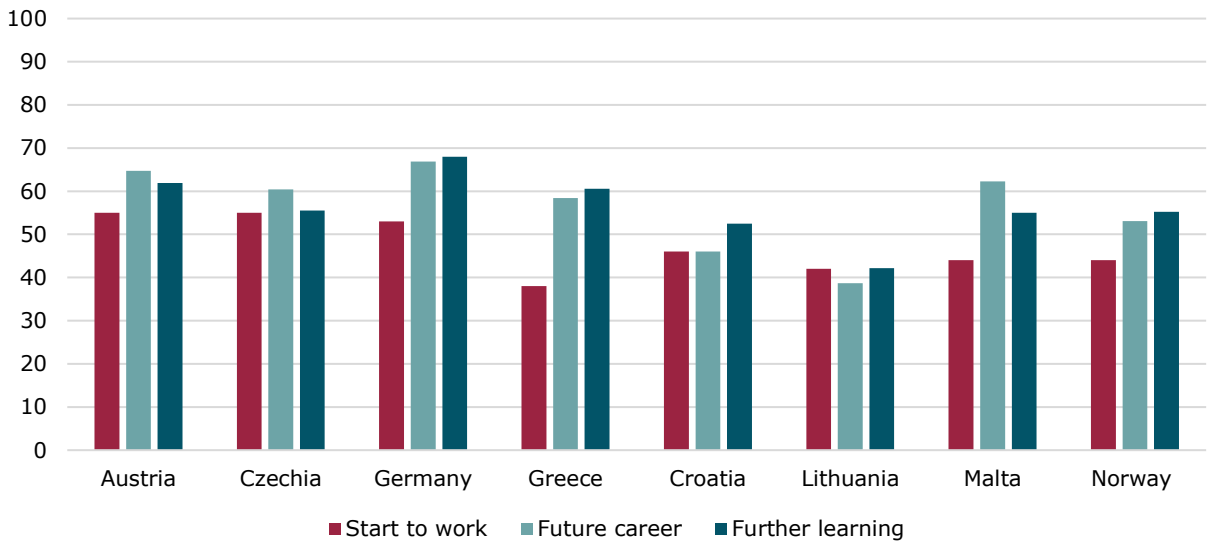
[17] The exact wording of the question was: 'To what extent has your study programme been a good basis for …?'. The answers were measured on a 5-point Likert scale with 1 ('to a very high extent') ←→ 5 ('not at all').

[18] We define a (very) good basis as an answer 1 or 2 on the 5-point Likert scale.

[19] Comparing the EUROGRADUATE results for the MA-level graudates with a similar measurement in the EUROSTUDENT survey (combined measurement of preparedness for

level and MA-level graduates with respect to the basis the study programme provided to start on the labour market is found[20].

Figure 4.3 MA program provided (very) good basis for …. (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, MA-level graduates, cohort 2016/17. For the underlying figures, see Appendix 4.1.

Future career

While the basis provided to start to work rather represents a short-term indicator, the basis provided for the future career gives an indication on how the respondents judge the study programme they graduated from regarding their expected mid-term working career. With the exception of Lithuania, respondents are more satisfied with the basis for their future career than they are with the basis to start working. Between 37% (Lithuania) and 61% (Austria) of the BA-level graduates think that the study programme provided a (very) good basis for their future career. In four countries (Austria, Germany, Czechia and Malta), more

national and international labour market, own calculation), shows for the countries both datasets are available, the following: In Austria, Czechia and Lithuania, the students view and the graduates view is strongly comparable. In Croatia, the graduates have a more positive view than the students. However, this is related to the relative negative view students have on the international preparedness which might be related to the low share of temporary foreign experience during the study (see Chapter 5). In Malta and Norway, students have genrally a more positive view on the preparedness than graudats have. However, in these two countries, we further find that the view students have on the international labour market preparedness is strongly in line with the view the graduates have on the preparedness to start to work.

[20] It is important to realize that respondents of BA-level programs and respondents of MA-level programs might have different anchors when answering the question and hence, (no) differences found between the two groups might not fully reflect differences in the basis provided to start to work.

than half of the BA-level graduates are (very) satisfied and in another two countries (Croatia and Norway) the share is slightly below the 50%. Comparing Figure 4.2 and Figure 4.3, the results show that (except for Croatia) the MA-level graduates are generally more satisfied than the BA-level graduates are. The range varies for MA-level graduates between 39% in Lithuania and 67% in Germany. The largest difference between BA-level and MA-level graduates is found in Greece (+14%-points in advantage of the MA-level programmes).

Basis for further learning

The third output indicator is the basis the study programme provided for further learning. The overall picture is that in all countries (the exception is Lithuania) the graduates (BA-level and MA-level) are relatively most satisfied with this indicator[21]. Among the BA-level graduates, between 39% (Lithuania) and 68% (Austria) and among the MA-level graduates between 42% (Lithuania) and 68% (Germany) are (very) satisfied with the basis the study programme provided for further learning. Except for Lithuania, it holds further for all countries and both types of graduates that more than half of the graduates are (very) satisfied. In terms of differences between BA-level and MA-level programmes, the data provide a fuzzy picture. In four countries (Germany, Greece, Lithuania and Norway), graduates from MA-level programmes are (slightly) more positive. In the other four countries (Austria, Czechia, Croatia and Malta), graduates from MA-level programmes are less positive about the basis for further learning than graduates from BA-level programmes.

Box 4.2: Further study or entering the labour market

To what extent the basis provided by the study programme to start to work, for the future career or for further learning, has a distinct influence on the decision of graduates between entering the labour market or continue to study is in more detail analysed in Chapter 8. The main findings of Chapter 8 are:

- BA-level graduates that continue to study (e.g. on MA-level) are
  - More critical on the basis provided by their BA-level study to start to work.
  - More positive on the basis provided by their BA-level study for further learning.
- BA-level graduates that decided to continue more likely stay in the same field of study if
  - They are satisfied with the basis provided by their BA-level study for further learning.
  - The are satisfied with the basis provided for the future career by their BA-level study

[21] BA-level programs and respondents of MA-level programs might have different perspectives when answering the question. Respondents of BA-level programs might more likely have had a further study in mind when answering the question whereas MA-level graduates might more likely have had on-the job learning or professional trainings in mind when answering the question.

To analyse the extent to which effects of the field of study or the type of higher education institution are relevant in explaining student's assessment of their study programme, multivariate analyses are carried out to explain the probability to which respondent indicated that the study programme provided a (very) good basis. These multivariate analyses control for country-fixed effects as well as personal background effects (gender and age) and different experiences during the study period. The focus in this section is on the field of study, the ISCED-level and the type of higher education institution.

Figure 4.4 presents the odds ratios of the multivariate analyses. Odds ratios [22] not significantly differing from the reference group (e.g. the study field *Business, administration, law and services*) are set to 1.

Box 4.3: Odds ratio

The Odds Ratio (OR) measures the association between an outcome and a treatment/exposure. In other words, a comparison of an outcome given two different groups (exposure vs. absence of exposure). The Odds Ratio (OR) is a comparison of two odds: the odds of an outcome occurring given a treatment compared to the odds of the outcome occurring without the treatment. Odds represent the probability of an event occurring divided by the probability of an event not occurring. Although related, probability and odds are not the same. Probability values can only range from 0 to 1 (0% to 100%), whereas odds can take on any value.

- An OR value of 1 indicates no effect on the odds from the exposure to the outcome,
- OR values less than 1 indicate that lower odds of the outcome are attributed by the exposure,
- OR values greater than 1 indicate that higher odds of the outcome are attributed by the exposure.

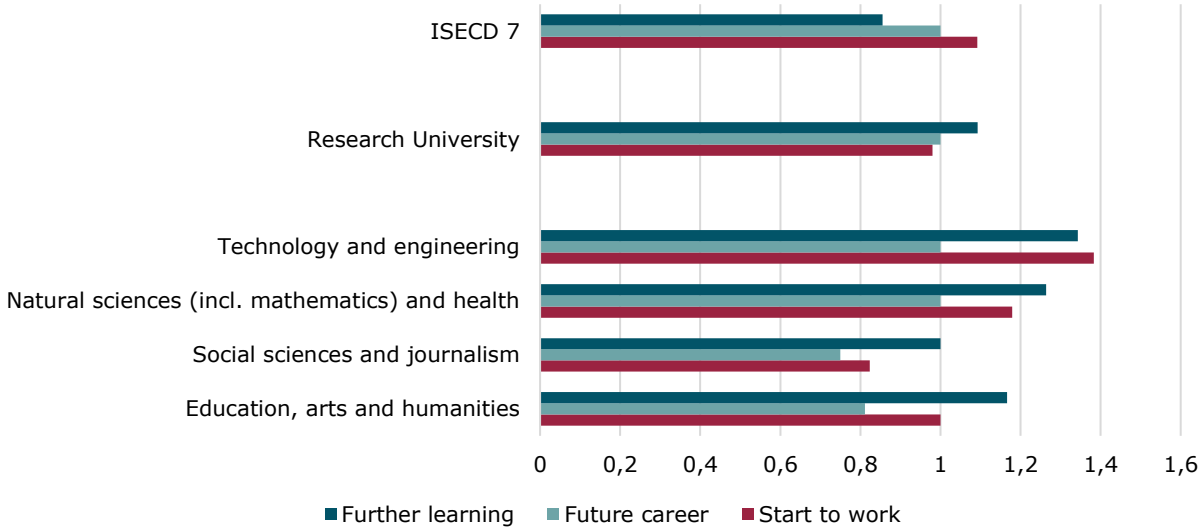
Source: https://www.statisticssolutions.com/odds-ratio/

Example: Multivariate analyse on unemployment (versus employment)

The multivariate analyses (Start to work) shows that the odds ratio (OR) for the dummy 'Technology and Engineering' is 1.383. This indicates that, controlled for the other input variables, the odds of respondents from the field 'Technology and Engineering' reporting that the study programme provided a (very) good basis to start to work versus not reporting that the study programme provided a (very) good basis to start to work is 1.383 times higher than the odds of respondents from the field of 'Business, administration, law and services' to report a (very) good basis versus not reporting a (very) good basis.

[22] See Box 4.3 for a brief explanation of odds ratios.

Figure 4.4 Multivariate analyses on whether the study was a good basis for…[23]



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, presented are odds ratios, Odds ratios not significantly different from 1 are set to 1, the reference group for field of study is *Business, administration, law and services.*

On the one hand, the results show that graduates from the fields of *Natural sciences (including mathematics)* and *Technology and engineering* report more likely that the study programme provided a (very) good basis to start to work than graduates from the field of *Business, administration, law and services*. On the other hand, graduates from the field of *Social sciences and journalism* less likely report a (very) good basis. Further analyses show that the graduates from *Education, and Arts and humanities* are also less likely to report that their study programme provided a (very) good basis. Given that the former two fields of study provide in general better opportunities to find a (matching) job than the latter three fields of study (see Chapter 6), these findings indicate that the satisfaction of the graduates with respect to this indicator is influenced by the actual labour market outcome.

Interestingly, there are much less differences found with respect to the basis provided for the future career. However, the graduates from the field of *Social Sciences and journalism* judge their study programme less positively. Finally, the results show that, graduates from *Education, arts and humanities*, *Natural sciences (incl. mathematics) and health* and *Technology and engineering* rate the relevance of their study programme as a basis for further learning higher than the study programmes in the fields of *Business* and *Services*.

No differences are found between graduates from research universities and non-research universities for all three indicators. However, differences are found for two out of three indicators between BA-level graduates and MA-level graduates. With respect to start to

[23] The analyses further control for country, age, sex, activating learning environments (see Chapter 5), work-learning related learning environment (See Chapter 5).

work, MA-level graduates are slightly more positive than BA-level graduates are. Opposite results are found, with respect to the basis provided for further learning.

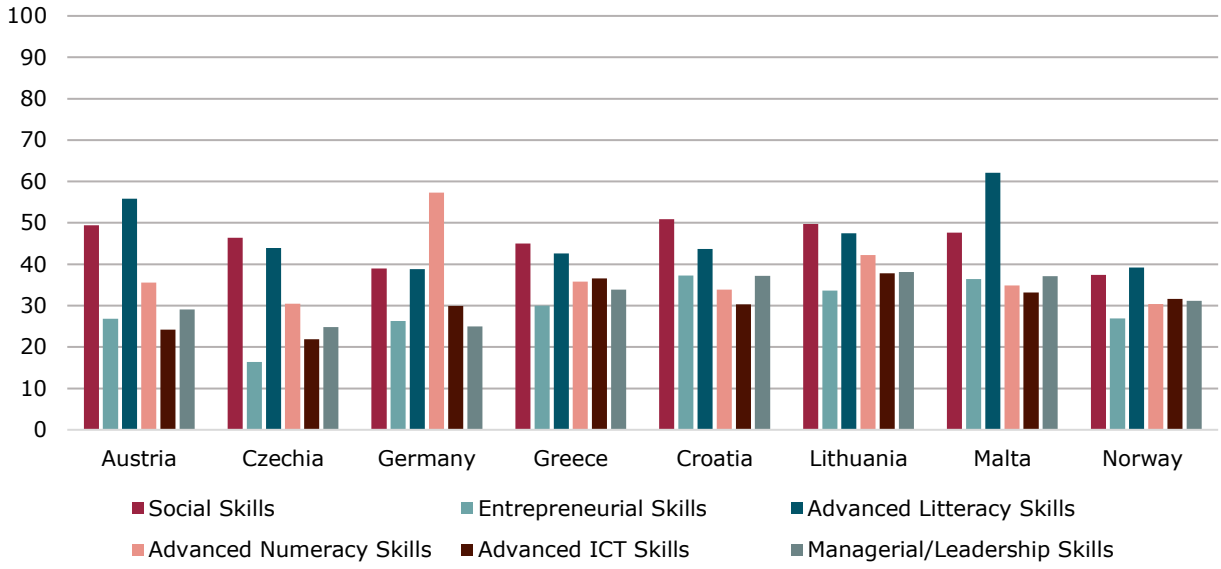
4.2 Innovation, entrepreneurship and adequate skills

According to the New Skills Agenda (EC, 2016) of the EU, 'skills are a pathway to employability and prosperity. With the right skills, people are equipped for good-quality jobs and can fulfil their potential as confident, active citizens. In a fast-changing global economy, skills will largely determine competitiveness and the capacity to drive innovation. They are a pull factor for investment and a catalyst in the virtuous circle of job creation and growth. They are key to social cohesion'. This is also in line with e.g. the OECD Skills Outlook 2017 (OECD, 2017). However, they also indicate big differences in the extent to which countries, also inside the EU, are equipping their workers with the right skills to benefit from the globalization of production chains. The EC recognises that there is a 'mismatch in the skills Europe needs and the skills it has: many parts of the EU are experiencing shortages in certain high-skill professions, both in terms of qualifications and the quality of the associated skills. At the same time, too many students graduate with poor basic skills (literacy, numeracy, digital) and without the range of transversal skills (problem-solving, communication, etc.) they need for resilience in a changing world' (EC, 2017b).

In EUROGRADAUTE, respondents are queried on the basis provided for the following skills:

- Social skills
- Entrepreneurial skills
- Advanced Literacy Skills
- Advanced Numeracy Skills
- Advanced ICT skills
- Managerial / leadership skills

Figure 4.5 BA program provided (very) good basis for development of…. (%): Cohort 2016/17

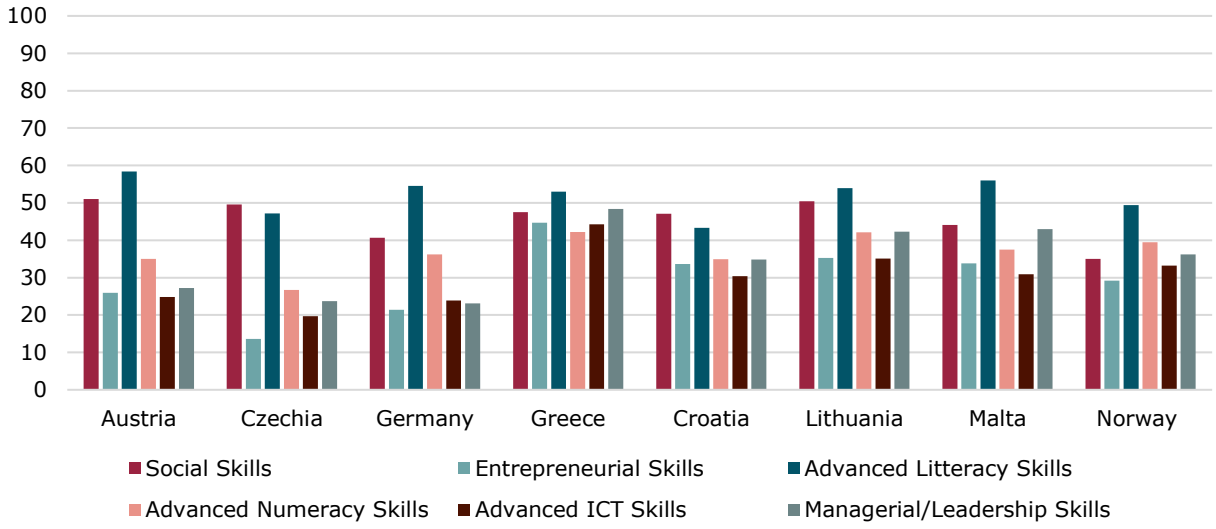


Source: EUROGRADUATE pilot survey 2018, BA-level graduates, cohort 2016/17. For the underlying figures, see Appendix 4.1.

Figure 4.5 presents the share of BA-level graduates (cohort 2016/17) that indicate that the study program provided a (very) good basis for development of these skills and Figure 4.6 does the same for the MA-level graduates (cohort 2016/17).

With a few exceptions, the results show for all countries and all types of skills that less than half of the graduates (MA-level and BA-level) indicate that the study programme provided a (very) good basis for the development of these skills. Exceptions are the development of *Social skills* and *Advanced Literacy skills* in Austria, the development of *Advanced Numeracy skills* in Germany, the development of *Social skills* in Croatia and Lithuania and the development of *Advanced Literacy skills* in Malta (BA-level). Among the MA-level graduates, the figure shows that the development of *Advanced Literacy skills* scores in seven countries close to or higher than 50% (the exception is Croatia with 43%). Moreover, in Austria, Germany, Greece, Malta, Norway and Lithuania the results show that at least 50% of the graduates from MA study programmes indicate that the study programme provided a (very) good basis to develop *Advanced Literacy skills.*

Figure 4.6 MA program provided (very) good basis for development of…. (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, MA-level graduates, cohort 2016/17. For the underlying figures, see Appendix 4.1.

The least satisfied are graduates with respect to the basis the study programme provided for the development of Entrepreneurial skills, Advanced ICT skills and Managerial/Leadership skills. However, with respect to Managerial/Leadership skills, the results show that in almost all countries graduates from MA-level programmes are more satisfied than graduates from BA-level programmes. To what extent the basis provided for these crucial skills can be improved through applications of activating learning environments or work-related learning environments will be discussed in Chapter 5.

Table 4.1 presents the outcomes of multivariate analyses. The multivariate analyses control for country-fixed effects as well as personal background effects (gender and age) and different experiences during the study period. The focus is on the outcomes with respect to the field of study, the ISCED-level and the type of higher education institution. Results that focus on study experiences (such as the learning environment) are discussed in detail in Chapter 5 when discussing in more detail the study experience.

Programmes in *Business, administration, law and services* provide a better basis than programmes in the other four fields of study with respect to Entrepreneurial skills and Managerial/leadership skills. The results show that respondents from the field of *Education* and the field of *Social sciences* are relatively more positive about the basis provided for Advanced literacy skills and Social skills. With respect to the basis provided to these two skills, there seems to be a trade-off between Advanced numeracy skills and Advanced ICT skills. Respondents from the field of *Education, Arts and Humanities* and the field of *Social sciences* and journalism are less positive about the basis provided. The opposite is visible for the respondents from the field of *Technology and Engineering*. These graduates are more positive about their Advanced ICT skills and Advanced numeracy skills but less positive about Social skills and Advanced Literacy.

Table 4.1 Multivariate analyses: Field of study / Type of Institution / ISCED-level (odds ratios) [24]

	Social skills	Entrepre-neurial skills	Advanced literacy skills	Advanced numeracy skills	Advanced ICT skills	Managerial /leadership skills
Education, arts and humanities	1.41	0.50	1.32	0.50	0.84	0.54
Social sciences and journalism	1.27	0.62	1.39			0.67
Business, administration, law and services	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Natural sciences (incl. mathematics) and health		0.45	0.86	0.86	1.15	0.50
Technology and engineering	0.66	0.54	0.80	1.88	2.24	0.50
Research University Type	0.84	0.85		1.31	1.14	0.76
ISCED-level 7						

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17; presented are odds ratios; only odds ratios significant different on at least 5% level are shown.

The results show no significant difference between MA-level and BA-level programmes, controlling for other factors. However, except for Advanced literacy skills, significant differences between graduates from research universities and graduates from non-research universities are found. Graduates from research universities are more positive about the basis provided for Advanced numeracy skills and Advanced ICT skills. Graduates from non-research universities are more positive about the basis provided for social skills, entrepreneurial skills and managerial/leadership skills.

4.4 Personal and social outcomes

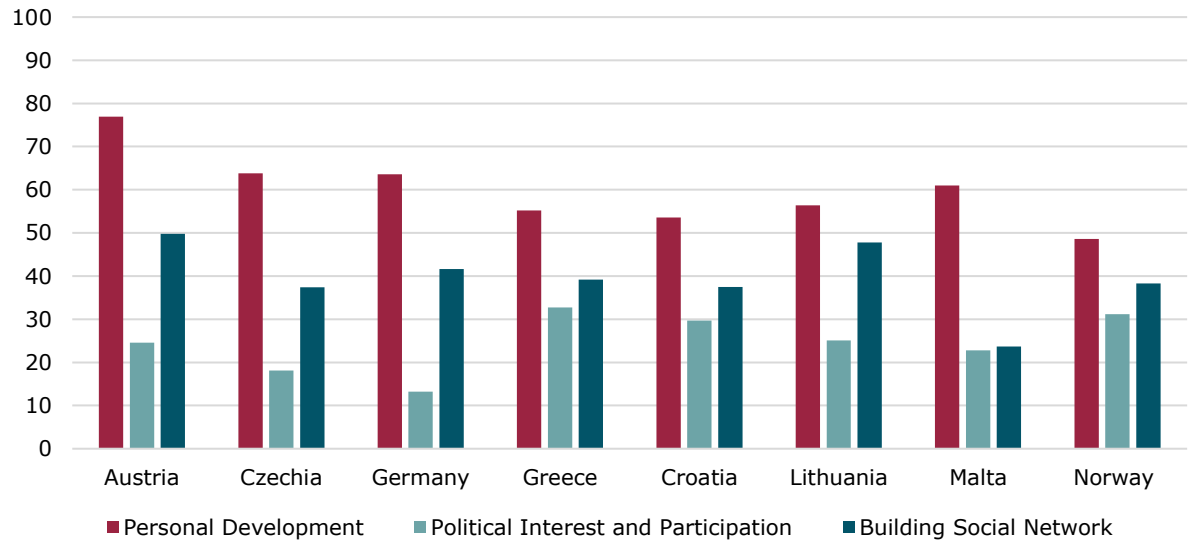
Higher education aims at promoting engaged citizenship and democratic values, such as tolerance, openness and critical thinking, and thus contribute to higher levels of social cohesion and trust. Therefore, personal and social outcomes are addressed within EUROGRADUATE in detail. In particularly, to the basis the study programme provided with respect to:

[24] The analyses further control for country, age, sex, activating learning environments (see Chapter 5), work-learning related learning environment (See Chapter 5).

- Personal development
- Political interest and participation
- Building a social network

Figure 4.7 (BA-level graduates) and Figure 4.8 (MA-level graduates) present the share of respondents that indicated on the 5-point Likert scale that the study programme provided a (very) good basis.

Figure 4.7 BA program provided (very) good basis for …. (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, BA-level graduates, cohort 2016/17. For the underlying figures, see Appendix 4.1.

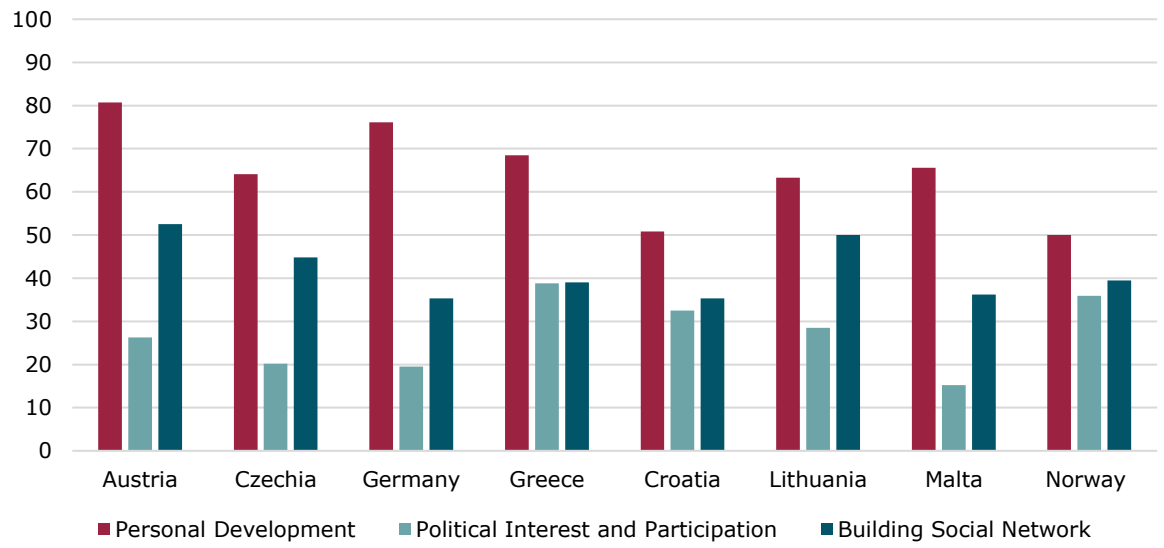
Study programmes are generally well judged considering the basis provided for the personal development. Except for Norway, in all countries more than 50% of the graduates (BA-level and MA-level) indicate that the basis for personal development was (very) good. Compared to all other outcome indicators presented in this chapter, the satisfaction with the basis provided for personal development is therefore relatively high. Comparing the satisfaction of the BA-level graduates with the MA-level graduates, the findings show that, except for Croatia, the satisfaction of the MA-level graduates is (slightly) higher[25]. Relatively large differences are found in Germany and Greece where the share of MA-level graduates that indicate that the basis for personal development was (very) high is around 13%-point above the share of BA-level graduates.

The share of graduates that indicate that the study programme provided a (very) good basis for political interest and participation is significantly lower. Focusing on BA-level graduates, results show that in three countries (Greece, Croatia and Norway) the share is around 30%. In the other countries (except for Germany), around one out of five BA-level

[25] To what extent this is simply the outcome of 1-2 years prolonged study or a real MA-level impact is not possible to analyse on the basis of the EUROGRDAUTE data.

graduate indicates that the study provided a (very) good basis for political interest and participation. In Germany, no more than 13% of BA-level graduates is of that opinion. In most countries, study programmes at the MA-level level score (slightly) higher on that indicator. The exception is Malta were only 13% of the MA-level graduates indicate that the study programme provided a (very) good basis. Again, Greece, Croatia and Norway present the highest approval rate of between 39% and 32%.

Figure 4.8 MA program provided (very) good basis for …. (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, MA-level graduates, cohort 2016/17. For the underlying figures, see Appendix 4.1.

Finally, the share of the respondents that think that the study programme provided a (very) good basis for building a social network lies in general between the two other indicators discussed in this section. Among BA-level graduates, the share of graduates is (close to) 50% in Lithuania and Austria, around 40% in Czechia, Germany, Croatia, Malta, Norway, and relatively low (25%) in Malta. The share of MA-level graduates that indicate that the study programme provided a (very) good basis for building a social network is in two countries (slightly) lower than among BA-level graduates, namely Germany and Greece. Again, Austria and Lithuania with shares of around 50% are the top scoring countries with respect to this indicator. Germany, Croatia and Malta with scores around 35% are this time rather low scoring countries.

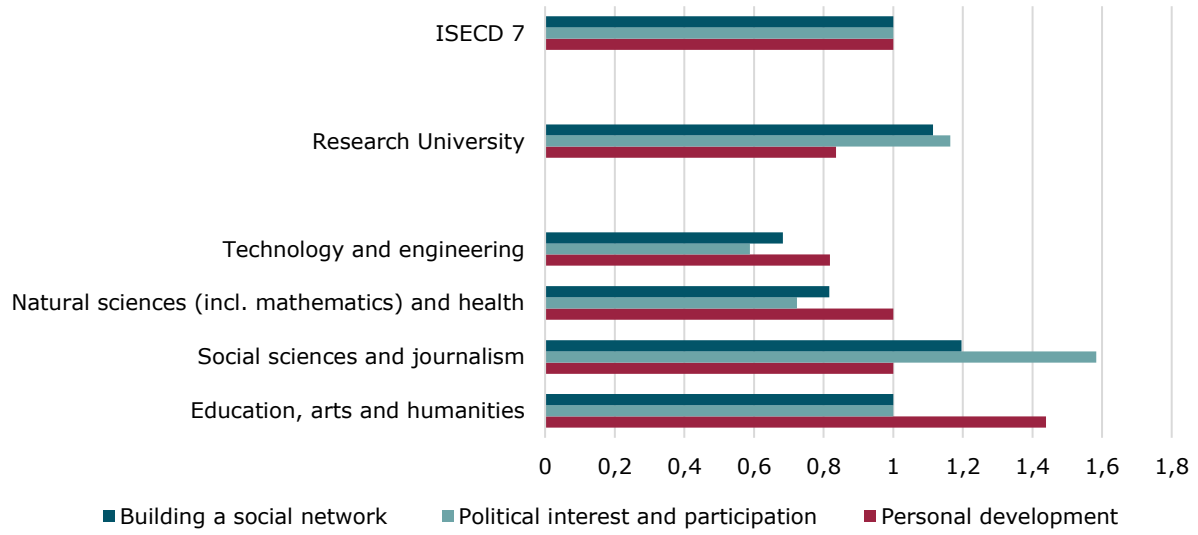
For these three output indicators again the results from the multivariate analyses are presented. The multivariate analyses control for country-fixed effects as well as personal background effects (gender and age) and different experiences during the study period[26].

[26] The focus in this section is again on the outcomes with respect to the field of study, the ISCED level graduated from and the type of higher education institution. The outcomes with respect to the study experience (such as the learning environment) are discussed in Chapter 5.

Compared to the respondents from the field *Business, administration, law and services* (see Figure 4.9), respondents from the field *Education, arts and humanities* more likely report a (very) good basis with respect to Personal development. At the same time, respondents from the field *Technology and engineering* are less positive about that output indicator. With respect to the basis provided for Political interest and participation, the respondents from the field *Social science and journalism* are more positive whereas the respondents from the field *Natural sciences (including mathematics) and health* and the field *Engineering and Technology* are relatively less positive. Comparable findings are visible for the third output indicator Building a social network.

No significant differences are found between respondents from BA-level programmes and graduates from MA-level programmes with respect to these three output indicators. Finally, respondents from research universities are slightly more positive about the basis provided for Political interest and participation and for Building a social network whereas respondents from non-research universities are more positive about the basis provided for personal development.

Figure 4.9 Multivariate analyses on whether the study was a (very) good basis for…[27]



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, Odds ratios not significant different from 1 are set to 1, Reference group for field of study: Business, administration, law and services.

4.5 Higher education outcomes: substitutes or complements

The different dimensions reflecting the ways in which higher education contributes to modern economies and societies are interrelated with each other. In this sense, they can mutually reinforce or attenuate each other.

[27] The analyses further control for country, age, sex, activating learning environments (see Chapter 5), work-learning related learning environment (See Chapter 5).

This section addresses the extent to which a mutual reinforcement takes place, by analysing the correlation of 12 indicators most characteristic for good labour market prospect, further learning, skills development and democratic citizenship[28].

The correlation matrix shows that in some cases providing a strong basis for a specific aspect indeed goes hand in hand with another aspect, but sometimes they indeed compete. The most central outcomes are:

- A first set of aspects that seem to mutually reinforce themselves are the basis provided by the study programme to *start to work (A)*, *further learning* (B) and *future career (C).* The correlations between these three indicators are medium to strong and show in particularly that providing a basis for the future career goes hand in hand with providing the students with a strong basis for further learning.
- Programmes that provide students with a strong basis for *entrepreneurial skills (E)* also provide them with a strong basis for *managerial / leadership skills (I)*, and to a lesser extent, with the acquisition of *advanced numeracy skills (G)* and *advanced ICT skills (H)* and seems finally to encourage *political interest and participation (L)*.
- The development of *social skills (D)* is strong positively related to a good basis for *personal development (J)* and *building a social network (L)* but competes with a strong basis provided for *advanced numeracy skills (G)* and *advanced ICT skills (H)*.
- Providing a basis for *building a social network (L)* goes in particularly hand in hand with the basis for *personal development (J)* and *social skills (D)* but competes slightly with the basis for *advanced numeracy skills (G)* and the basis for *Advanced ICT skills.*

[28] To do so, the share of graduates that indicates that a (very) good basis has been provided by broad ISCED field * ISCED level * country is calculated. In total, focussing on BA-level and MA-level graduates of the 2016/17 cohort, the data allow to distinguish 157 combinations of which 93 combinations have at least 30 respondents. Matrix 4.1 shows the significant correlations between the 12 distinguished indicators for these 93 combinations.

Matrix 4.1 Higher education outcomes: Substitutes or competitors (correlations matrix)

	A	B	C	D	E	F	G	H	I	J	K	L
A	1	0.41	0.68					-0.21		0.33	-0.36	
B		1	0.64		-0.28				-0.29	0.46	-0.29	
C			1							0.40	-0.31	
D				1		0.39	-0.44	-0.39	0.26	0.59	0.37	0.65
E					1		0.44	0.49	0.87		0.38	
F						1				0.49	0.42	0.36
G							1	0.86	0.32	-0.28	-0.21	-0.29
H								1	0.36	-0.36		-0.34
I									1		0.43	
J										1		0.63
K											1	0.45
L												1

Source: EUROGRADAUTE pilot survey 2018, cohort 2016/17, Only significant correlations (at least 5% level) are reported, A = Start to work / B = Further learning / C = Future career / D = Social skills / E = Entrepreneurial skills / F = Advanced literacy skills / G = Advanced numeracy skills / H = Advanced ICT skills / I = Managerial / leadership skills / J = Personal development / K = Increasing political interest and participation / L = Building a social network.

4.6 Conclusions

Higher education is given the task to prepare students for different dimensions, such as a good start on the labour market, long-term employability, handling skills required in a changing labour market, life-long learning as well as to promote engaged citizenship and democratic values, such as tolerance, openness and critical thinking, and thus contribute to higher levels of social cohesion and trust.

The results presented in this chapter indicate clearly that, according to the graduates, higher education in the eight pilot countries succeeds differently with respect to these dimensions.

Graduates are *most satisfied* with respect to the basis provided by their higher education study programme for further learning, acquiring social skills and their personal development. The basis provided for further learning is thereby crucial, as graduates throughout their working career will be confronted with challenges requiring e.g. new occupational skills or with changes in the labour market making their previously acquired skills obsolete.

More critical are graduates with respect to the basis provided by the higher education study programme to start on the labour market. Partially, country or study field differences with respect to this finding might be related to difficulties in specific countries or difficulties with a degree from certain fields of study to find during the transition phase a satisfying occupation. We return to this in Chapter 6. Partially, this finding might however also reflect a lacking focus of higher education study programmes on the direct transition to the labour

market and finally, it might also be related to traditional learning styles still applied in higher education. We return to the impact of the learning environment in Chapter 5.

Most critical are the graduates with respect to the basis provided by the higher education study programme to acquire entrepreneurial and managerial/leadership skills. Entrepreneurs are seen as the backbone of the current and future labour market. However, entrepreneurial skills are not only relevant for entrepreneurs but also for those employed by companies to look beyond the traditional boundaries of their occupation and to provide new creative solutions. In this sense, it is of crucial importance for the higher education system to look into approaches that will in the future stimulate the basis provided to students with respect to entrepreneurial skills. To what extent this is related to different learning environments is discussed further in Chapter 5.

4.7 Appendix

Appendix 4.1

Table A4.1 Program provided (very) good basis for … (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
BA-Level								
Start to work	43,1	41,9	36,6	37,6	46,3	43,1	44,8	42,2
Future career	61	48,3	56,8	44,8	51,5	36,9	58,4	48
Further learning	68,3	64,2	57,7	53	55,9	39	65,8	53
Social Skills	49,4	46,4	39	45	50,9	49,7	47,6	37,4
Entrepreneurial Skills	26,8	16,4	26,3	30	37,3	33,6	36,4	26,9
Advanced Litteracy Skills	55,8	43,9	38,8	42,6	43,7	47,5	62,1	39,2
Advanced Numeracy Skills	35,6	30,5	57,3	35,8	33,9	42,2	34,9	30,4
Advanced ICT Skills	24,2	21,9	29,9	36,6	30,3	37,8	33,2	31,6
Managerial/Leadership Skills	29,1	24,8	25	33,9	37,2	38,1	37,1	31,2
Personal Development	76,9	63,8	63,6	55,2	53,6	56,4	61	48,6
Political Interest and Participation	24,6	18,1	13,2	32,7	29,7	25,1	22,8	31,2
Building Social Network	49,8	37,4	41,6	39,2	37,5	47,8	23,7	38,3
MA-level								
Start to work	55	55	53	38	46	42	44	44
Future career	64,7	60,4	66,9	58,4	46	38,7	62,3	53,1
Further learning	61,9	55,5	68	60,6	52,5	42,2	55	55,2
Social Skills	51	49,6	40,7	47,5	47,1	50,4	44,1	35
Entrepreneurial Skills	25,9	13,6	21,4	44,7	33,6	35,3	33,8	29,2
Advanced Litteracy Skills	58,4	47,2	54,5	53	43,3	53,9	56	49,4
Advanced Numeracy Skills	35	26,7	36,2	42,2	34,9	42,1	37,5	39,5
Advanced ICT Skills	24,8	19,7	23,9	44,3	30,4	35,1	30,9	33,2
Managerial/Leadership Skills	27,2	23,7	23,1	48,4	34,8	42,3	43	36,2
Personal Development	80,7	64,1	76,1	68,5	50,8	63,3	65,6	50
Political Interest and Participation	26,3	20,2	19,5	38,8	32,5	28,5	15,2	35,9
Building Social Network	52,5	44,8	35,3	39	35,3	50	36,2	39,5

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

5. The student journey

5.1 Introduction

To assess labour market placement and labour market success of higher education graduates, it is essential to understand a student's journey through higher education, their side steps during this journey (including extracurricular activities) as well as the learning environment provided by the higher education programme. This chapter investigates this study journey in more detail and asks questions such as

- *What kind of working experience do students acquire before entering the study programme and during the study programme?*
- *How important is working income as source to finance one's study?*
- *What are the foreign experiences during the study period?*
- *What kind of learning environments do study programmes provide?*
- *What are the study attitudes of graduates?*

By discussing these questions, this chapter does not only intend to provide a context in which labour market success can be discussed in and indicators of labour market success can be related to, but also intends to provide the reader with a comparative picture of the student journey in the eight EUROGRADUATE pilot countries.

The setup of the chapter is as follows. Section 5.2 starts of by focusing on possible working experience the respondents had before entering the study programme they graduated from in the academic year 2016/17 and thereafter discusses the sources the students had at their hand to finance the study period (Section 5.3). Section 5.4 discusses indicators related to an International classroom that is often seen as a manner to setup higher education study programmes to prosper the knowledge and skills graduates are required to handle when entering an international oriented labour market. The language in which the study programmes has been followed, the foreign experiences of graduates during the study programme as well as the share of EUROGRADUATE respondents that followed the study programme abroad are briefly discussed. Next, Section 5.5 discusses the extent to which activating learning environments and work-related learning environments are applied in the eight pilot countries. Section 5.6 has a closer look at internships or other work experience gained during the study programme and Section 5.7 discusses different study attitudes. Finally, Section 5.8 concludes the chapter.

Box 5.1: Graduates at the core in this chapter:

We focus in this chapter on the EUROGRADUATE respondents that graduated in the *academic year 2016/17*. By that, we consider the graduates who have followed most recently a study programme, either at the BA-level or at the MA-level and hence analyse the student journey most likely comparable to the one current students experience.

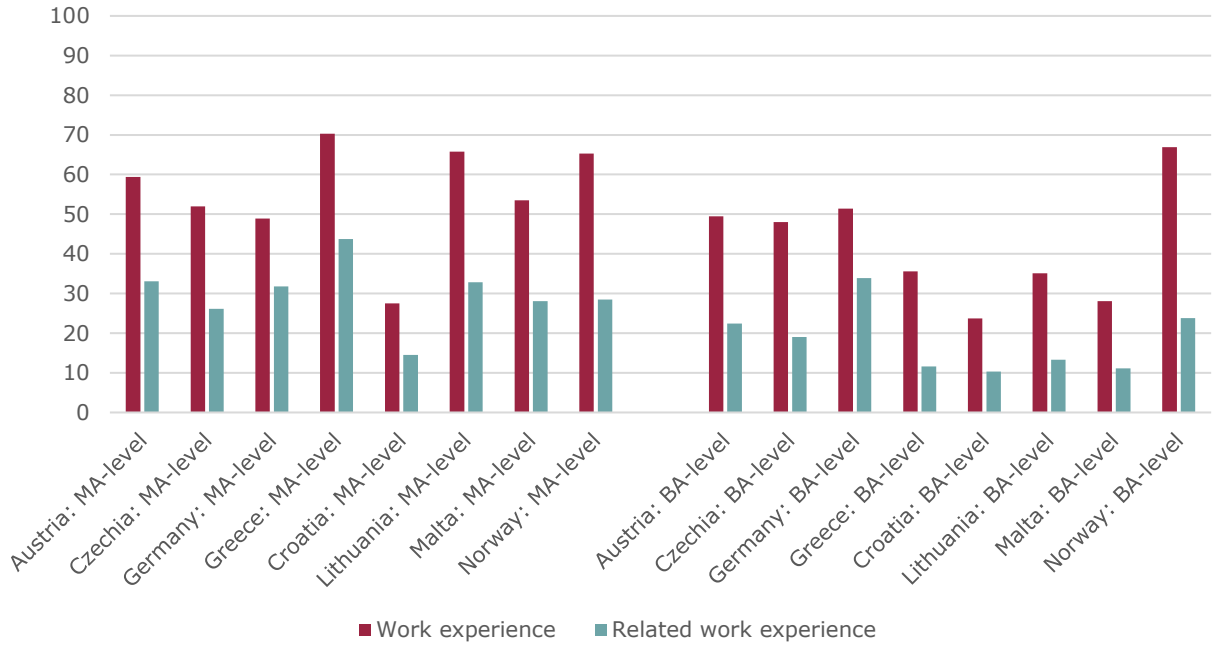
5.2 Working experience before entering study programme

Before entering the study programme, students quite often gain already working experience. These working experiences can be related to the study programme they enter or not. Figure 5.1 shows the percentage of the 2016/17 cohort graduates that report to have acquired before entering the study programme labour market experiences for at least six months without interruptions. Both, the share that reported any work experience as well as the share that reported work experience that was related to the study programme they entered is discussed.

Both, among the MA-level graduates as well as among the BA-level graduates, a clear difference between countries is visible. Whereas in Croatia less than 30% of the MA-level and even less than 25% of the BA-level graduates report any kind of work experience, in Norway for both types of graduates around two out of three graduates report previous work experiences. In some countries, a clear difference between BA-level and MA-level graduates is found. In Greece, Lithuania and Malta, the share of MA-level graduates reporting previous work experience is around twice as high as the share among BA-level graduates. This might indicate that in these countries, work-experience is in particularly gained between the graduation of the BA-level programme and the entrance to the MA-level programme. In the other countries, no clear difference between the two graduate types is visible.

Finally, Figure 5.1 also shows the extent to which the work experience is study related. Overall, the data show that previous work experience is less likely study related among the BA-level graduates. The share of BA-level graduates that reports previous study-related work experience ranges from 10% in Croatia to 34% in Germany. In relative terms of the BA-level graduates with previous work experience, between 33% in Greece and 66% in Germany of the work experience of this group was related to the study they entered thereafter. Among the MA-level graduates, between 15% in Croatia and 44% in Greece report previous work experience that was related to their MA-level study programme. In relative terms, 65% of the German MA-level graduates report that their work experience was study related, whereas in Norway this holds for 44%.

Figure 5.1 Work experience before entering study programme of at least 6 months without interruption (%): Cohort 2016/17



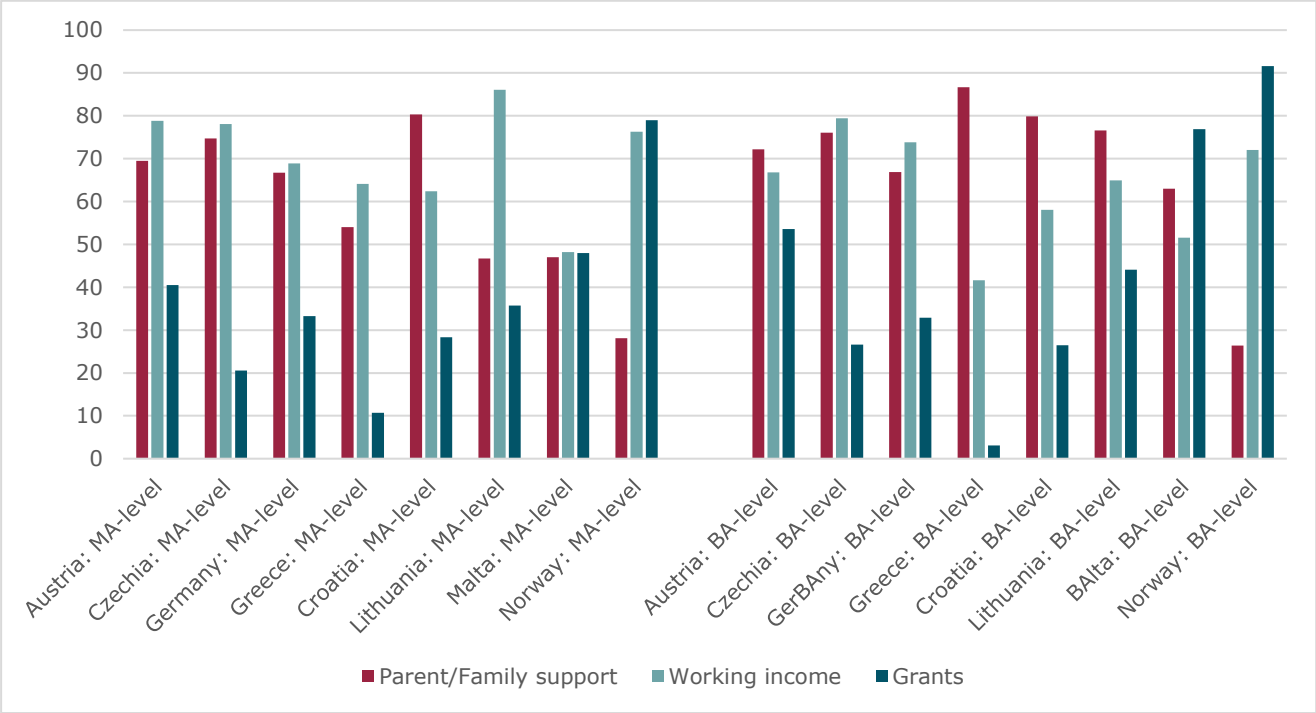
Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.1.

5.3 Financing the study period

Work-related income might be an important manner to finance one's study period. Following a BA-level programme for 3-4 years or a MA-level programme for 1-2 years indeed requires a (substantial) financial investment. In addition to work income, students might also rely on financial support by their parents or family or be eligible for grants to finance their study period[29]. Figure 5.2 distinguishes between these three main sources of financial support and reports the share of graduates of the 2016/17 cohort that reported that a particular source was relevant for them.

[29] Available grants differ strongly between countries. In Table 5.2 as well as our discussion of it, all different types of grants (e.g. grants that were converted into gifts after graduation or not, grants for specific groups, etc.) are combined.

Figure 5.2 Types of financial sources during study period (%): Cohort 2016/17

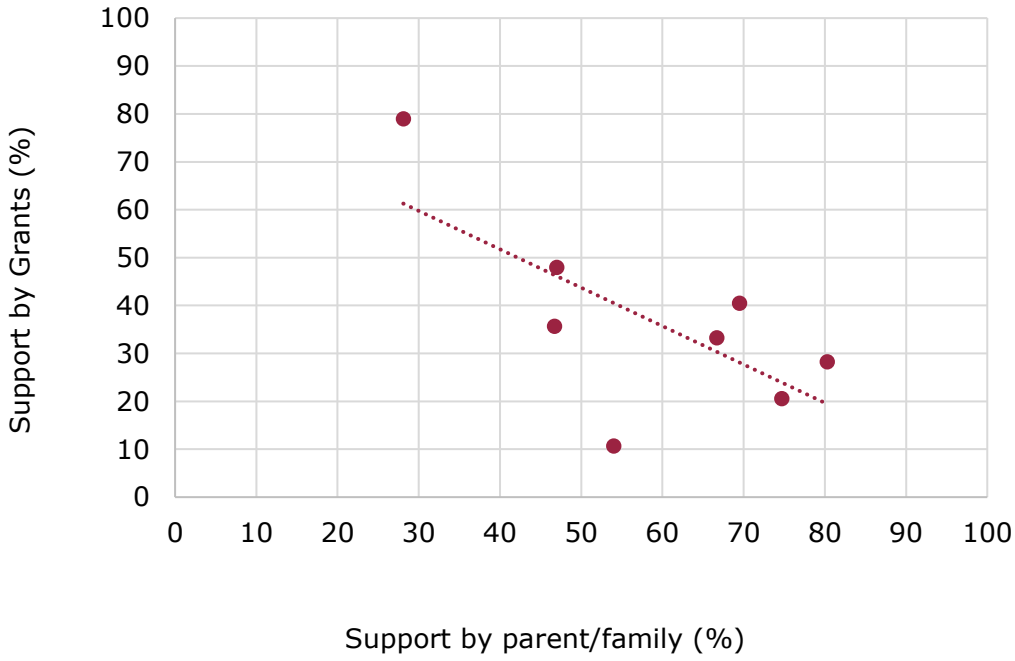


Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.2.

For both, MA-level and BA-level graduates, the data shows that there is a trade-off between parent/family as source of finance and grants. Figure 5.3 illustrates for the MA-level graduates the relation[30]. In countries with a higher share of graduates accessible to grants to support financially their study period, the share that reports that they were (partially) financed by their parents/families is smaller. However, apart from Norway, the findings show that in all countries close to or more than half of the graduates relied at least partially on the support of parents/family during their MA-level programme. For those studying at the BA-level, this holds for at least two out of three graduates (except for Norway).

[30] The figure for the BA-level graduates looks similar.

Figure 5.3 Share with Parent/Family support versus share with Grants as support: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Apart from Greece, grants were both at the BA-level as well as at the MA-level a source of finance for at least one out of four graduates. In Greece only 11% of the MA-level and 3% of the BA-level graduates report to have had access to a grant as a basis of financing their study[31]. In Norway, even 79% of the MA-level graduates and 92% of the BA-level graduates report that they had a study grant that at least partially helped them to finance their study period.

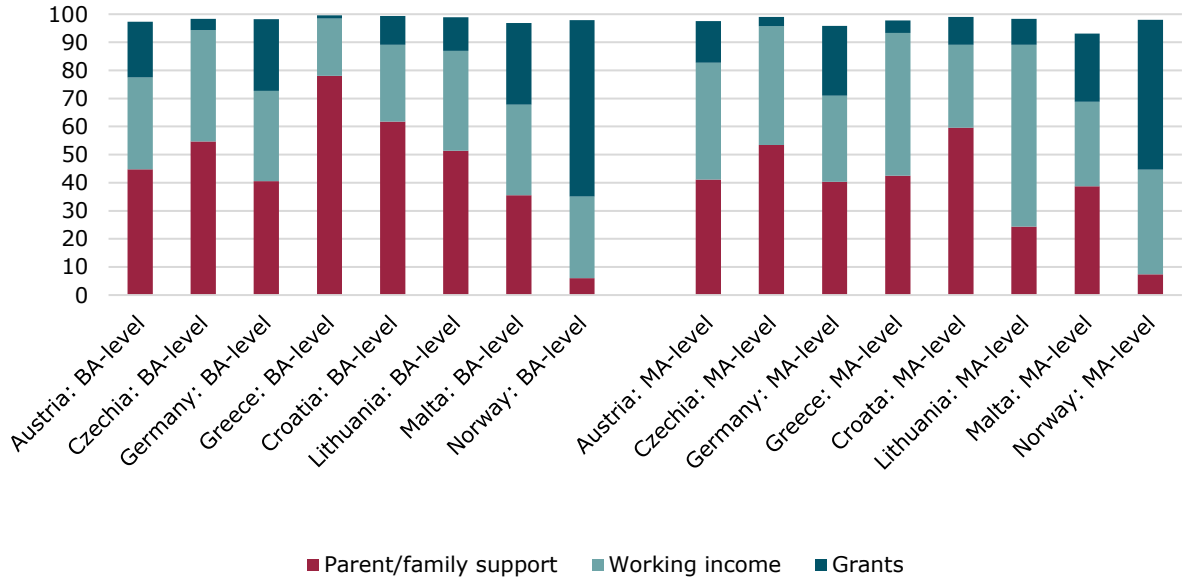
The third type of financial source, working income, plays an important role in study financing in all countries. At the BA-level, between 42% (Greece) and 79% (Czechia) and at the MA-level, between 48% in Malta and 79% in Austria, report that they at least partially financed their study period through their own work income.

Having established what sources graduates used to finance their study period, Figure 5.4 looks at the share the different sources contributed to the total amount needed. For that

[31] Because there are no fees at Greek universities for undergraduates, grants are not as widely available as in other European countries. In addition, many grants are blended with scholarships, being awarded for merit, but then having income restrictions more typical of a standard grant. There are also tax credits and family allowances in place, which function as indirect grants for students. Loans are provided by private lenders, but resemble consumer loans and are not guaranteed by the government. (Source: http://www.european-funding-guide.eu/articles/grants-and-loans/grants-and-loans-greece).

reason, respondents were asked to indicate for each source they used the share that specific source contributed. Figure 5.4 presents on the left-hand side the income distribution for the BA-level graduates and on the right-hand side the income distribution of the MA-level graduates.

Figure 5.4 Share of financial support from specific source: Cohort 2016/17



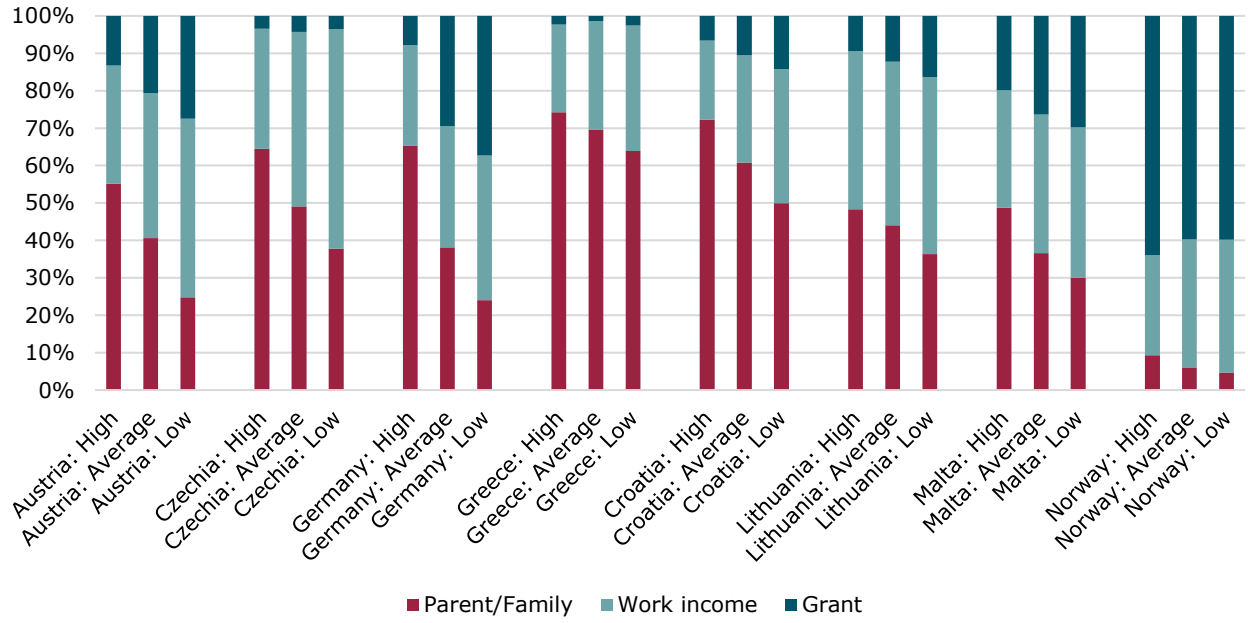
Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.3

With respect to BA-level programmes, in four countries more than half of the costs incurred are covered by support from parents/family: Greece (78%), Croatia (62%), Czechia (55%) and Lithuania (51%). In contrast to that, in Norway only 6% of the costs incurred are covered by parents/family support. Working income adds during the BA-level study between 20% in Greece and 40% in Czechia. Finally, grants add on average between 1% in Greece and 63% in Norway.

During the MA-level programme, between 7% (Norway) and 60% (Croatia) of the costs incurred are covered by parents/family support. The share financed through working ranges from 29% in Croatia and 65% in Lithuania and finally, between 3% (Greece) and 53% (Norway) comes from grants.

Support by parents/family is of course dependent on the wealth of the parents/family. For that reason, Figure 5.5 provides for MA-level and BA-level graduates combined a split into three groups of graduates according to the financial situation of their parents. Respondents were asked to indicate on a 5-point Likert scale how well off financially they think their parents (guardians) were during their time as student compared with other families. Three categories are distinguished, namely 'high' with respondents that indicated that their parents were '(very) well off' (answer category 1 and 2), 'average' with respondents that reported the middle category (3) and 'low' with respondents that indicated that their parents were 'not (at all) well-off' (answer category 4 and 5).

Figure 5.5 Share of financial support from specific source by wealth of parents: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.4.

In all countries, the share of financial support by parents/family is highest among the graduates reporting that their parents are (very) wealthy. However, there are clear differences between countries to what extent the share of financial support by parents/ family differs according to the wealth of the parents. In Greece, Lithuania and Norway, the differences in the share of financial support from parents/family is relatively small between the three groups of graduates distinguished. However, in Greece for all three groups of graduates the majority of the financial support is provided by parents/family. In Norway, the share of financial support from parents/family is for all three groups very low. In all other countries, the share provided by parents/family is strongly related to the financial situation of the parents. The interesting question is, whether this unequal situation is at least partially offset by the accessibility to grants during the study period. On average, this seems indeed to be the case as the share of financial support within the group of graduates with no wealthy parents to finance their study period with grants is (clearly) higher than the financial support share of grants among graduates with wealthy parents. However, looking at the individual countries, some clear differences are visible. In Germany, among the EUROGRADUATE respondents, the share of grants as source of financing of studies seems indeed to be strongly related to the wealth of the parents. To a lesser extent, this also holds in Austria Croatia, Lithuania and Malta. In these countries, grants reduce at least partially the pressure on students from low wealth families to make up for their reduced parents/family support by increasing the number of hours working next to studying. In Czechia, this seems not to be the case. The lack of an extensive grant system seems to require students from low wealth families in Czechia to indeed invest more hours in working to finance their study period.

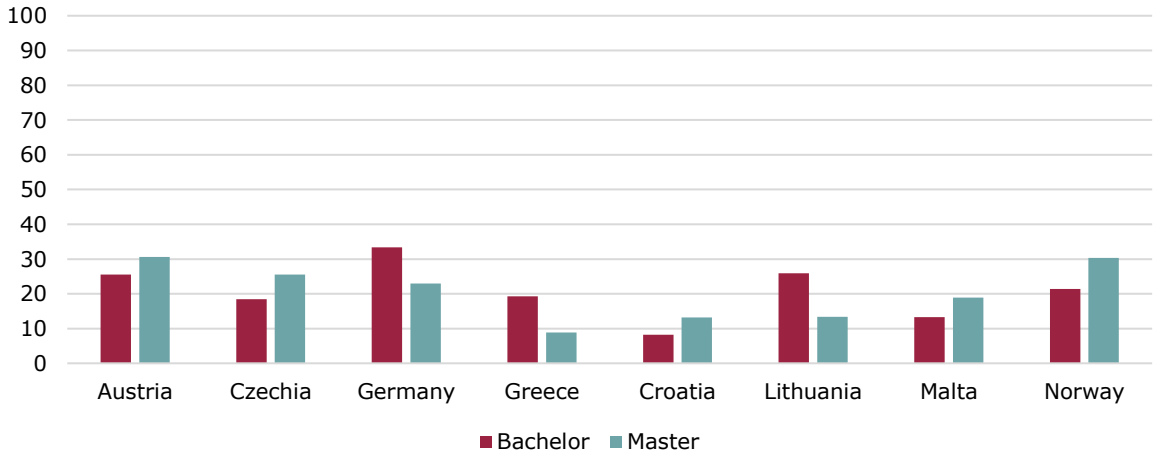
5.4 International classroom

International classrooms are a manner to setup higher education study programmes to increase the knowledge and skills graduates are required to handle when entering an international oriented labour market. The EUROGRADUATE survey allows us to measure some of the indicators related to an international classroom, in particularly:

- % that followed full study in a foreign language[32]
- % that followed full study in English
- % that followed part of study in a foreign language[33][34]
- % that had a foreign experience during the study (internship, study abroad period)
- % that lived outside of the country at age 16

Figure 5.6 presents the share of graduates that reports that during their study time, they gained foreign experience, be it as a study period abroad or by doing an internship/study-related work experience abroad. For BA-level graduates, the share ranges from below 10% in Croatia to nearly 35% in Germany.

Figure 5.6 Experience abroad during study period (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Table 5.1.

In Germany, Greece and Lithuania, the share with foreign experience is larger for the BA-level graduates than for the MA-level graduates. In the other countries, MA-level graduates are more likely to have gained foreign experience. Relatively few foreign experiences at

[32] English is considered a national language in Malta.
[33] English is considered a national language in Malta.
34 The precise question in the survey was: "Did you follow as part of your study programme also courses in a different language than the main language of instruction? (yes/no)", In other words, a further distinction into the share or course followed in a foreign language is not measured.

the MA-level are found in Greece (9%) and in Croatia and Lithuania with both around 13%. Norway (31%) and Austria (30%) know the largest share of respondents from MA study programmes that report to have participated in a foreign experience.

Box 5.2 Determinants of foreign experience during study

Chapter 9 discusses in more detail (inter)national mobility during as well as after the study period. The analyses of Chapter 9 provide interesting outcomes with respect to the determinants of foreign experience during the study period. The main takeaways are:

- As already visible in Figure 5.6 and Table 5.1, there are strong country differences.
- There are significant disparities due to social and personal characteristics:
  - Without at least one parent with an academic degree (at least BA-level), the likelihood to have foreign study experience is about half the chance of students with (at least one) academic parent(s).
  - If parents represent a central source of study financing, the chances are 1.5-times higher to study termporarily abroad within the EU mobility programme compared to not studying abroad and 1.8-times higher when comparing non-EU mobility programmes to not studying abroad. The chance to study temporarily abroad is also higher if the study phase was financed through a grant, whereas graduates that funded their study with own resources had a significantly lower chance to study temporarily abroad.
  - Female graduates are found to be more likely to study abroad, this also holds true for younger compared to older students.
  - The migration background of students does not make a difference in the chance to participate in abroad experiences.

Table 5.1 provides more insight on the types of foreign experience[35]. Among the BA-level graduates, between 5% (Croatia) and 23% (Germany) report to have followed a study period abroad (be it in combination with an internship or not) and among the MA-level graduates the shares range from 4% in Greece to 26% in Norway. Internships/study-related work experience abroad is reported by between 4% (Croatia) and 16% (Lithuania) among BA-level graduates and 6% (Greece and Croatia) to 18% (Austria) among MA-level graduates.

[35] For more analyses on type of foreign experiences and (international) mobility previously, during or after the study, see also Chapter 9.

Table 5.1 International classroom (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
BA-Level								
Language								
Full study in foreign language	2.7	10.7	9.1	2.2	4.2	7.4	1.1	3.9
Full study in English	2.3	8.0	9.1	1.4	2.9	6.8	89.5	3.6
Part study in foreign language	73.2	46.7	76.8	36.1	47.2	40.4	23.9	47.7
Foreign experience								
Study period abroad	10.6	10.0	18.2	9.4	3.8	9.9	8.6	13.1
Internship abroad	9.6	6.5	10.8	5.8	3.5	10.2	3.2	2.7
Study and Internship abroad	5.3	1.9	4.4	4.1	.9	5.8	1.5	5.6
Country at age 16								
Lived abroad at age 16	10.9	7.7	5.9	1.4	2.7	1.5	1.0	5.0
MA-level								
Language								
Full study in foreign language	12.9	7.5	7.6	6.6	2.4	10.4	1.5	26.2
Full study in English	12.9	6.4	7.6	5.5	2.0	10.0	95.4	25.7
Part study in foreign language	67.6	42.2	39.7	30.9	45.4	22.3	18.0	49.1
Foreign experience								
Study period abroad	12.4	10.9	10.3	3.1	7.1	3.7	7.9	20.5
Internship abroad	11.1	8.7	7.9	5.1	4.2	7.2	11.0	4.5
Study and Internship abroad	7.1	5.9	4.8	.7	1.9	2.5	.0	5.3
Country at age 16								
Lived abroad at age 16	17.2	7.6	6.0	2.3	1.9	1.7	10.1	9.0

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Studying the full programme in a language not spoken as mother tongue in the country of higher education is still rather an exception. However, a significant share of graduates report that they have followed at least some of the courses in a foreign language[36]. Considering in more detail the share of graduates that report to have followed the full study programme in a foreign language, a clear distinction between study programmes at the BA-level and study programmes at the MA-level is generally visible. Except for Czechia, the results show that in all countries (clearly) less than 10% of the respondents from BA-level study programmes have followed the full study in a foreign language. At the MA-level, 26% of the respondents in Norway followed the full study programme in a foreign language. Next, also in Austria (13%) and Lithuania (10%) at least 10% of the respondents reported that they followed the study programme in a foreign language. Following the full study programme in a foreign language generally means following the full study

[36] The data does not allow to further distinguish between following e.g. only one specific study course in a foreign language or e.g. 80% of the study courses in a foreign language.

programme in English. The importance of English as language in higher education in Malta is also clearly visible. 90% of the BA respondents and even 95% of the MA-level graduates report that they followed the study programme in English.

Even though the clear majority of the respondents reports that the main study language was the 'home language', Table 5.3 shows that a significant share of the respondents report that they have at least followed parts of the study programme in a foreign language (mainly English). At the BA- level, this holds for more than 70% of respondents in Germany and Austria. In the other countries (except Malta were English is considered an official national language) the percentage is between 35-50%. At the MA-level, again Austria is the highest scoring country (68%). Interestingly, Germany scores significantly lower at the MA level (40%) compared to the BA level. Malta and Lithuania (around 20%) are this time the lowest scoring countries and the remaining countries show shares of 30%-50%[37].

Finally, the share of respondents that lived at the age of 16 outside of the country in which they followed the BA-level study programme they graduated from in 2016/17, is, with the exception of Austria (11%), in all countries (clearly) below 10%. Austria also reports among the respondents from MA-level study programmes the highest share of respondents that lived at the age of 16 outside of Austria (17%). However, at the MA-level, there are two more countries, Malta with 10% and Norway with 9% scoring relatively high. For more analyses on the (inter)national mobility between the age of 16 and age at time of survey, see also Chapter 9.

5.5 Learning environment

The increasing demand for generic competencies next to discipline-specific knowledge in the labour market, together with the growing criticism on traditional learning styles, has led to a widespread introduction of learning methods stimulating on the one side the active learner in the student and on the other hand stimulating larger interactions between learning in the classroom and economic life. The former is related to the introduction of activating learning methods (such as problem-based or project-based learning) where the student is expected to be an active discoverer instead of a passive recipient of easily digestible chunks provided by the teacher. The latter requires higher education to initiate possibilities for cooperative education, providing opportunities for connecting the traditional higher university campus to the work environment. Both learning environments are supposed to help student to acquire skills that are difficult to acquire in the traditional lecture room setting.

Activating learning environment

[37] That the part of the study programme followed in a foreign language is not equal by definition to a study abroad exchange programme during the study is also visible. The share of graduates reporting that they partially followed the study programme in a foreign language is clearly larger than the share of graduates reporting a foreign experience.

Traditionally, higher education studies have been organized around lectures that intend to help the students to understand the literature. At the end of the study (course), an examination is waiting in which the students have to demonstrate their understanding of the literature's content. This traditional style of teaching has been suspect to several criticisms. Guskin (1994, cited in Barr and Tagg, 1995) argued 'The primary learning environment for undergraduate students, the fairly passive lecture-discussion format where faculty talk and most students listen, is contrary to almost every principle of optimal setting for student learning'. More specific, Gerritsen (1999) argued that the traditional setting risks that students acquire knowledge that is meaningless to them and hence will soon be forgotten after the examination. Furthermore, Schmidt and Bouhuijs (1985) criticized this type of learning environment on the basis that it divides the material up into distinct disciplines, whereas the reality the graduates encounter in their professional career is rather organized around problems, which have to be addressed using knowledge from a range of disciplines. These critics have in the last decades led to more and more applications of activating learning methods.

Central to all sorts of activating learning environments is their student-centred approach, requiring the student to be an active discoverer who is directly involved in the learning process rather than feed passively by the teacher. Hence, activating learning environments include didactic styles that help and motivate students to learn and that promote an active engagement of students with the subject matter, their desire to understand it and their ability to actively apply it. Main examples of activating learning environments are project-based learning and problem-based learning. The problem-based learning approach was first established in medical teaching at the McMAster University in Canada. Its central characteristic is that 'Problem-based learning is the learning that results from the process of working toward the understanding or solution of a problem. The problem is encountered first in the learning process' (Barrows & Tamblyn, 1980). Although problem-based learning was initiated in the 1970s, its roots can be traced back to the beginning of the 20th century and in particular to the work of Dewey (1916). Dewey proposes that 'Methods which are permanently successful in formal education …go back to the type of situation which causes reflection out of school in ordinary life. They give pupils something to do, not something to learn, and the doing is of such a nature as to demand thinking, or the intentional noting of connections, learning naturally results' (Dewey, 1916, p.154).

To define the learning environment in the EUROGRADUATE survey, we rely on the respondents self-report on the emphasis attached by the higher education institute on particular curriculum aspects. More precisely, information on the following two questions is used:

- The extent to which the teaching mode *Lectures* is applied.
- The extent to which the teaching mode *Problem-based/Project-based* is applied.

Based on earlier research (Meng, 2006), this allows distinguishing four learning environments:

Matrix 5.1 4 Types of learning environments

		Problem-Based / Project-Based	
		Low Extent	High Extent
Lectures	Low Extent	Self-study (1)	Pure PBL (3)
	High Extent	Classical lecture style (2)	PBL with lectures (4)

Note: High extent: answer category 1/2 on the 5-point Likert scale (from 1 'Very high extent' to 5 'not at all'.

The first two learning environments distinguished do not use activating learning methods, at least not on a significant level (approximated by answer category 4 and 5). The third and fourth learning environment distinguished apply activating learning methods to a significant extent:

1) Self-study style

This style is characterized by the fact that the higher education institution neither puts strong or very strong emphasis on 'lectures' nor on 'Problem-based/Project-based learning'. Although this does not by definition mean that no lectures were provided, one can assume that students in particular learned by extensive self-study and the present at lectures was not seen as obligatory by the graduates.

2) Classical lecture style

In this case, the graduates indicated that lectures played a strong or very strong role, but that less emphasis was placed on 'Problem-based/Project-based learning'. This type of teaching resembles the situation to which students from per-higher education are generally used, where the teacher talks and the students listen.

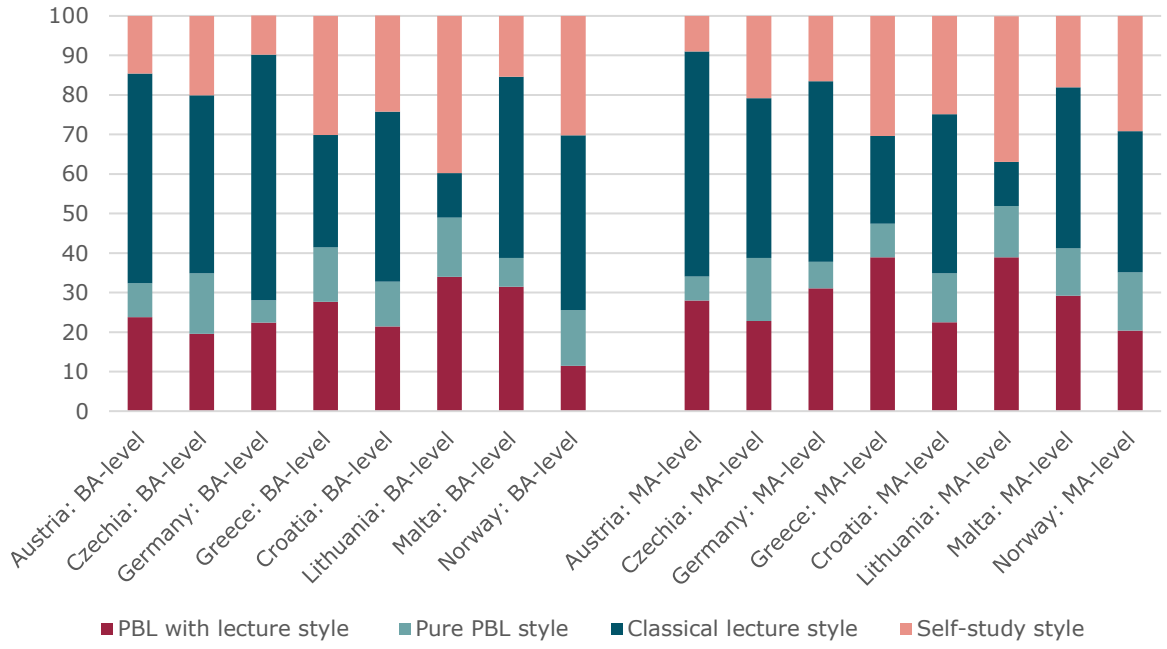
3) Pure PBL

The third style that distinguished is a situation in which 'Problem-based/Project-based learning' played a strong or very strong role, but where lectures were not a major source of information. This style resembles mostly the original idea of 'Problem-based/Project-based learning', in which the role of the teacher is process- rather than content-oriented and hence lectures only play a minor role.

4) PBL with lectures

The final learning environment mixes a strong or very strong role of lectures with a strong or very strong role of 'Problem-based/Project-based learning'. In contrast to the pure PBL style, this style gives the teacher through lectures a role beyond mere process monitoring.

Figure 5.7 Activating learning environment (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.5.

Figure 5.7 shows that in all countries and both, at MA-level as well as BA-level, at least one out of four reports that some type of 'Problem-based/Project-based learning' has been applied in the study to a (very) high extent. In Lithuania, even half of the respondents report that 'Problem-based/Project-based learning' has been applied. Finally, the data shows that Problem-based / project-based learning (be it in combination with lectures or as stand-alone method) is in all countries more present at the MA-level than at the BA-level.

The classical lecture style is still the mainstream learning environment in Germany (62%) and Austria (53%) at the BA-level and in Austria at the MA-level (57%). Activating learning environments are in all countries mainly based on a combination of 'Problem-based/Project-based learning' parts with lectures.

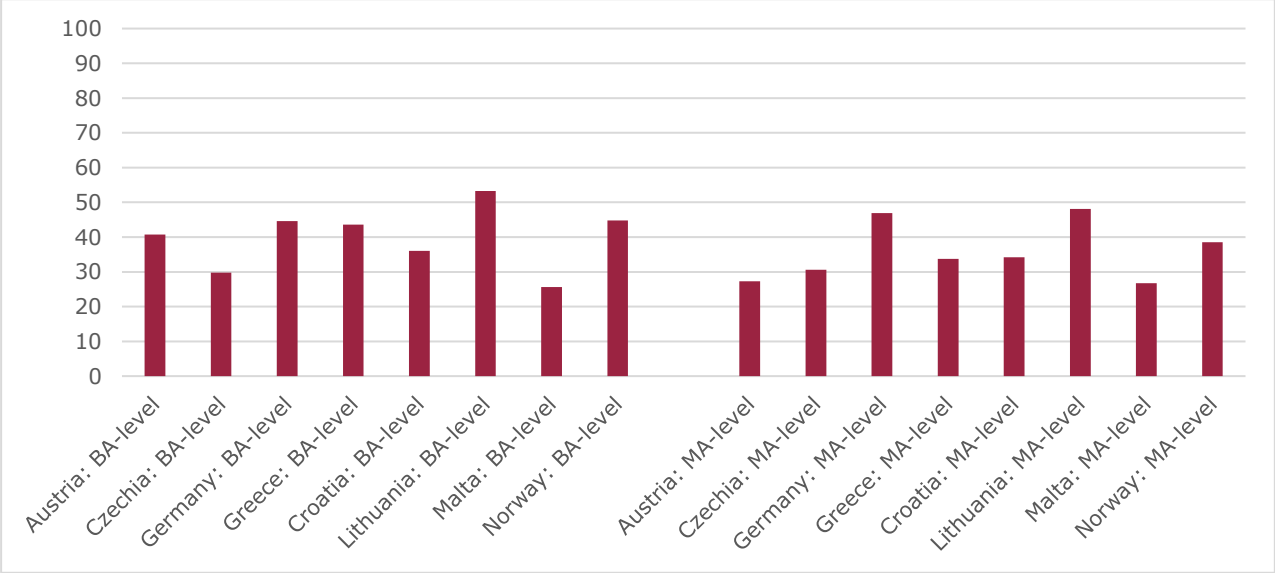
Work-related learning environment

Our second learning environment context variable is the extent to which the study programme the respondents graduated from in 2016/17 can be defined as a learning environment with a close link between learning and work. This is measured by the share of graduates that indicated that the mode of teaching 'Internships, work placement (as formal part of your study programme)' applied to a (very) high extent to their study.

A work-related learning environment is generally more applicable at the BA-level than at the MA-level (see Figure 5.8). However, with the exception of Lithuania at the BA-level

(53%), this type of learning environment is according to the respondents in less than half of the study programmes applied to a (very) high extent. At the BA-level, graduates least likely have followed their study programme in such a work-learning environment in Malta (26%) and Czechia (30%). In the other countries, the share of respondents that indicate that this mode of teaching applied to their BA-level study is around 40-45%.

Figure 5.8 Work-related learning environment (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.6.

At the MA-level, again the graduates in Malta (27%) and Czechia (31%) followed relatively not often their study in such a learning environment. This time also Austria (27%) scores relatively low. At the other end of the spectrum, graduates in Germany and Lithuania report in nearly half of the cases that a work-learning environment applied to their study programme[38].

[38] Table 5.4 shows that differences between study programmes at MA-level and study programmes at BA-level seem to be rather small. Multivariate analyses confirm that. Only in Greece, we find a significant difference between the two levels of study: MA-level programmes in Greece less likely provide work-related learning environment. In all other countries, the differences are not significant from zero on at least at 5% significance level. In five countries (Austria, Germany, Czechia, Greece and Croatia), we find that Research Universities less likely provides a work-related learning environment than non-university type ofhigher education (e.g. Universities of Applied Science). Finally, with the exception of Germany and Norway, we find that study programmes in the broad field of educational study programmes more likely provide a work-learning environment and with the exception of Lithuania, this holds for health studies as well.

The impact of the learning environment on the basis the study programme provided

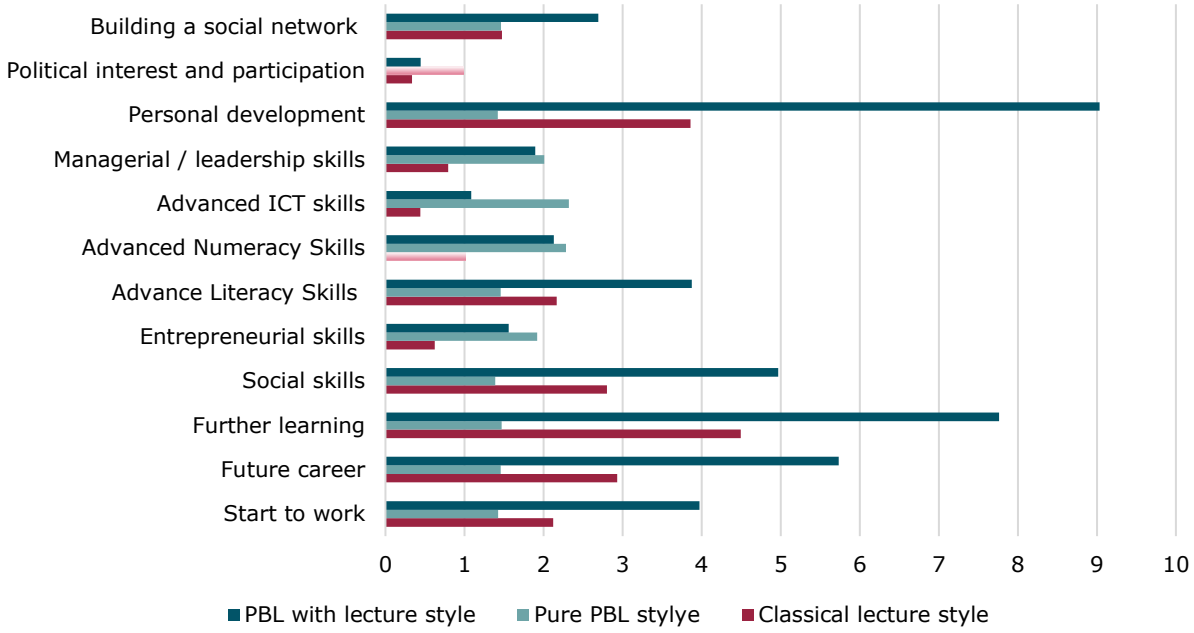
Chapter 4 discussed the basis higher education programmes provided to their students with respect to different outcomes. It is interesting to analyse now to what extent the learning environments distinguished relate to these outcomes. For that reason, we return to the multivariate analyses discussed in Chapter 4 trying to explain what the impact of different factors is on the basis provided by the study programme. Next to the previously discussed variables related to the study (field of study, ISCED-level, type of higher education institution) and some personal characteristics (age, gender), the multivariate analyses include dummies for a) the four learning environments with respect to *Activating learning* and b) a dummy for a work-related learning environment. Figure 5.9 presents the odds ratios with respect to three dummies (*Classical lecture style, Pure PBL style* and *PLB with lecture style)* compared to the *Self-study style*. Figure 5.10 presents the odds ratios for the dummy *Work-related learning environment* (versus non work-related learning environment).

The first general picture painted by Figure 5.9 clearly indicates the important role of activating learning environments.

- The *PBL with lecture style* clearly outperforms the other four styles with respect to the basis provided by the study programme to *Start to work*, for the *Future career*, for *Further learning*, to develop *Social skills*, to develop *Advanced literacy* skills, for *Building a social* network and for the *Personal development.*
- The *pure PBL style* scores highest for the development of *Entrepreneurial skills*, the development of *Managerial / leadership skills*, the development of *Advanced Numeracy skills* and the development of *Advanced ICT skills.* However, with the exception of the *Advanced IT skills*, the differences between the pure PBL style and the PBL with lecture style are marginal.

Secondly, the findings indicate that replacing the *classical lecture style* with a *pure PBL style* might harm the basis provided by the study programme with respect to *Start to work, Future career, Further learning* and *Social skills.* In other words, and according to the graduates' point of view, lectures form a crucial part in higher education and should not be replaced fully by an activating learning environment, but rather a good balance has to be found between the two approaches (*PBL with lecture style)*.

Figure 5.9 Multivariate analyses: Activating learning environments (odds ratios) [39]



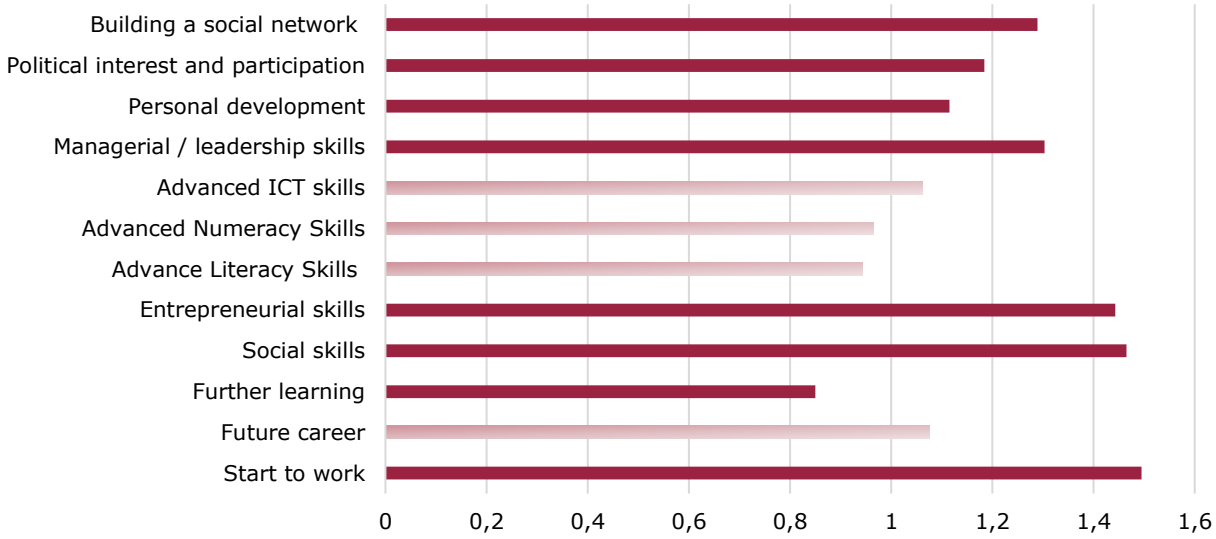
Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, Light red= not significantly different from 1.

Finally, the basis provided by the study programme with respect to *Political interest and participation* is according to the respondents valued highest in case that lectures are not applied to a (very) high extent.

The importance of a work-related learning environment is clearly visible in Figure 5.10. Seven out of the twelve outcome indicators are positively influenced. The strongest effects are found for the basis provided by the study programme with respect to *Start to work*, *Social skills*, *Entrepreneurial skills*, *Managerial/leadership skills* and *Building a social network*. Next, it also positively influences the basis provided for *Personal development* and for *Political interest and participation*. No significant impact is found for the basis provided for the *Future career* and the development of *Advanced literacy skills, Advanced numeracy skills* and *Advanced ICT skills*. Finally, a work-related learning environment seems to harm the basis provided for *Further learning*.

[39] The analyses further control for country, age, sex, field of study type of higher education institution and ISCED level.

Figure 5.10 Multivariate analyses: Work-related learning environment (odds ratios)



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, Light red= not significant different from 1.

5.6 Internship, work-experience and voluntary activities

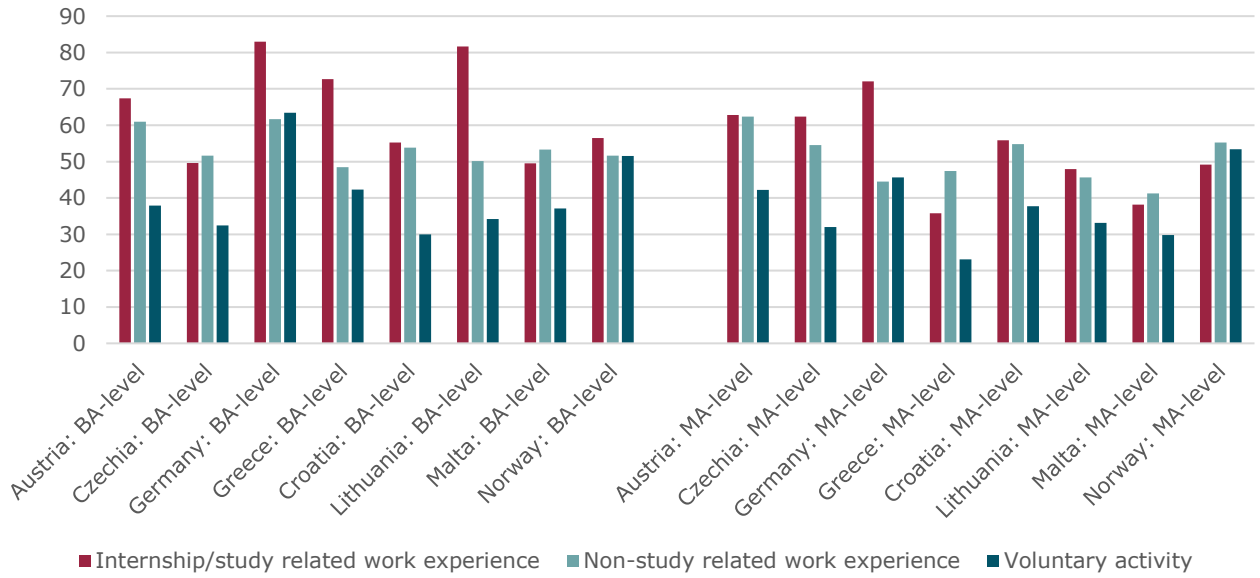
Section 5.1 presented that a significant share of the graduates reported to have gained (study-) related work-experience before entering the study programme. This section looks at the question to what extent graduates also gained (study-) related work experience during their study period and if they carried out voluntary activities.

Internship/ study-related work experience

Even though the study programmes provided generally in less than half of the cases a strong work-learning environment, the results show that at the BA-level at least 50% report that they have followed during the study period an internship, or other (content-wise) study-related work experience. At the MA-level, this holds for five out of the eight countries. Both, at the BA- and the MA-level, the highest share of internships/study related work experiences are reported in Germany. At the BA-level, at least two out of three respondents in Austria, Greece and Lithuania report such activities. At the MA-level, next to the respondents from Germany also the respondents from Austria, Czechia and to a slightly lower extent from Croatia and Norway report relatively often that they have followed an internship/study related work experience. Comparing the outcomes of the MA and the BA respondents, two countries show strong differences. Whereas at the BA-level, 82% of the respondents from Lithuania and 73% of the respondents from Greece report such an activity, at the MA-level, the shares are respectively 48% and 36%. In other words, in these two countries clearly more students at the BA-level carry out

internships/study related work experiences than at the MA-level. In the other countries, the differences between the two study levels are smaller[40].

Figure 5.11 Work experience and voluntary activities during study period (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.6.

Non study-related work experience

Next to study-related work experience, the findings show that at the BA-level in all countries at least half of the graduates report to have work experience that is not directly related to their BA-level programme content-wise. In Germany and Austria this holds for around 60% of the graduates, whereas in the other countries it is around half of the graduates. At the MA-level, the shares vary, except for Austria and Malta, between 45%-55%. That non study-related work experience and internship and study-related work experiences are not by definition competing with each other can be observed when

[40] Based on multivariate analyses, we find that in Croatia and Czechia students at the MA-level significantly more likely follow internships/study related work experiences than BA students and that it is the other way around in Germany, Greece, Lithuania and Malta. Finally, multivariate analyses show, comparable to the outcomes of the work-learning environment indicator,that students in the programs of the fields of Health and Education report significantly more often to have followed internships/study related work experiences. However, this time, at least in half of the countries (Austria, Germany, Greece and Norway), this also holds for the respondents from the field of *Agriculture, forestry, fisheries and veterinary'* and ' *Engineering, manufacturing and construction'* (Austria, Croatia, Lithuania and Norway).

analysing the correlation between the two activities per country. With correlation coefficients ranging from -.01 to +0.1, the correlations are weak and certainly do not provide evidence for a trade-off.

Box 5.3 The value of work-experience and voluntary activities in the transition to the labour market

Chapter 6 discusses in detail the transition to the labour market and the current labour market situation of graduates. The analyses presented in Chapter 6 provide interesting outcomes with respect to the value of work-experience and voluntary activities (both during the study period) in the transition to the labour market.

The main takeaways are:

- Following an internship or gaining otherwise content-wise study-related work experience during the study period increases the likelihood of finding a job that matches well the level and field graduated from.
- Internships / content-wise study-related work experience is of particular importance in countries with generally unfavourable labour market situations.
- Voluntary work carried out during one's study period increases the likelihood of finding a job that matches well the level and field graduated from.

The analyses also indicate that work experience before entering the higher education programme pays off:

- Work experience of at least 6 months before entering the study period positively influences the likelihood of finding a job that matches well the level and field graduated from.
- The value of contentwise to the study related work experience is thereby higher than the value of contentswise not to the study related work experience.

Voluntary activities

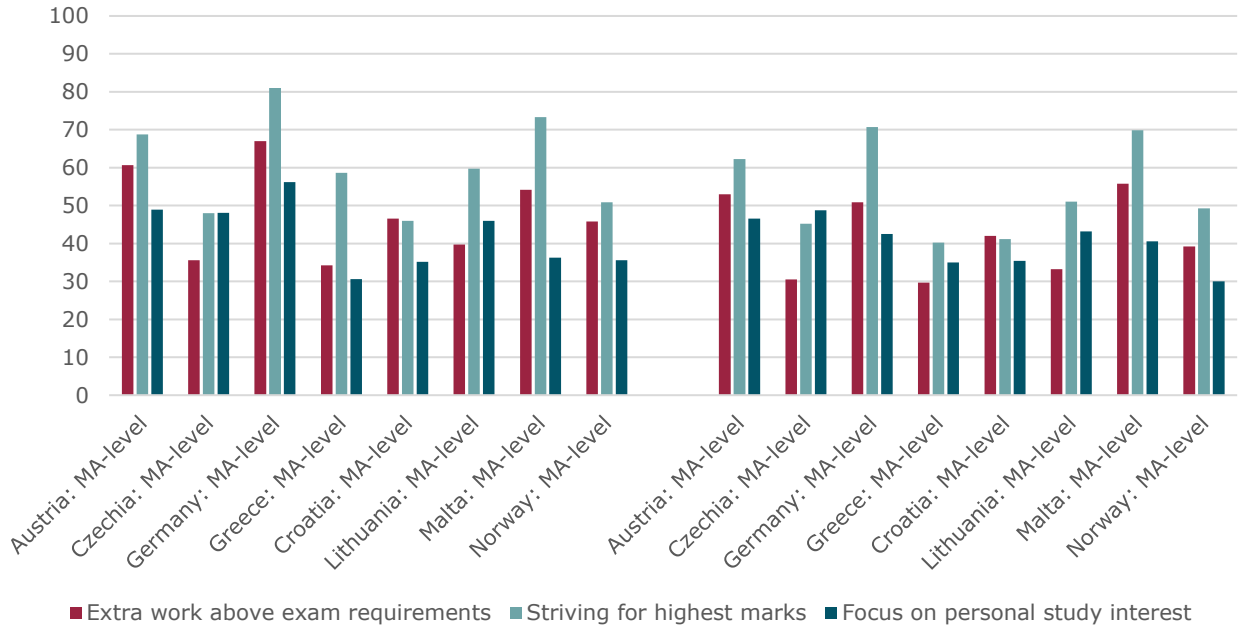
Finally, Figure 5.11 shows that between 23%, (MA-level graduates in Greece) and 63% (BA-level graduates in Germany) report that they have carried out voluntary activities during the study period. In two countries, the figures differ thereby sharply between BA-level and MA-level graduates.

5.7 Study attitudes

It is of course up to the student him- or herself to decide what they make out of the study experience and the learning environment offered. Student attitudes towards studying might thereby play an important role. For that reason, the EUROGRADAUTE pilot survey asked the respondents to what extend the following description applied to their study behaviour:

- I did extra work above what was required to pass my exams.
- I strived for the highest possible marks.
- I focused on my personal study interest rather than straight follow the curriculum.

Figure 5.12 Study attitudes: % applied to a (very) high extent: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.7.

At the MA-level, the graduates of two countries stand out with respect to 'I did extra work above what was required to pass my exams', namely Austria (61%) and Germany (67%). This is in rather sharp contrast to the graduates in Czechia, Greece and Lithuania. In the latter three countries, less than 30% report to have done more than was required for the exams. At the BA-level, doing more than is required for the exams is in all countries reported by a lower share of graduates. However, relatively seen, again Austria, Germany and this time also Malta know the highest shares. In Greece, Czechia and Lithuania, the data shows again the relative lowest shares. Considering finally for the combined BA-level and MA-level group possible differences between male and female graduates, the data informs that in three countries a difference of at least 5%-points exists (see Table A5.8 in Appendix 5.8). In Austria (+6%-points) and Germany (+11%-points) male graduates more likely report to have done more than is required, whereas in Lithuania (+8%-points) female graduates more likely report to have done more.

Not surprisingly, the findings in Figure 5.12 indicate that there is a, although relative weak, relation between the share that has done more than was required for the exams and the share that strived for the highest marks. Austria and Germany show again the highest shares, but this time the other countries have at the MA-level also shares of at least (close to) 50% or higher and at the BA-level of at least 40%. Interestingly, female graduates generally strived to a higher extent for the highest marks whereas with respect to doing

more than is required for the exams, the results show in two countries that male graduates know a higher share and in five countries, no difference is found. To what extent this result might indicate that female graduates have less likely to do more than is required to pass the exams and striving at the same time for the highest marks or is rather related to the fact that male graduates more likely report having done more than female graduates needs to be addressed in further research.

Finally, at the BA-level between 30% (Norway) and 49% (Czechia) and at the MA-level between 33% (Norway) and 59% (Czechia) of the graduates report that they focused rather on their personal study interest than straight following the curriculum. Male graduates in all countries report thereby to a higher share that they focused more on their personal study interest than female graduates with relative large differences in Austria and Czechia (+17%-points) and Greece and Malta (+10%-points). Further analyses show that graduates that followed rather their personal study interest than straight the curriculum are more positive about the basis provided by the study programme with respect to *Managerial/leadership skills*, *Personal development* and *Building a social network*. At the same time, no trade-off is found with respect to e.g. the basis provided to *Start to work* or the *Future career.* In this sense, allowing for flexibility in the curriculum seems to generally benefit the student.

5.8 Conclusions

The student journey has its impact on the outcome of higher education. For that reason, this chapter discussed, the manner students finance their journey through the higher education system, the (side-) steps they take and the learning environment they encountered during their study. The main conclusions are the following follows.

The manner of financing one's higher education journey depends strongly on both, the wealth of the parents / family as well as the availability of grants. The lack of grants in combination with low family wealth yields a situation wherein students are pressured to work long hours next to study. The extent to which such work experience and the relation of the work experience to the study programme influences the transition of work will be one of the questions addressed in the next Chapter.

The world of the labour market is increasingly an international world and higher education has to adapt to that. Providing courses in foreign languages, stimulating students to gain foreign study or work experience and stimulating students to follow the full study programme are only some of the possible instruments at hand. The results in this chapter indicate that such international migration experiences are still not the regular approach and providing full study programmes in a foreign language (mostly in English) still forms rather the exception than a rule.

Finally, the results show that to prepare students for the different dimensions of higher education outcomes (a strong transition to the labour market, long-time employability, lifelong learning or a social citizenship) requires a balanced approach between activating learning environments and traditional lecture style approaches. In the future, a leanring environment that embraces a strong connection between the lecture hall and the workplace will be crucial.

5.9 Appendix

Appendix 5.1

Table A5.1 Work experience before entering study programme of at least 6 months without interruption (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
MA-Level								
Work experience	59.4	52.0	48.9	70.3	27.5	65.8	53.5	65.3
Related work experience	33.1	26.1	31.8	43.7	14.5	32.8	28.1	28.5
BA-Level								
Work experience	49.5	48.0	51.4	35.6	23.7	35.1	28.1	66.9
Related work experience	22.4	19.0	33.9	11.6	10.3	13.3	11.1	23.8

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 5.1.

Appendix 5.2

Table A5.2 Types of financial sources during study period (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
MA-Level								
Parent/Family support	69.5	74.7	66.7	54.0	80.3	46.7	47.0	28.1
Working income	78.8	78.1	68.9	64.1	62.4	86.1	48.2	76.3
Grants	40.5	20.6	33.3	10.7	28.3	35.7	48.0	79.0
BA-Level								
Parent/Family support	72.2	76.1	66.9	86.7	79.9	76.6	63.0	26.4
Working income	66.8	79.4	73.8	41.6	58.1	64.9	51.6	72.0
Grants	53.6	26.6	32.9	3.1	26.5	44.1	76.9	91.6

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Appendix 5.3

Table A5.3 Share of financial support from specific source: Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
BA-level								
Parent/Family	45	55	41	78	62	51	36	6
Work income	33	40	32	20	27	36	32	29
Grant	20	4	26	1	10	12	29	63
MA-level								
Parent/Family	41	53	40	43	60	24	39	7
Work income	42	42	31	51	29	65	30	37
Grant	15	3	25	4	10	9	24	53

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Appendix 5.4

Table A5.4 Share of financial support from specific source: Cohort 2016/17

	Parent/Family	Work income	Grant
Austria: High	54	31	13
Austria: Average	39	38	20
Austria: Low	24	47	27
Czechia: High	64	32	3
Czechia: Average	48	46	4
Czechia: Low	37	57	3
Germany: High	64	26	8
Germany: Average	37	32	29
Germany: Low	23	37	36
Greece: High	74	23	2
Greece: Average	69	29	1
Greece: Low	64	33	3
Croatia: High	72	21	7
Croatia: Average	60	28	10
Croatia: Low	49	35	14
Lithuania: High	48	42	9
Lithuania: Average	43	43	12
Lithuania: Low	35	46	16
Malta: High	48	31	19
Malta: Average	36	36	26
Malta: Low	29	38	28
Norway: High	9	26	63
Norway: Average	6	34	59
Norway: Low	5	34	58

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Appendix 5.5

Table A5.5 Learning environment (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
BA-Level								
Activating learning environment								
Self-study style	14.6	20.1	9.9	30.1	24.3	39.8	15.4	30.2
Classical lecture style	53.0	45.0	62.1	28.5	43.0	11.2	45.8	44.2
Pure PBL style	8.6	15.3	5.7	13.7	11.4	15.0	7.3	14.1
PBL with lecture style	23.8	19.6	22.4	27.7	21.4	34.0	31.5	11.5
Work-related learning environment								
%	40.7	29.8	44.6	43.6	36.0	53.3	25.6	44.8
MA-Level								
Activating learning environment								
Self-study style	9.0	20.8	16.5	30.4	24.9	36.8	18.1	29.2
Classical lecture style	56.9	40.4	45.7	22.2	40.2	11.2	40.7	35.7
Pure PBL style	6.1	16.0	6.7	8.5	12.4	13.0	12.0	14.7
PBL with lecture style	28.0	22.8	31.1	38.9	22.5	38.9	29.2	20.4
Work-related learning environment								
%	27.3	30.6	46.9	33.7	34.2	48.1	26.7	38.5

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Appendix 5.6

Table A5.6 Work experience and voluntary activities during study period (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
BA-Level								
Internship/study related work experience	67.4	49.6	83.0	72.7	55.2	81.7	49.5	56.5
Non-study related work experience	61.0	51.6	61.7	48.5	53.8	50.1	53.3	51.6
Voluntary activity	37.9	32.4	63.4	42.3	30.0	34.2	37.1	51.5
MA-Level								
Internship/study related work experience	62.8	62.4	72.1	35.8	55.9	47.9	38.2	49.2
Non-study related work experience	62.4	54.5	44.5	47.4	54.8	45.6	41.2	55.2
Voluntary activity	42.2	32.0	45.6	23.1	37.7	33.1	29.8	53.4

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Appendix 5.7

Table A5.7Study attitudes: % applied to a (very) high extent: Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
MA-Level								
Extra work above exam requirements	60.7	35.6	67.0	34.2	46.6	39.7	54.2	45.8
Striving for highest marks	68.8	48.0	81.0	58.6	46.0	59.7	73.3	50.9
Focus on personal study interest	48.9	48.1	56.2	30.6	35.2	46.0	36.3	35.6
BA-Level								
Extra work above exam requirements	53.0	30.5	50.9	29.7	42.0	33.2	55.8	39.2
Striving for highest marks	62.3	45.2	70.7	40.2	41.2	51.0	69.9	49.3
Focus on personal study interest	46.6	48.8	42.5	35.0	35.4	43.2	40.6	30.0
Male								
Extra work above exam requirements	59.8	35.1	63.0	31.6	43.2	29.5	52.7	43.4
Striving for highest marks	58.9	36.1	71.0	42.2	40.1	43.8	64.2	44.4
Focus on personal study interest	57.4	58.8	51.9	38.0	38.9	48.9	43.0	33.2
Female								
Extra work above exam requirements	53.5	31.5	52.5	29.6	44.6	38.4	57.2	40.2
Striving for highest marks	69.7	53.3	79.3	49.0	45.5	59.3	78.2	53.4
Focus on personal study interest	40.0	41.8	44.7	27.8	32.9	40.9	32.9	31.0

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

6. Labour market outcomes

6.1 Introduction

Higher education aims at preparing students for a successful transition to the labour market, adequate employment, career development and job security. Along this line, this chapter discusses the labour market outcomes of the higher education programmes in the eight EUROGRADUATE pilot countries.

Section 6.2 provides a general picture of the economic situation in the eight countries to give a context for the more specific discussion of the labour market outcomes of the EUROGRADAUTE population. In Section 6.3 and Section 6.4 the labour force participation of graduates as well as – given graduates enter the labour force – the unemployment situation is discussed. This step intents to provide insight into questions such as *how enters the labour market and who continues to study, what are the graduates at risk of not finding employment* or *What factors help graduates to find employment?* .

Having established how likely graduates find employment and what groups are at risk not finding employment, Section 6.5 focuses in detail on the employment situation of the graduates at time of survey (October 2018 – January 2019). To start with (Section 6.5.1 Section 6.5.2), job security, the share of graduates that start their own business, how common part-time work is among recent graduates as well as the questions if part-time work is voluntary or not is discussed.

Next, Section 6.5.3 until Section 6.5.4 turns to the adequacy of the employment in relation to the education. To do so, these sections discuss the occupation and economic sector graduates are working in, look at the match between the educational degree and the occupational requirements (vertical and horizontal match) and discuss both the skills requirements in the labour market as well as match between the skills required in the labour market and the skills acquired in higher education.

In a final part, earnings are discussed (Section 6.5.6) and a comparative picture on the extent to which the occupations graduates hold offer different aspects of occupational success – such as work-life balance, the possibility for lifelong learning or the chances of doing something useful for society – are presented in Section 6.5.7.

The final question addressed in this chapter is, to what extent the labour market situation one year after graduation determines the labour market situation five years after graduation is. In Section 6.6, the EUROGRADAUTE cohort of 2012/13 is for that reason analysed and their labour market situation in 2014 is compared with their labour market situation in 2018.

Box 6.1 Graduates at the core in this chapter: The chapter focuses on three of the four type of EUROGRADUATE respondents:

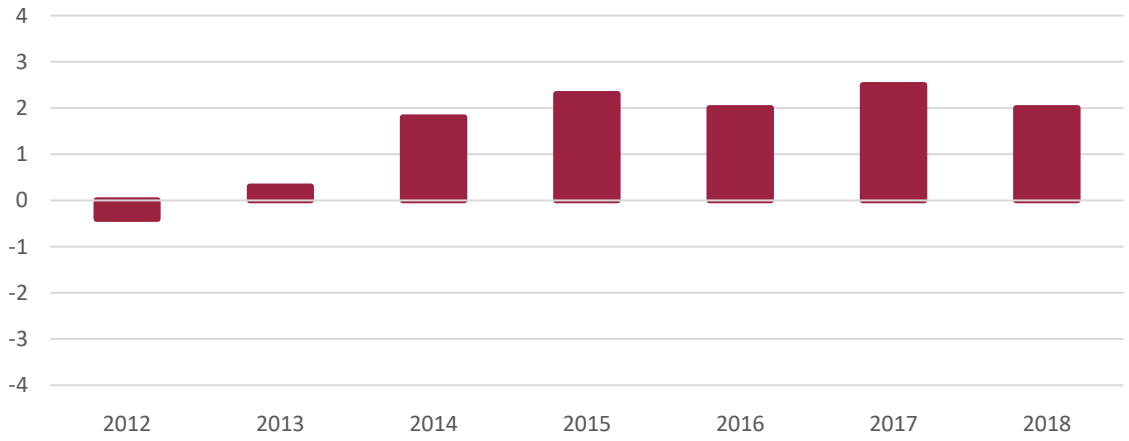
- MA-level graduates of the academic year 2016/17
- BA-level graduates of the academic year 2016/17
- MA-level graduates of the academic year 2012/13

In this sense, the chapter neglects BA-level graduates of the academic year 2012/13. Reason for that is that a significant share of the BA-level graduates of the academic year 2012/13 in the period until 2018 have upskilled themselves by following in particular MA-level programmes. Their labour market situation in 2018 will therefore more likely be an outcome of the MA-level programme they graduated from in the period 2013-2018 than an outcome of the BA-level programme graduated from in 2012/13.

6.2 Economic context

Before in more detail labour market outcomes of the EUROGRADUATE pilot survey respondents are discussed, this section provides some background information with respect to the general labour market situation in the eight EUROGRADUATE pilot countries. To start with, Figure 6.1 shows the real GDP growth in the European Union (28 countries) between 2012 and 2018.

Figure 6.1 Real GDP growth rate European Union (%)

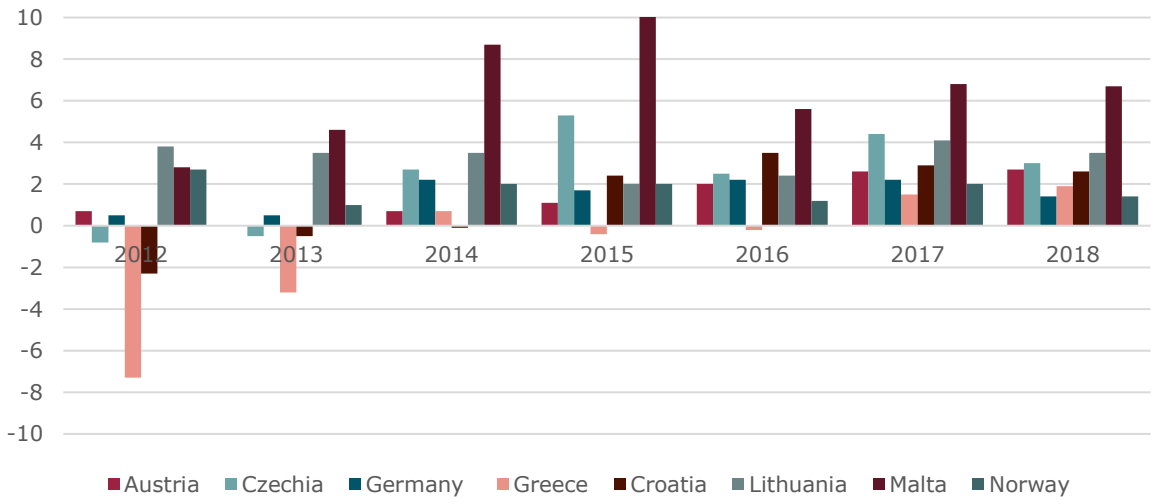


Source: EUROSTAT (24-07-2019).

The picture emerging from Figure 6.1 is that of a recovering economy after 2012, with real GDP growth rates of above 2% from 2015 onwards. Most 'EUROGRADUATE pilot survey' graduates will thus have entered the labour market just after the clear dip in economic growth in the European Union area (cohort 2012/13) or in a period with a general steady growth rate (cohort 2016/17). However, the reader has to keep in mind that a) there might be clear differences between the countries and b) that the dip due to the financial crisis in the years before entering the labour market might have long lasting consequences in some countries. To get more insight, Figure 6.2 presents the country individual real GDP growth rates for the same period.

Economically seen the toughest circumstances graduates are confronted with are clearly seen in Greece[41] with negative growth rates in four of the seven years considered and strong negative growth rates in 2012 (-7.3%) and 2013 (-3.2%). Croatia has negative growth rates in the period 2012 (-2.3%) to 2014 (-0.4%) but shows a rather strong recovery in the years thereafter. Next to these two countries, also Czechia had negative growth rates during the period the first EUROGRADAUTE pilot survey cohort (2012/13) received their degree, however with negative growth rates of -0.8% and -0.5% the dip in the economy is clearly smaller than in Greece and in 2012 also smaller compared to Croatia. Comparable to Croatia, Czechia shows a strong recovery with growth rates even above 4% in 2015 and 2017. The remaining five countries did not have any negative growth rates in the period under consideration. However, in Austria, Germany and Norway, the growth rates are, with the exception of Austria in 2006 and 2007, relative weak, ranging from 0.5% to 2.2%. Finally, Lithuania and Malta show for the complete period strong growth rates, topping even nearly 11% in Malta in 2015.

Figure 6.2 Real GDP growth rate (%)



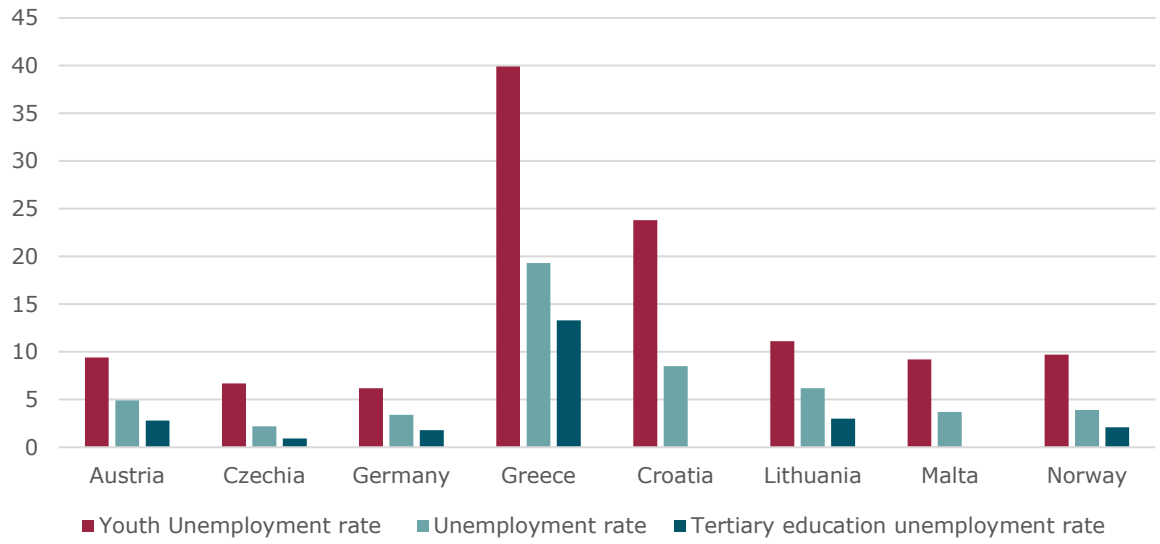
Source: EUROSTAT (24-07-2019), Note: Figures for Greece are provisional. For the underlying figures, see Appendix 6.1.

The differences in economic growth rates in the period 2012-2018 also impacts the unemployment rate in the eight EUROGRADAUTE pilot countries in 2018, the survey year of EUROGRADUATE. Figure 6.3 presents for each of the country the unemployment rates for three distinct groups, namely the overall unemployment rate of 2018, the youth unemployment rate as well as the unemployment rate of those with a tertiary education degree. The overall unemployment rate ranges from 2,2% in Czechia to 19,3% in Greece. Greece is the only pilot country with an overall unemployment rate above 10% in 2018. Croatia follows with 8,5% and Lithuania with 6,2 is still above the 5%. All other countries had in 2018 an unemployment rate of below 5%. Youth unemployment rates are in all countries above the overall unemployment rate with a factor ranging from 1,8 in Lithuania up to 3 in Czechia. In most countries, the factor between the youth unemployment rate

[41] The figures for Greece are still provisional.

and the overall unemployment rate is around 2. Finally, the data shows that in all countries the unemployment rate among the population with a tertiary education degree is lower than the overall unemployment rate. Only Greece shows an unemployment rate among tertiary educated of more than 10%.

Figure 6.3 Unemployment rate EUROSTAT 2018 (%)



Source: EUROSTAT (24-07-2019), low reliability. Note: Low reliability for 'Tertiary education unemployment rate' in Croatia and Malta. For the underlying figures, see Appendix 6.2

Table 6.1 presents the employment rates in 2018 of recent graduates (aged 20-34) who are not in education and training and have graduated within the previous three years. Except for Croatia (71.2%) and Greece (55.3%), the data shows that the total employment rate in all of our EUROGRADUATE pilot survey countries is (clearly) above 80% and by that also (clearly) above the average of the European Union (28 countries) of 81.6%. Malta, with 94.8% has the highest employment rate among the eight pilot countries and actually also among all 35 countries covered by EUROSTAT. Greece scores among the 35 countries covered by EUROSTAT second last just above North Macedonia. For all our eight pilot countries, it holds that the employment rate of recent graduates from ISCED 5-8 is above the total employment rate. Again, Greece (59%) and Croatia (75%) score relatively seen lowest and Malta (96.7%) highest.

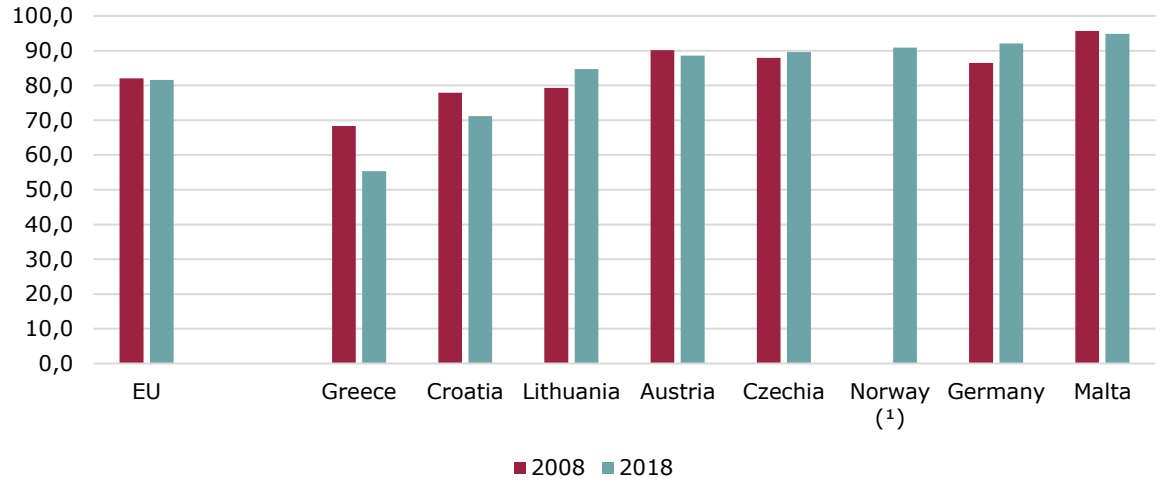
Table 6.1 Employment rates of recent graduates (aged 20-34) not in education and training, 2018 (%)

	Total	ISCED 3 and 4: General	ISCED 3 and 4: Vocational	ISCED 5-8
European Union - 28 countries	81.6	66.3	79.5	85.5
Austria (1)	88.6	77.4	87.3	90.1
Croatia	71.2	n.a.	68.8	75.2
Czechia (1)	89.6	80.6	87.7	91.5
Germany	92.1	68.7	92.4	94.3
Greece	55.3	45.2	50.5	59.0
Lithuania	84.7	75.6	79.2	90.4
Malta	94.8	93.0	89.8	96.7
Norway	90.9	78.4	90.4	94.8

Source: Eurostat (online data codes: edat_lfse_24 and edat_lfse_32), Notes: (1) Upper secondary & post-secondary non-tertiary education — general: low reliability, Graduates with an upper secondary & post-secondary non-tertiary education or a tertiary education (ISCED 2011 levels 3–8), having graduated within one to three previous years, n.a. = not available.

Figure 6.4 compares the total employment rate of recent graduates (aged 20-34) not in education and training of 2018 with the situation of 2008, and hence the year before the financial crisis started and the economies of the European Union were hit by economic difficult periods. In Germany and Lithuania, the employment rates in 2018 are around 5-6%-points higher than before the economic crisis. In Malta, Austria and Czechia, the employment rates are strongly comparable between 2008 and 2018. In this sense, these five countries seem to have recovered fully from the economic downturn. This does not hold for Croatia and Greece. In Croatia, the employment rate is with 71.2% in 2018 still nearly 8%-point lower than in 2008 (77.9%). In Greece the employment rate in 2018 (55.3%) is 13%-point lower than in 2008 (68.3%).

Figure 6.4 Employment rates of recent graduates (ISCED 3-8 aged 20-34) not in education and training, 2008 and 2018 (%)



Source: Eurostat (online data code: edat_lfse_24), Note: graduates with an upper secondary & post-secondary non-tertiary education or a tertiary education (ISCED 2011 levels 3–8), having graduated within one to three previous years, Breaks in series, Note: (1) 2008: not available.

6.3 Labour force participation

Graduation from higher education is a crucial landmark in the individual career. Graduates have to take important decisions. Questions such as 'Do I continue to study to upskill me? Do I enter the labour market? Do I start my own company, or do I search for work at a company or organization?' are of utmost importance. These decisions can have lasting effects due to hysteresis and path dependency.

The situation of the EUROGRADAUTE respondents can most generally be described as being part or not being part of the labour force. Graduates out of labour force are not available for the labour market, e.g. because they are still studying full-time in another programme, are involved in domestic work or cannot work due to health problems.

Box 6.2: Entering the labour market or continue to study?

Given that a (relative) large share of BA-level graduates continues to study and that also holds, although clearly on a lower level, for MA-level graduates, it is interesting to briefly inform the reader on some outcomes discussed in more detail in Chapter 8.

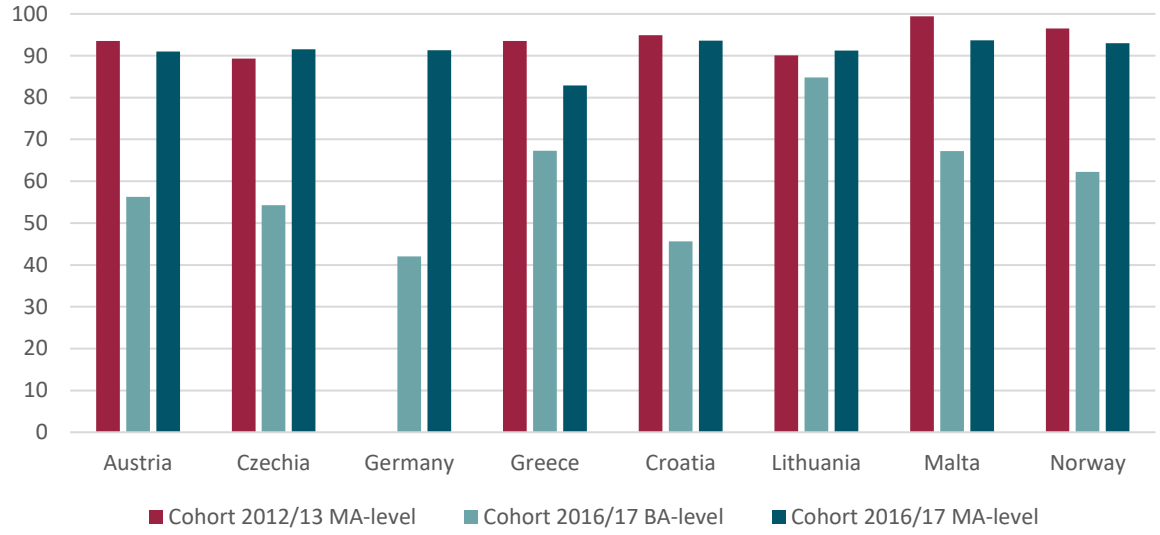
- BA-level graduates from research universities more likely continue to study than BA-level graduates from non-research universities (e.g. Universities of Applied Sciences). In this sense, a BA-level degree from the latter type of higher education institution is more likely seen as an entrée ticket to the labour market.
- Graduates with no higher educated parents and graduates from less wealthy families less likely continue to study.
- Graduates that are less satisfied with the basis the study programme provided to start to work and more satisfied with the basis the study programme provided for further learning more likely continue to study.
- Graduates see further learning as an investment into a better labour market position but often also as entrée ticket to the world of academia.
- Graduates most likely continue to study in the field they previsiusly graduated in. Reasons for re-skilling (chaning the field of study) are mostly related to the feeling that the study programme previously graduated from does not prepare well for the future labour market career.

It is important to consider these findings when interpreting the labour market outcomes presented in this chapter, given that the group of graduates that enters the labour market might be a selective group of the graduates. This holds in particular for BA-level graduates entering the labour market.

Figure 6.5 shows the share of the three graduate cohorts set central in this chapter that is at time of survey part of the labour force, be it as unemployed or as employed. Not surprising, in particularly the BA-level graduates of the cohort 2016/17 have a relative low share of labour force participants. For this cohort, the group of BA-level graduates not part of the labour force consists in particular of graduates that continued to study fulltime directly after receiving their BA degree and are at time of survey (one year after graduation) studying at a MA-level programme. The share of BA-level graduates actively participating in the labour market varies from as low as 42% in Germany up to 85% in Lithuania. Next to Germany, the data shows for the BA-level cohort 2016/17 also less than half of the graduates in the labour force in Croatia (46%). MA-level graduates, both one and five year after graduation, know a much higher probability to have entered at time of the survey the labour force. In all countries, a clear majority of the MA-level

graduates are part of the labour force. The lowest share is found for the 2016/17 MA-level cohort in Greece, where 83% are part of the labour force. In all other countries, one year after graduation around 90% of the graduates are in the labour force. Five years after graduation, the shares of the MA-level graduates in the labour force are comparable or even slightly higher. In Greece, the largest increase between the two MA-level cohorts with 94% of the 2012/13 cohort being part of the labour force at time of survey compared to 83% among the 2016/17 cohort is visible.

Figure 6.5 Labour Force share (%)



Source: EUROGRADAUATE Pilot Survey 2018. For the underlying figures, see Appendix 6.4

Table A6.4 in Appendix 6.4 also provides the share of MA-level graduates that are part of the labour force and the shares that are not part of the labour force for the two cohorts split by sex. The results present an interesting picture. One year after graduation (cohort 2016/17), only small differences in the share that is part of the labour force between male and female graduates are found. In some countries (Austria, Greece, Malta and Norway), the share is even slightly higher among female graduates than among male graduates. Five years after graduation, the situation has changed. Except for Malta, the share that is part of the labour force is in all countries now (clearly) larger among the male graduates compared to female graduates. In Czechia, 93% of the male graduates are part of the labour force whereas the share among the female graduates is 84%. In Greece and Lithuania, the difference is around 10%-points and in Austria and Croatia around 7%-points. Further analyses indicate that among female graduates not participating in the labour force a larger share than among their male peers report that they are fulfilling domestic tasks.

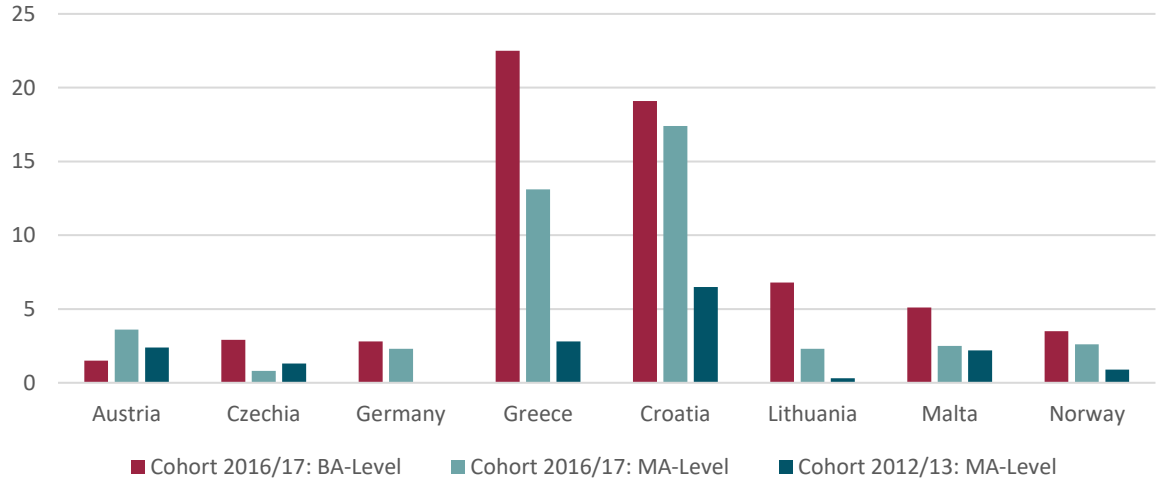
6.4 Finding a job

The first step for graduates entering the labour force is to find a job, be it as employee of an organization or by starting up one's own company. On an individual level, being unemployed for a longer period might not only provide financial distress but can also yield the feeling of being left out. Moreover, in a world that is due to technological inventions

changing fast, not being able to apply one's acquired skills and being able to update them through on-the-job learning or formal occupational training yields the risk of being confronted with skills obsolesce. On a country and European level, unemployment means unused labour potential restricting the further growth of the European economies. Moreover, significant shares of young graduates not actively employed and feeling left out might reduce social cohesion and trust among each other. To understand what groups of graduates are at risk, this section analyses extent of unemployment one and five year after graduation.

Figure 6.6 presents the unemployment rate at time of survey (October 2018 – February 2019). Two general findings are directly visible. First, graduates from BA-level programmes have in most countries one year after graduation a higher unemployment rate than those that graduated from a MA-level programme. Second, the unemployment rate is lower five years after graduation compared to one year after graduation.

Figure 6.6 Unemployment rate (%)



Source: EUROGRADUATE pilot survey 2018, n.c = not comparable as the EUROGRADUATE labour force definition is not fully comparable to the definition in the DZHW graduate panel. For the underlying figures, see Appendix 6.5.

More in detail, the data shows that in Austria, Czechia, Germany, Lithuania Malta and Norway, comparable to the EUROSTAT unemployment rates presented in Figure 6.3, unemployment rates are below or around 5%. The exception is Lithuania where the unemployment rate of graduates from BA-level programmes one year after graduation (6,8%) is slightly above the 5%. On average, the unemployment rates within these six countries are generally, just slightly above the unemployment rates of the whole group with a tertiary education degree in these countries (see Figure 6.3), reflecting the fact that our graduates are at the beginning of their labour market career. The unemployment rates of the remaining two countries (Greece and Croatia) show a sharp decline between the survey one year and the survey five years after graduation. However, in Croatia and Greece, the unemployment rate one year after graduation is significantly higher than in the other six pilot countries. BA-level graduates of the 2016/17 cohort are confronted with an unemployment rate of 22,5% in Greece and 19,1% in Croatia. MA-level graduates in these two countries have a better start on the labour market. However, in comparison

with Austria, the pilot country with the third highest unemployment rate among MA-level graduates from the cohort 2016/17, the unemployment rates among the MA-level graduates of the cohort 2016/17 is with 13,1% (Greece) and 17,4% (Croatia) still 4-5 times higher.

Table 6.2 Unemployment rate: Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Total	2.7	1.7	2.5	19.8	18.0	5.5	3.8	3.1
Education, arts and humanities	3.0	1.9	0.6	21.6	24.6	6.9	2.5	5.3
Social sciences and journalism	4.8	1.3	0.0	20.3	24.3	5.3	n.a.	6.3
Business, administration, law and services	2.5	2.0	5.4	14.9	18.5	6.0	3.7	2.5
Natural sciences (incl. mathematics) and health	2.7	2.9	1.7	22.6	20.4	5.5	9.5	1.1
Technology and engineering	1.2	0.0	3.2	21.4	8.2	4.2	1.7	2.5
STEM Fields	1.3	0.4	2.3	18.4	9.7	3.7	7.9	3.3
Male	2.2	1.2	1.9	17.9	13.7	4.1	6.8	4.3
Female	3.0	1.9	3.2	22.7	20.9	6.4	1.6	2.3
Research University	4.1	1.8	3.8	16.5	19.1	4.6	4.3	3.9
University of Applied Sciences	0.7	0.0	0.8	27.6	15.8	7.9	0.0	2.4

Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, BA-Level and MA-level graduates, n.a. = not available (too few respondents).

Comparing the averaged unemployment rate for the EUROGRADUATE population in Greece with the EUROSTAT unemployment rate among tertiary educated in Greece (Figure 6.3), the two unemployment rates are strongly in line with each other. However, the averaged EUROGRADUATE unemployment rate of Croatia is with 14,3% more than twice as high as the unemployment rate among tertiary educated persons reported by EUROSTAT. To what extent this is related to the specific group of higher education graduates covered in the EUROGRADUATE pilot survey (graduates that just recently have entered the labour market) or to what extent this is related to the low reliability of the unemployment rate according to EUROSTAT stays outside of the current analyses. However, the finding of the EUROGRADUATE pilot survey that the Croatian unemployment rate five years after graduation has sharply decreased and is strongly comparable to the EUROSTAT unemployment rate hints at support for the former explanation. In other words, unemployment rates among graduates of higher education are in Croatia in particularly high during the direct transition from education to the labour market and drop thereafter, leading to a relative lower overall unemployment rate among all tertiary education graduates.

Table 6.2 provides more detailed information for the 2016/17 cohort and Table 6.3 for the 2012/13 cohort. For most distinguished subgroups, the unemployment rate is comparable to the overall unemployment rate and the focus in our discussion is therefore on the few, but interesting, outliers.

Considering the cohort 2016/17, the data shows in Malta the unusual situation that the unemployment rate among STEM graduates is twice as high as the overall unemployment rate. This is in contrast to the finding in the other pilot countries where the unemployment among STEM graduates is generally below average or close to the average unemployment rate. Considering the main fields providing STEM study programmes, a strong difference between *Natural Science and Health* (9,5% unemployment rate) and *Technology and Engineering* (1,7%) is visible in Malta. A similar situation with respect to these two fields of study is also visible in Croatia, with an unemployment rate of 20.4% among graduates of *Natural Sciences and Health,* and an unemployment rate of 8.2% among graduates of *Technology and Engineering.*

In Greece, the only field of study with an unemployment rate of (just) below 15% is the field of *Business, Administration, Law and Services*. In Croatia, the graduates from *Technology and Engineering* (8,2%) are the only graduates with an unemployment rate clearly below the average unemployment rate.

Except for Greece and, as discussed Malta, the high demand for graduates from STEM fields is generally good visible in all countries. Interestingly, however, clear distinctions between graduates from the field *Natural Science and Health* and graduates from the field *Technology and Engineering* are visible. Whereas in Austria, Croatia and Lithuania, the graduates from the latter field of study have the lower unemployment rate, in Germany and Norway, the former group is (slightly) in advantage in finding a job one year after graduation.

Except for Malta and Norway, in all countries a (slightly) higher unemployment rate among female graduates is found. To what extent this is the outcome of e.g. an underrepresentation of female students in STEM fields will be discussed later.

Considering (see Table 6.3) the unemployment rates of the MA programme graduates five year after receiving the degree, again some interesting exceptions compared to the overall unemployment rates of the eight pilot countries are visible.

First, graduates from the 2012/13 MA cohort of the field *Social sciences and journalism* have a relative high unemployment rate in Austria and Croatia. Whereas in the latter country this unemployment rate is significantly lower than the unemployment rate of graduates from the cohort 2016/17, indicating that in Croatia these graduates seem in particularly to have a difficult first transition that improves strongly after the first years, the situation in Austria is quite different. Whereas the unemployment rate in Austria for MA- and BA-level graduates of the field *Social sciences and journalism* of the 2016/17 cohort is 4.8%, the unemployment rate of their colleagues who graduated four year earlier is nearly three times as high (12.0%).

Second, also for the 2012/13 MA-level graduate cohort, the data shows that the demand for STEM graduates is generally high, yielding in almost all pilot countries a (very) low unemployment rate. The exception is Croatia with an unemployment rate of 8.4%.

Finally, in most countries the situation of male graduates is (slightly) better than the situation of female graduates. Again, before drawing further conclusions on this finding, one needs to analyse the extent to which this is related to differences in study choices between male and female students.

Table 6.3 Unemployment rate: Cohort 2012/13 (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Total	2.4	1.3	n.c.	2.8	6.5	0.3	2.2	0.9
Education, arts and humanities	2.2	1.4	n.c.	n.a.	2.4	n.a.	n.a.	0.0
Social sciences and journalism	12.0	0.0	n.c.	n.a.	12.5	n.a.	n.a.	1.1
Business, administration, law and services	0.0	2.1	n.c.	n.a.	8.6	n.a.	n.a.	0.0
Natural sciences (incl. mathematics) and health	1.0	1.3	n.c.	n.a.	1.8	n.a.	n.a.	0.4
Technology and engineering	1.4	1.1	n.c.	n.a.	6.0	n.a.	n.a.	3.4
STEM Fields	1.2	0.0	n.c.	3.0	8.2	n.a.	0.0	2.9
Male	0.5	0.0	n.c.	1.5	8.4	0.0	0.0	0.9
Female	4.0	2.4	n.c.	4.9	5.3	0.4	3.8	1.0
Research University	2.4	1.5	n.c.	3.0	6.7	0.3	2.2	1.3
University of Applied Sciences	2.7	n.a.	n.c.	n.a.	5.6	n.a.	n.a.	0.0

Source: EUROGRADUATE pilot survey 2018, Cohort 2012/13, MA-level graduates, n.a. = not available (too few cases), n.c = not comparable as the EUROGRADUATE labour force definition is not fully comparable to the definition in the DZHW graduate panel.

6.5 A closer look on unemployment

Section 6.4 presented the unemployment rate for different subgroups of the EUROGRADUATE pilot survey population. Our next step is to analyse to what extent specific characteristics of graduates, such as the field of study graduated from or the sex of the graduate have a significant impact on the probability of being unemployed at time of survey when controlling for each other. Also included in the analyses are indicators for the study experience, as have been discussed in Chapter 5.

To do so, multivariate analyses are conducted (both for the eight pilot countries together as for each individual country) in which the effects on unemployment for the following indicators are estimated:

Personal background

- Sex
- Age
- Education of parents
- Migration background[42]

[42] Graduates are divided into two groups. The group with a migration background is the group of graduates that were not born in the country they graduated. The group with no migration background is the group of graduates that was born in the country they graduated. A possible migration background of the parents is left aside.

Study graduated from

- Level of degree
- Type of higher education institution
- Study field

Study experience indicators

- Internship/study related work experience during study period
- Foreign experience during study period (e.g. semester abroad)
- Voluntary work during study period
- Work experience of at least 6 months before entering study programme

The focus in the analysis is on the cohort 2016/17, as for this cohort the study experience indicators will be of more relevance than for the cohort that is already 5 years into the labour market. Moreover, given the better response rates, the cohort 2016/17 provides a more reliable dataset for such analyses4344.

[43] We will return to graduates five years into the labour market in Section 6.6 when analysing to what extent the situation one year after graduation influences the labour market outcome five years after graduation.

[44] Given that, we still need to attend the reader on the fact that samples in countries, and in particular Greece, Lithuania and Malta, are small and the outcomes for these countries need to be treated with some caution.

Box 6.4: Odds ratio

The Odds Ratio (OR) measures the association between an outcome and a treatment/exposure. In other words, a comparison of an outcome given two different groups (exposure vs. absence of exposure). The Odds Ratio (OR) is a comparison of two odds: the odds of an outcome occurring given a treatment compared to the odds of the outcome occurring without the treatment. Odds represent the probability of an event occurring divided by the probability of an event not occurring. Although related, probability and odds are not the same. Probability values can only range from 0 to 1 (0% to 100%), whereas odds can take on any value.

- An OR value of 1 indicates no effect on the odds from the exposure to the outcome,
- OR values less than 1 indicate that lower odds of the outcome are attributed by the exposure,
- OR values greater than 1 indicate that higher odds of the outcome are attributed by the exposure.

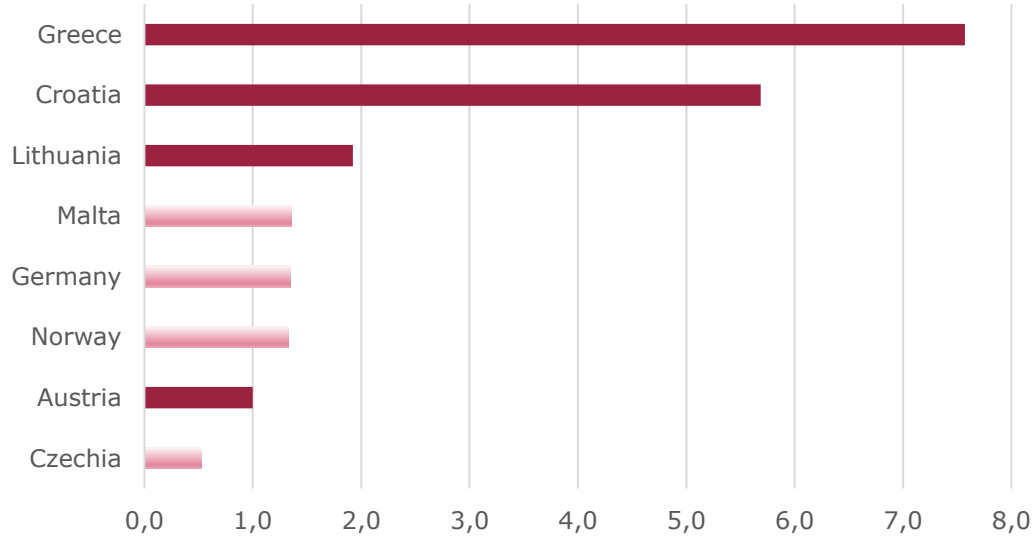
Source: https://www.statisticssolutions.com/odds-ratio/

Example: Multivariate analyse on unemployment (versus employment)

The multivariate analyses shows that the odds ratio (OR) for the country dummy 'Greece' is 7.6. This indicates that, controlled for the other input variables, the odds in Greece of being unemployed versus being employed is 7.6 times higher than the odds in Austria of being unemployed versus employed.

Figure 6.7 presents the effects of the country dummies (reference: Austria) of the multivariate analysis on the unemployment rate. The findings confirm our earlier discussion that Greece and Croatia have a significantly higher unemployment rate than the other six pilot countries. In Greece, the probability of being unemployed versus the probability of being employed is more than seven times higher than in Austria and in Croatia, it is still 5.5 times higher. Lithuania also knows a significant higher unemployment rate. The other four countries do not differ significantly from Austria. Further analyses show that the difference between Greece and Croatia is significantly different on a 5% level, that the Lithuanian situation is significantly better than the situation in Croatia or Greece and that the unemployment rate in Czechia is significantly lower than in Norway, Germany or Malta.

Figure 6.7 Multivariate analyses: Unemployment rate differences with Austria (odds ratio)



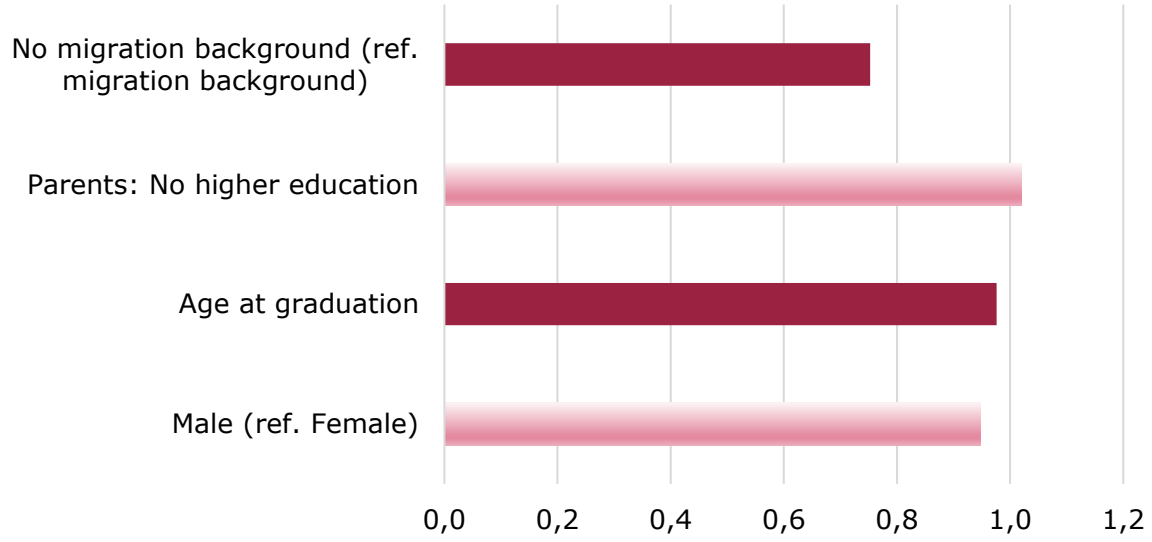
Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, Light red = no significant difference.

The next set of indicators discussed are four personal background characteristics. The overall analysis shows (see Figure 6.8) that graduates with no migration background have a reduced probability of becoming unemployed and hence an increased probability of finding a job. In addition, a significant impact is found for the age at graduation. The older the graduate, the less likely he or she is unemployed. Since the analyses control for possible work experience before entering the higher education programme of at least 6 months, the age effect is not by definition an indication of more work experience of older graduates that would smoothen the transition to the labour market. The education of the parents and the sex of the graduate does not influence the probability of becoming unemployed. Hence, one can conclude that the earlier presented difference in unemployment rates between male and female graduates is generally an effect of e.g. differences in study field choices rather than an effect based on the sex of the graduate.

Looking at the within country analyses, the results show only in a few countries indications that the personal background characteristics influence the probability of becoming unemployed. In Greece, Croatia and Malta, a significant effect of the age is found that is in line with our overall picture. In Lithuania, Malta and Norway, those with no migration background are less likely unemployed. In Malta, the results show additionally that graduates with no higher education parents are less likely unemployed and in Norway, male graduates are more likely unemployed[45].

[45] For Malta a similar finding with respect to sex is found, however only significant at a 10% level

Figure 6.8 Multivariate analyses: Unemployment rate differences – personal background (odds ratio)



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, Light red = no significant difference.

In comparison to graduates from *Business, Administration, Law and Service* programmes (see Figure 6.9), only graduates from the study field *Technology and Engineering* have a significant different and clearly lower unemployment rate. In the within country analysis, this result is only found for Croatia whereas in Greece the findings show that graduates from the *Social Sciences and Journalism* programmes have a significant higher unemployment rate. To what extent the within country effects are influenced by the relatively small sample sizes in most countries is not clear.

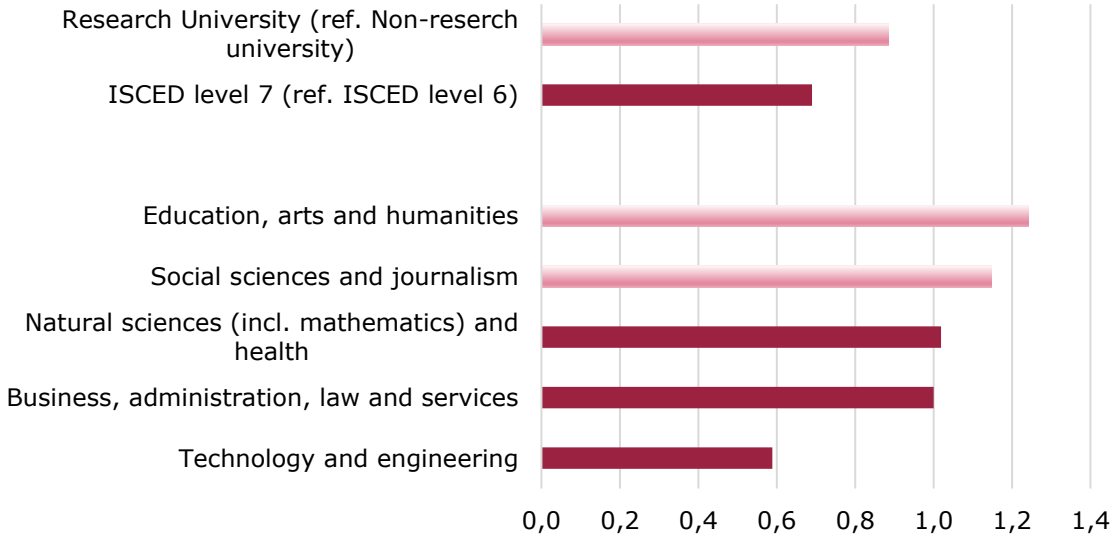
Box 6.5: Statistical significance

Statistical significance is the likelihood that a relationship between two or more variables is caused by something other than chance. Statistical hypothesis testing is used to determine whether the result of a data set is statistically significant. This test provides a p-value, representing the probability that random chance could explain the result. In general, a p-value of 5% (sometimes 10%) or lower is considered statistically significant, indicating that there is a relation between the variables in question.

Next, Figure 6.9 shows that graduates from MA-level programmes are clearly less likely unemployed and hence more likely find employment one year after graduation. This result is also found in the within country analyses of Croatia and Norway (although only on a 10% significance level). Finally, no significant impact of the type of higher education institution in the overall estimation is found. However, such an effect is visible in Austria and Germany (on a 10% significance level), two of the pilot countries with a clear bilateral

higher education system, where graduates from research universities less likely are unemployed.

Figure 6.9 Multivariate analyses: Unemployment rate differences – study programme (odds ratio)



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, Light red = no significant difference.

Finally, Figure 6.10 looks at a set of indicators for (pre-) study experiences. The only significant impact found is related to the two indicators for work experience of at least 6 months before entering the higher education programme. No work experience (compared to work experience that is not related to the study programme) has a negative impact on the likelihood of finding employment and hence a positive effect the likelihood of being unemployed. Hence, work experience before entering the study programme pays off. On top of that, work experience related to the study entered has a negative effect on being unemployed and hence a positive effect on being employed. In other words, work experience before entering the study programme is valued by employers after graduation, with a bonus for study-related work experience. Looking at the within country analyses, the former result (no work experience) is found in Czechia, Croatia and Greece. The latter effect in Croatia, Lithuania, Malta and Norway. In Croatia also a negative effect on being unemployed of having followed an internship and having done voluntary work is found. Finally, the findings show that participating in foreign exchange programmes during one's study period increases the likelihood to find employment one year after graduation Greece.

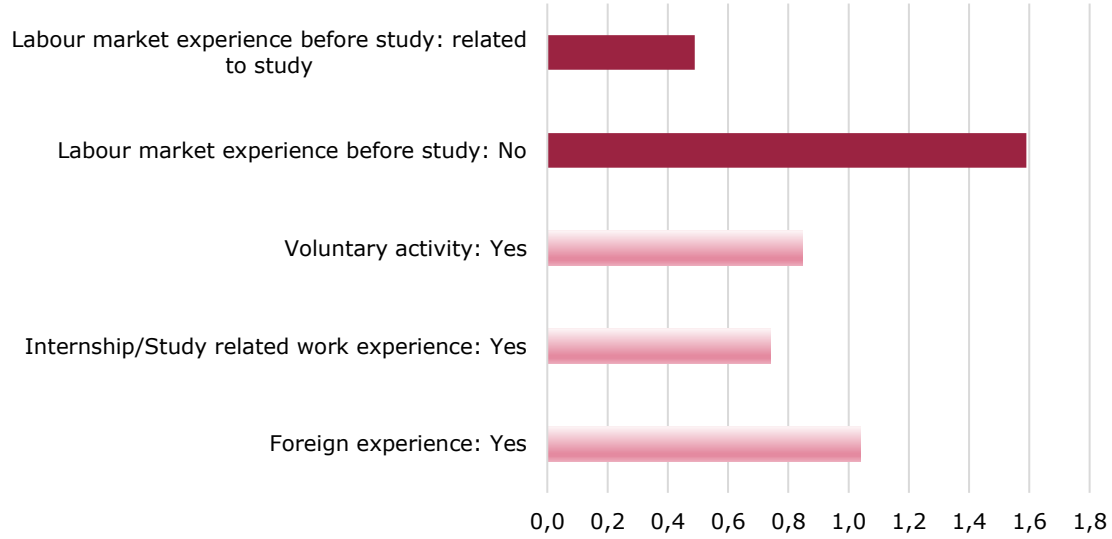
To summarize, some careful conclusions can be drawn:

a) The unemployment rates are in particularly high among graduates in Greece and Croatia. The unused labour potential in the other six pilot countries is relatively small.
b) The demand for graduates from *STEM* programmes is in most countries clearly above the supply.

c) Labour market experience before or during the higher education study programme helps graduates in general to smoothen their transition to the labour market. However,
   a. It is of importance to have a clear link between the labour market experience and the study programme,
   b. Labour market experience seems to be of more relevance for the transition in countries that have a relative more problematic labour market in general and hence, in countries with a relative high unemployment rate.

d) Foreign experience and voluntary work during higher education seem not to be activities that are directly rewarded by the labour market and hence, do not help the graduates to find employment one year after graduation.

Figure 6.10 Multivariate analyses: Unemployment rate differences – study experience (odds ratio)



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, Light red = no significant difference.

6.6 Current employment situation

Having discussed both the labour force status as well as the unemployment rate in the previous sections of this chapter, the following sections focus on the group in paid employment at the time of the survey. Paid employment covers thereby both graduates that work for an organisation as well as graduates that are self-employed. The setup is as follows. First, the chapter addresses the question how many work positions graduates have at the time of survey. Secondly, different types of employments (self-employment, part-time employment) and job security are discussed. Next, the chapter has a closer look at the distribution over occupations and the economic sectors and discusses the extent to which the level and field of job acquired matches with the level and field graduated from. Third, the chapter looks more specific at skills required in the labour

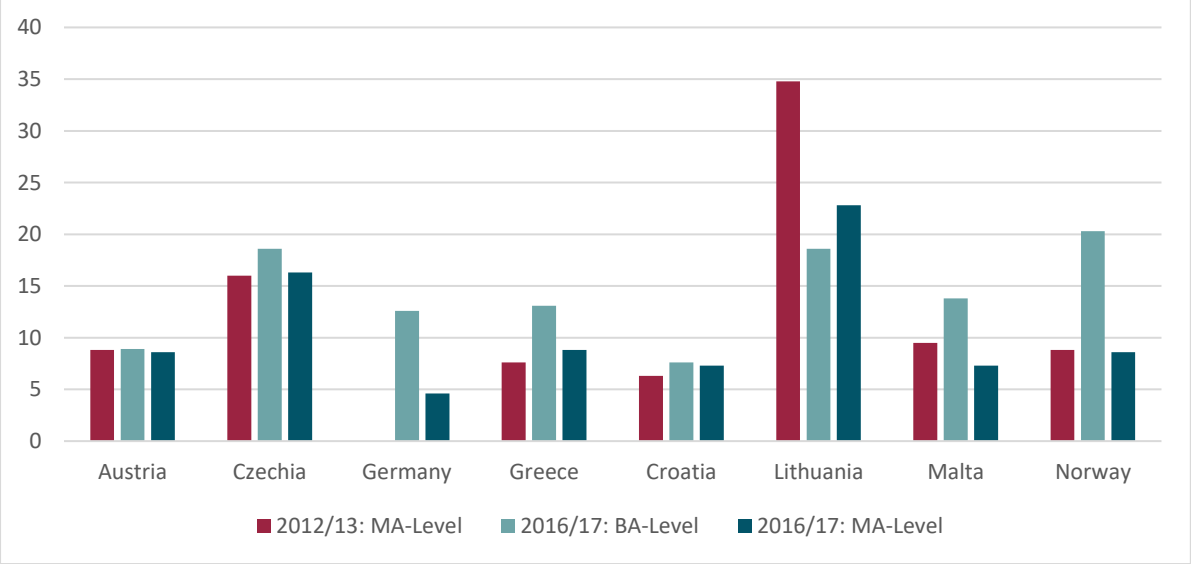
market and asks the question if graduates have acquired these skills in higher education. Finally, the chapter discusses the job satisfaction of the graduates and the extent to which the graduates have a good match between the importance they attach to different types of job characteristics and the extent to which these job characteristics apply to their current job.

6.6.1 Multiple jobs

Before addressing in the following sections in more details the type of employment and the adequacy of employment with respect to the degree and field of study graduated from, this section briefly asks the question if the EUROGRADUATE respondents at time of survey are working in more than one employment at the same time.

Figure 6.11 shows that in some countries quite a considerable share of graduates indicates to hold more than one paid employment at time of survey. With the exception of the German MA-level graduates, the data shows in all countries for the three distinguished groups of graduates shares that are above 5% and in several cases even (clearly) above 10%. The shares are in particularly high in all countries for the BA-level graduates (cohort 2016/17) ranging from close to 8% in Croatia to above 20% in Norway. Except for Lithuania, these shares are in all countries higher than among MA-level graduates. In Lithuania, 35% of the MA-level graduates of the cohort 2012/13 and 23% of the MA-level graduates of the cohort 20116-2017 report to hold more than one job at the same time.

Figure 6.11 Number of jobs: % graduates that hold more than 1 job at time of survey



Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13= not computable in the DZHW graduate panel. For the underlying figures, see Appendix 6.6.

Between study fields, there is also considerable differences visible (see Appendix 6.6 of this chapter). The overall picture is that graduates from the study field *Education, Arts and Humanities* relatively often report to have more than one job at the same time whereas in particularly the graduates from the study field *Technology and Engineering* report relatively few that they have more than one job. These differences might also

partially influence the differences visible between male and female graduates of the 2016/17 cohort as has already been discussed in Section 6.4 when analysing unemployment outcomes.

Box 6.6: Multiple jobs

A minority of the graduates report to hold more than one employment at time of survey. For the cohort 2016/17, the EUROGRADUATE data allows us to have briefly a closer look on the additional jobs the graduates hold as well as looking into some aspects combining the main and the additional job(s).

Table B6.1 presents the type of employment in the additional jobs, the mean number of working hours as well as the median gross monthly earnings in the additional jobs. Next, the table also reports for graduates holding more than 1 job the combined mean weekly working hours as well as the combined median gross monthly earnings. Finally, for comparsion reasons, the mean weekly working hours and the media gross monthly earnings of graduates with only 1 job are presented.

Table B6.1 Job characteristics: Cohort 2016/17

	Austria	Czechia	Greece	Croatia	Lithuania	Malta	Norway
Additional job(s)							
Type of employment(%)							
Employed	62.8	49.3	57.8	60.0	29.7*	64.0	77.2
Self-employed	26.2	39.9	33.5	32.9	55.3*	20.3	18.1
Employed & self-employed	11.0	10.7	8.7	7.1	15.0*	15.7	4.7
Mean weekly working hours	9.6	12.3	14.9	10.2	12.5	11.1	8.6
Median gross monthly earnings	358	461	361	319	413	366	341
All job(s)							
Mean weekly working hours	30.4	45.4	39.6	47.4	48.5	49.3	34.0
Median gross monthly earnings	1.950	2.129	1.108	1.829	2.036	2.351	2.511
Graduates with only 1 job							
Mean weekly working hours	36.57	39.41	38.23	40.21	39.26	39.84	37.63
Median gross monthly earnings	2216.27	1764.31	1083.89	1381.33	1582.70	1831.34	2590.04

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, n.a. = not available (too few cases), only graduates that reported more than one job at time of survey, * Low reliability, Median gross monthly earnings expressed in purchasing power (ppp).

With the exception of Lithuania, we see that in the countries for which data is available, the majority of graduates holding additional jobs is employed in these additional jobs. A smaller share reports to have multiple additional jobs in some of which they are employed and in some of which they are self-employed. Purely self-employment in the additional jobs varies finally between 18% (Norway) and 55% (Lithuania). On average, the graduates work around 10 hours in additional jobs (In Greece even 15 hours) yielding them a total weekly working week ranging from 30 hours in Austria up to 49 hours in Lithuania and Malta. In relative terms, the hours worked in the additional jobs cover between 21% (Croatia) of the total weekly working hours up to 38% in Greece. The median gross monthly earnings (expressed in ppp for comparison reasons) carried home from these additional job(s) ranges from 319 Euro in Croatia up to 461 Euro in Czechia. In relative terms, the additional job(s) contribution to the total gross monthly median earnings is between 14% in Norway and 33% in Greece. The findings in Table B6.1 indicate that in particularly in Greece the size of additional job(s) in terms of working hours is substantial and the additional job(s) add a significant share to the total earnings.

The comparison with the group of graduates that only hold 1 job at time of survey shows that, except for Austria, the sum of the median income of all jobs the graduates hold is strongly comparable (Greece and Norway) or (significantly) higher (Czechia, Lithuania, Malta and Norway) than the median income of the single job group of graduates. Differences with respect to the median income between the two groups seem thereby strongly be related

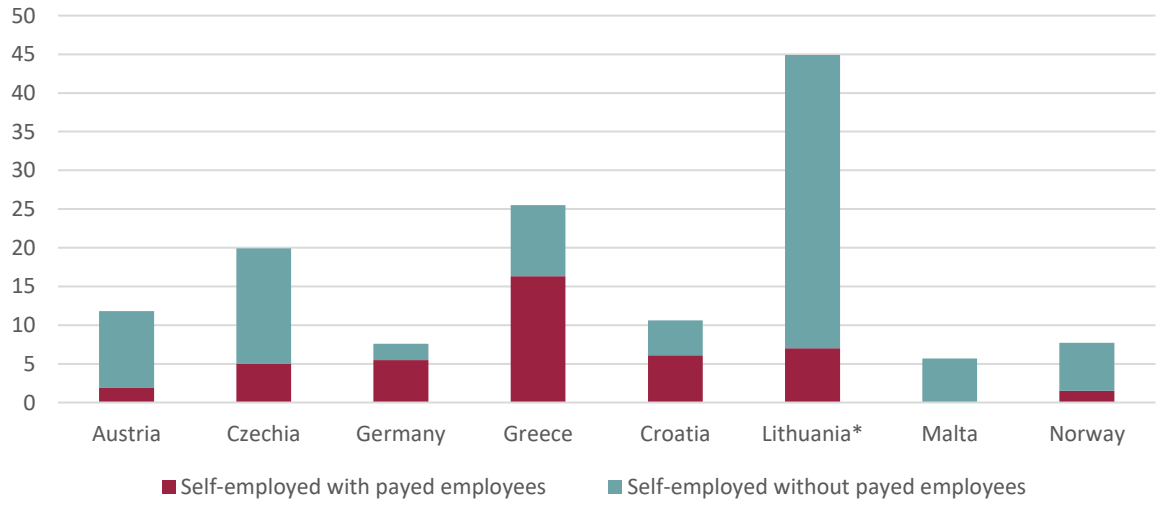
6.6.2 Different types of employments

Entrepreneurs are considered the backbone of the economy as they create the jobs of tomorrow. Higher education in this sense is crucial in providing the skills to graduates to look beyond the traditional boundaries, to provide new creative solutions. This not holds true for graduates that intend to start their own company but is also expected from those that enter occupations offered by employers. At the same time, flexibility in labour markets is another structural trend seen as crucial for economic growth of European countries. Flexibility asks skills that allow graduates to switch regularly from positions, to adjust their skills to new situations and to continuously update their skills. At the same time, flexibility might force graduates into series of temporary positions at the beginning of their career yielding uncertainty. In the following sections, different employment types are discussed and the question to what extent job security, in terms of a permanent contract, is available at the beginning of the labour market career is investigated.

6.6.2.1 Self-employment

To start with, Figure 6.12 presents the share of MA-level graduates from cohort 2012/2013 that report in 2018 self-employment[46]. A distinction is thereby made between the group that reports 'self-employment without payed employees' and the group that reports 'self-employment with payed employees. The latter group are graduates that have started their own company and have hired employees for them to work.

Figure 6.12 Self-Employment: MA-level graduates, cohort 2012/13 (%)



Source: EUROGRADUATE pilot survey 2018, cohort 2012/13, DZHW graduate panel, * low reliability. For the underlying figures, see Appendix 6.7.

Excluding for the moment the results for Lithuania due to a possible low reliability of the reported self-employment share, the findings show that except for Czechia and Greece,

[46] According to EUROSTAT, the self-employment rate of the 20-64 years old labour force participation in 2018 is relatively high in Malta (22%), Czechia (14%) and Greece (14%, 2017). In Germany, Austria and Norway the self-employment rate is below 10%, For Lithuania and Croatia, EUROSTAT has no figures available.

the share of self-employment five years after graduation varies between 6% (Malta) and 12% (Austria). In Czechia, the share of self-employment reported is 20% whereas in Greece it is even 25%. Comparing the shares of self-employment five years after graduation with the shares among the 2016/17 cohort (see Appendix 6.7), the data shows, not surprisingly, that in most countries the share increases with the time span since leaving higher education. Returning to the cohort 2012/13 and considering more in detail the type of self-employment, the data shows that in six of the eight countries, the share of self-employed without payed employees is clearly dominating the total share of self-employment. The two countries forming the exception are Croatia and Greece, the two countries with the most troublesome labour market to start one's career in. In particularly in Greece (16,3%), the data shows that not only a significant share of the graduates has within the first five years on the labour market decided to start their own company, but their company already performs the important task of providing work opportunities for others. The relative high shares of self-employment in these two countries among the graduates from the cohort 2016/17 confirms that self-employment in these two countries acts as an alternative to the limited number of jobs available at time of graduation from higher education.

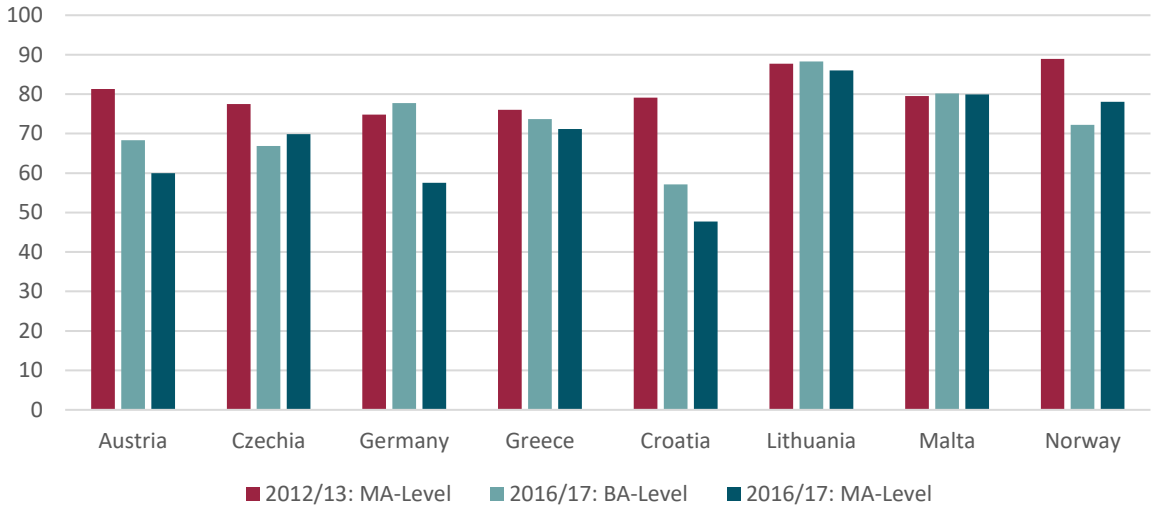
The figures for the five distinguished field of studies (cohort 2016/17, see Appendix 6.7) do not provide a clear-cut picture. Self-employment seems not directly to be related to (a) particular field(s) of study and the occurrence might rather be related to the opportunities given in different economic sectors within a country. Finally, self-employment is in most countries more likely to happen among male graduates than among female graduates.

6.6.2.2 Job security

Figure 6.13 presents the share of employed graduates working on a permanent contract for an organization[47]. A permanent contract in general offers more job security than a fixed term contract although the terms might differ strongly according to laws applicable in the eight different pilot countries. Except for Malta and Lithuania, the findings indicate clearly that the likelihood of working on a permanent contract increases over time. In Malta and Lithuania, already at the beginning of the working career a high share of employed graduates is found. In the other six countries, the share of permanent contracts varies for MA-level graduates one year after graduation between 48% (Croatia) and 78% (Norway) and four years later between 76% (Czechia and Greece) and 89% (Norway). The share of BA-level graduates holding a permanent contract one year after graduation is in most countries around or above the MA-level graduates share.

[47] Graduates working in self-employment are not considered in these figures.

Figure 6.13 Job security through permanent contract (%)



Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel. For the underlying figures, see Appendix 6.8.

Underlying figures show that the probability of working on a permanent contract differs within countries quite strongly between the five fields of study distinguished (see Appendix 6.8). Monitored one year after graduation, relative high shares of permanent contracts are found among graduates from the study fields *Business, administration, law and services* and *Technology and Engineering.* In contrast, in most countries graduates of the study field *Education, Arts and Humanities* report a relative low likelihood of working on a permanent contract. Finally, related to differences in study fields, the data shows that male graduates generally more likely have a permanent contract. The differences in the share between male and female graduates varies thereby between 1%-point in Norway and 21%-point in Germany.

6.6.2.3 Part-time versus full-time employment[48]

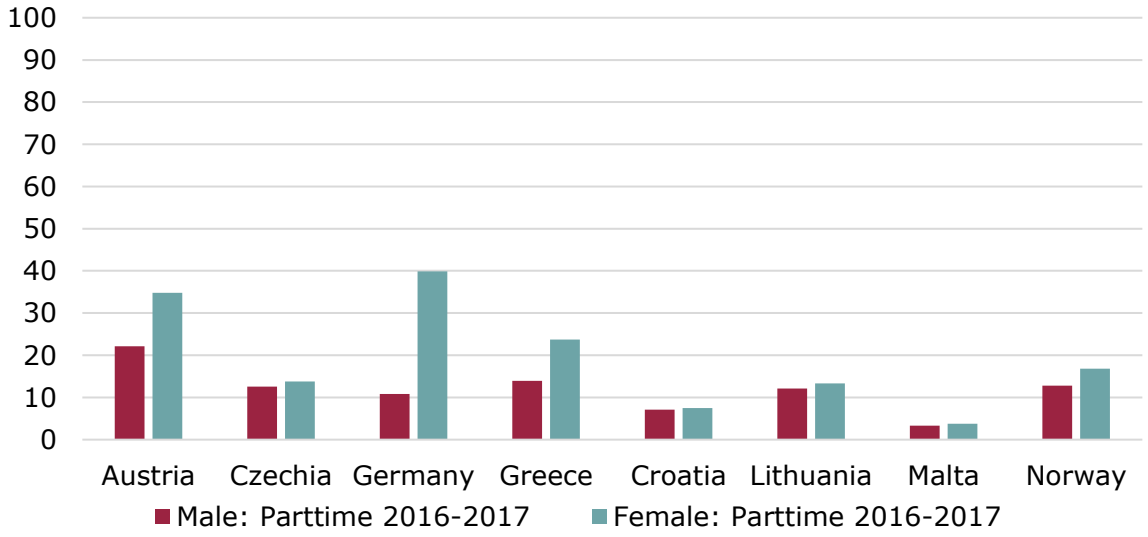
With 45%, respectively 35%, the female graduates in Germany and Austria of the cohort 2016/17 are at the beginning of the labour market career the part-time champions of the eight EUROGRADUATE pilot countries (see Figure 6.14)[49]. Greece with a part-time share of 24% among the female graduates follows already with clear distance. The other five countries have a female part-time share of around 15% or as in the case of Croatia (7.5%) and Malta (3.8%) eveearly below 10%. Considering their male peers, only in one country (Austria) a share slightly above 20% is visible. In all other countries, the share of male graduates of the cohort 2016/17 that start their working career in a part-time job is (clearly) below 15%. Table A6.9 in Appendix 6.9 of this chapter provides a mixed picture when comparing the graduates that are one year on the labour market (cohort

[48] Part-time or full-time is measured in the EUROGRADUATE survey as self-reported and hence, part-time might indicate different working hours per week in the eight pilot countries.

[49] According to EUROSTAT, in 2018 the overall part-time employment rate (20-64 years old) is relatively high in Austria (28%), Germany (27%) and Norway (24%). In the other five EUROGRADUATE pilot countries, the part-time employment rate is below 15%.

2016/17) and the graduates that are five year on the labour market (cohort 2012/13). Whereas for male graduates, except for Malta and Lithuania, the share of graduates working in part-time (sharply) drops, the picture among the female graduates is mixed. In Norway and Greece, the share clearly drops, in Austria, Czechia, Croatia, Malta the share stays rather constant, and in Lithuania, the share increases sharply.

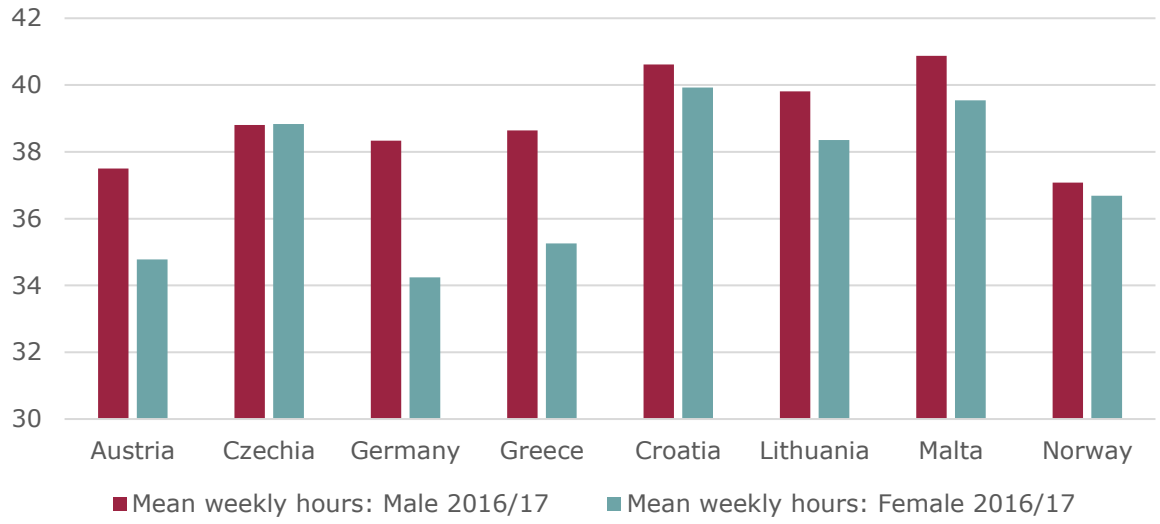
Figure 6.14 Part-time employment by sex: Cohort 2016/17 (%)



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Appendix 6.9.

The differences in part-time employment between female and male graduates are also visible when considering the average weekly hours the graduates work in their main current occupation (see Figure 6.15). Male graduates in Croatia and Malta work on average the most hours a week in their current occupation, namely 41 hours. Their female colleagues also rank at the top and work with 39-40 hours a week just one hour less. The shortest working weeks among male graduates are found on average in Norway (37 hours) and Austria (37,5 hours). Among the female graduates, the shortest working week is found in Germany (34 hours) and Austria (34,5 hours). Considering the differences between male and female graduates, the data shows that whereas in Czechia and Norway the differences in the average week hours worked is close to (Norway) or even zero (Czechia), the largest difference is found in Austria where male graduates on average work 2 hours and 45 minutes more per week.

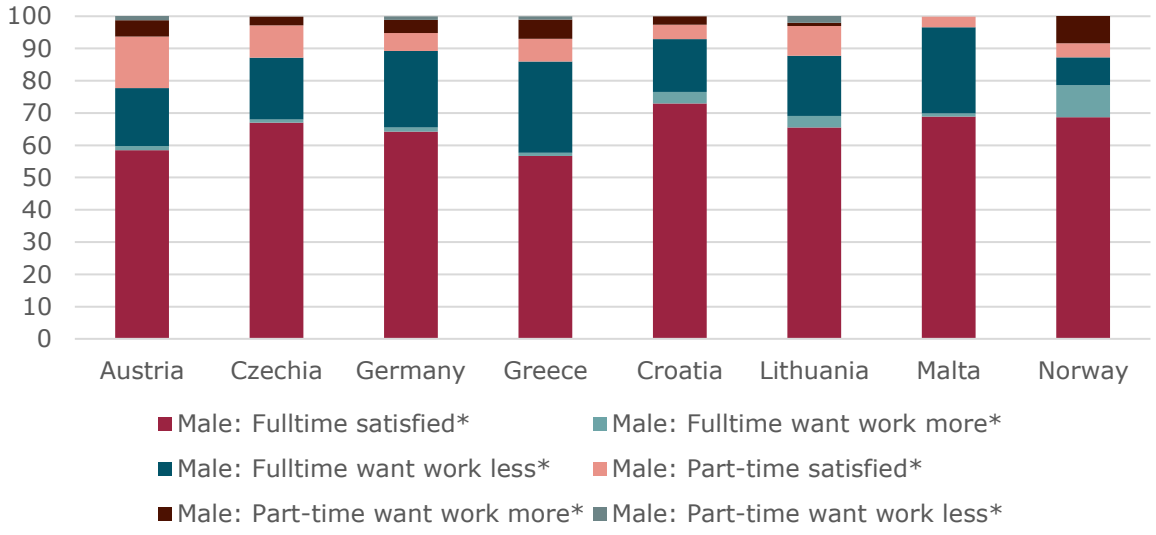
Figure 6.15 Mean weekly hours by sex: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17 only, BA-Level and MA-level graduates. For the underlying figures, see Appendix 6.9

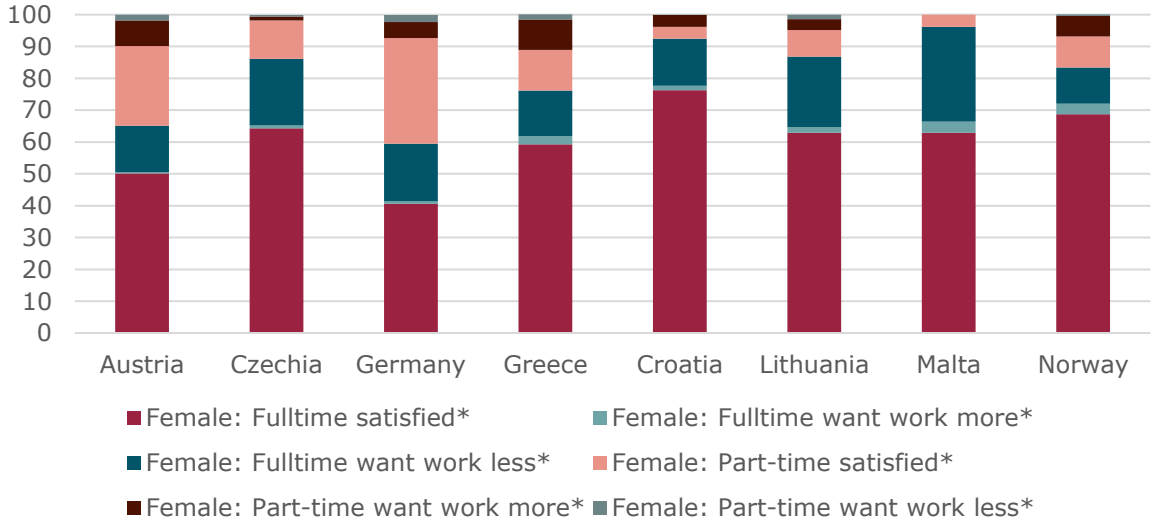
Is Part-time work (but also fulltime work) voluntary or not? In other words, do part-time employed graduates prefer to work more hours or not and do fulltime employees prefer to work less hours a week? Figure 6.16 presents the share of the employed male graduates of the 2016/17 cohort combining the question if one works fulltime or part-time in combination with the answer on the question if one is satisfied with the numbers of hours a week working. Figure 6.17 does the same for employed female graduates.

Figure 6.16 Working hours and Satisfaction (%): Male graduates



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17 only, Male BA-Level and MA-level graduates. For the underlying figures, see Appendix 6.10.

Figure 6.17 Working hours and Satisfaction (%): Female graduates

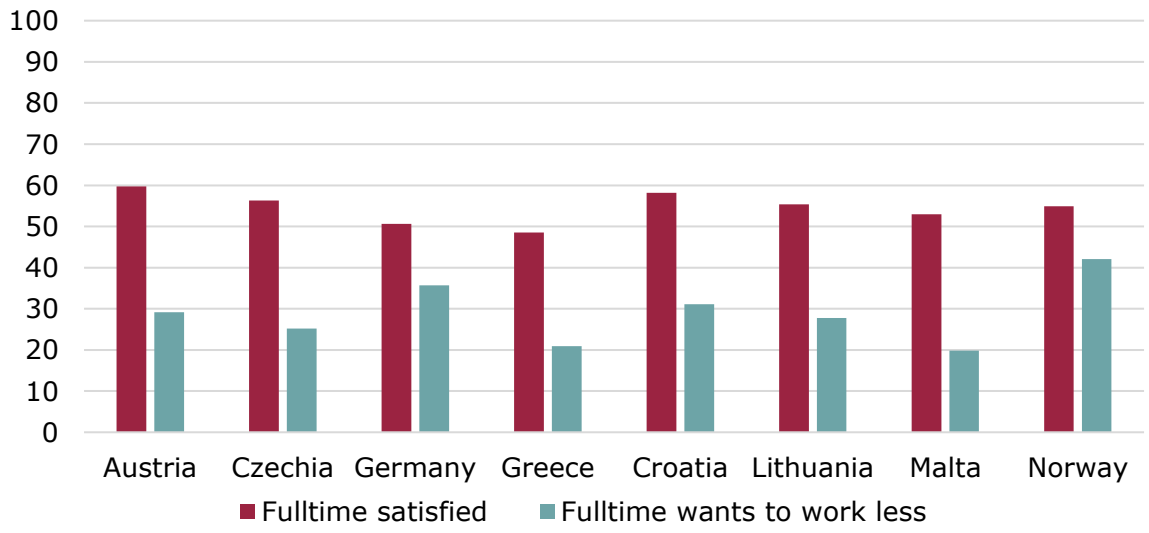


Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17 only, Female BA-Level and MA-level graduates. For the underlying figures, see Appendix 6.10.

A clear majority of the employed graduates is satisfied with the current number of working hours (be it in fulltime or part-time). The share of 'satisfied' employed graduates ranges between 64% (male graduates in Greece) to 80% (female graduates in Croatia). The share of 'satisfied' male employees does in most countries not differ strongly from the share of 'satisfied' female employees. Next, two subgroups are of interest, namely the group that works fulltime and would prefer to reduce their working hours and the group that works part-time and would like to increase their working hours. Considering the

former group, the findings show that this is both among the male and among the female employed graduates a considerable share. Among all employed male graduates, except for Norway (9%), between 16% (Croatia) and 28% (Greece) indicate that they work fulltime and would like to work less hours per week. Among the female employed graduates the share that works fulltime and would like to work less varies between 11% (Norway) and 30% (Malta). On the other hand, up to 9% (Norway) of the male employed graduates and up to 10% (Greece) of female graduates report to be working in part-time and would like to increase the number of working hours a week. For the latter group, an increase in earnings and hence financial independency is often a driver. For the former group, a distortion in the work-life balance might be the driver for the wish to reduce the number of working hours. The EUROGRADAUTE survey allows us to investigate this point further. Figure 6.18 for that reason provides the answer on a separate question of the survey, namely 'to what extent a good work-life balance applies to the current occupation'. The share of employed graduates that report that a good work-life balance applies to a (very) high extent to the current job varies for the 'satisfied' full-timers between 49% (Greece) and 60% (Austria). The answers of the 'unsatisfied' full-timers are in all countries clearly different from the 'satisfied' full-timers. The highest share of 'unsatisfied' full-timers that indicates that a good work-life balance applies to a (very) high extent to the current job is found in Norway with 42%. However, also in Norway, this is 12%-point lower than for the group of 'satisfied' full-timers. In all other countries, the share among the 'unsatisfied' full-timers is even lower and the difference with the 'satisfied' full-timers even more pronounced.

Figure 6.18 Good work-life balance applies to (very) high extent to current job (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, BA-Level and MA-level graduates. For the underlying figures, see Appendix 6.11

6.6.3 Occupation and Economic Sector

For both cohorts, and within the cohort of 2016/17 for both levels of degree, at least 80% of the employed graduates work in three occupations (see Figure 6.19)[50], namely *Professionals, Technicians and associate professionals* and *Managers*. In all countries, the largest share of graduates is found in the occupation *Professionals*. The shares range from 42% among the BA-level graduates (2016/17) in Lithuania up to 82% among the MA-level graduates (2016/17) in Germany. The share of *Technicians and associate professionals* varies between 7% among the MA-level graduates (2016/17) in Greece and 32% among the MA-level graduates (2012/13) in Croatia. Finally, the share of *Managers* varies between 1% among the BA-level (2016/17) graduates in Germany and 20% among the MA-level graduates (2012/13) in Malta.

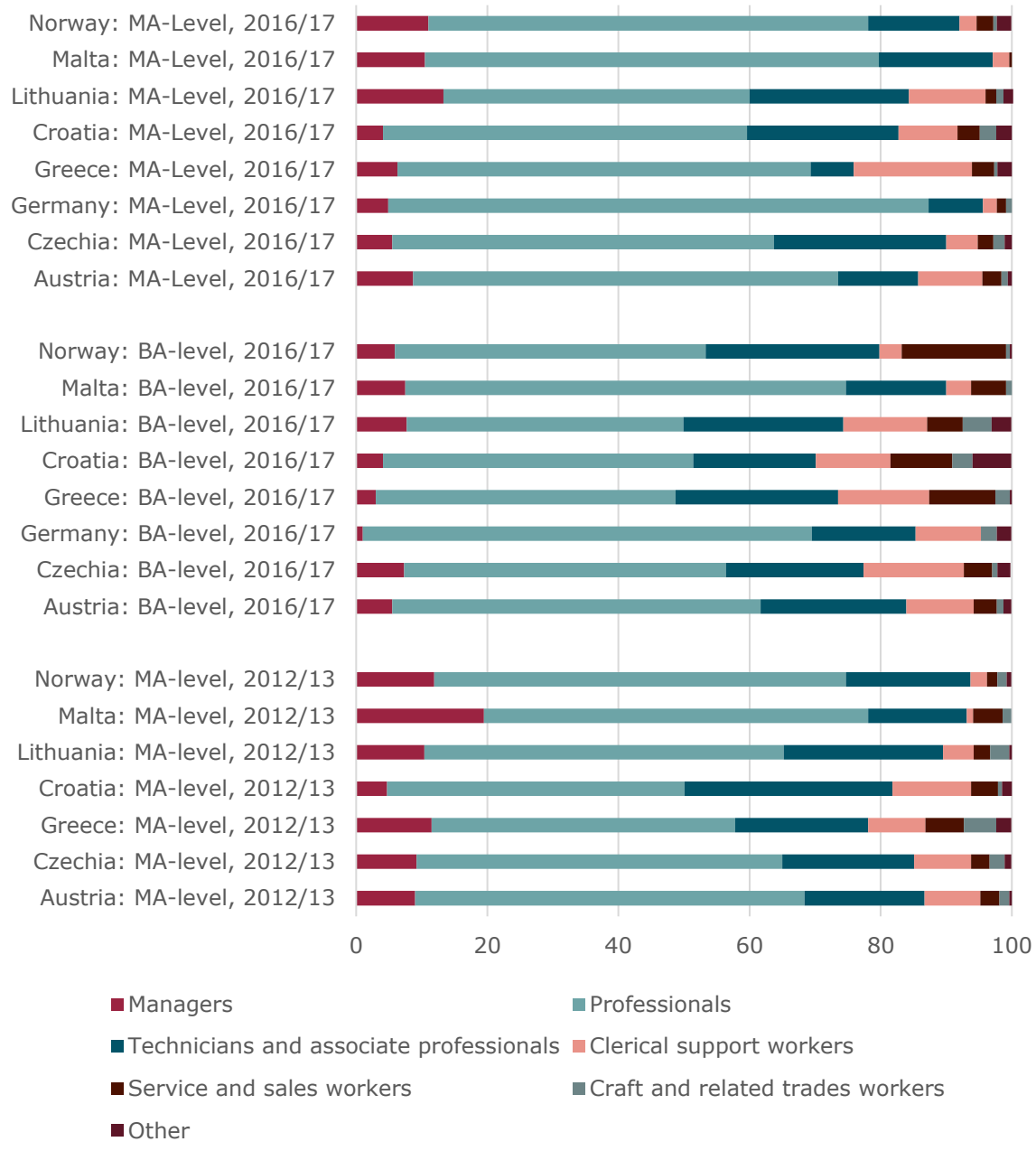
Five years into the labour market, the data show that still at least 5% of the graduates working as *clerical support workers* in Austria, Czechia, Greece, Croatia and Lithuania. Moreover, in Greece (6%) and Malta (5%), a significant share is working as *Service and sales workers* and in Greece, this also holds for *Craft and related trade workers* (5%).

One year into the labour market, the results show among the BA-level graduates, next to the three occupations that form the core, in particularly two more occupations with a significant share. In Austria, Czechia, Germany, Greece, Croatia and Lithuania, between 10% and 15% of the employed graduates work as *Clerical support workers*. In Greece, Croatia, Lithuania Malta and Norway, between 5% and 16% of the graduates are employed as *Service and sales workers.*

For MA-level graduates one year into the labour market, *Clerical support workers* occupations form a significant share of at least 5% in Austria, Czechia, Greece, Croatia and Lithuania.

[50] For the underlying figures, see Table A6.12 in Appendix 6.12 of this chapter.

Figure 6.12 Occupation, ISCO 1 unit (%)



Source: EUROGRADUATE pilot survey 2018, Other = Armed forces occupations, Skilled agricultural, forestry and fishery workers, Plant and machine operators and assemblers, Elementary occupations, Germany 2012/13. = not available as ISCO codes are not (yet) available in the DZHW graduate panel. For the underlying figures, see Appendix 6.12

Figure 6.20 presents the economic sector the graduates are working in at time of survey[51]. One year into the labour market, the highest share of MA-level graduates is working in the sector *Public sector, health care and education.* In Czechia, Croatia and Lithuania, this holds for around one out of three MA-level graduates (cohort 2016/17). In Germany, Malta and Norway, the share working in the sector *Public sector, health care and education* is around 50%. Considering the BA-level graduates one year into the labour market, the shares working in the sector *Public sector, health care and education* range between just below 20% in Lithuania and just above 60% in Norway. However, in Greece, Croatia, Lithuania and Malta, the sector *Commercial services* is now the largest sector. Finally, five years into the labour market, between 30% (Lithuania) and 53% (Greece) of the MA-level graduates work in the sector *Public sector, health care and education*.

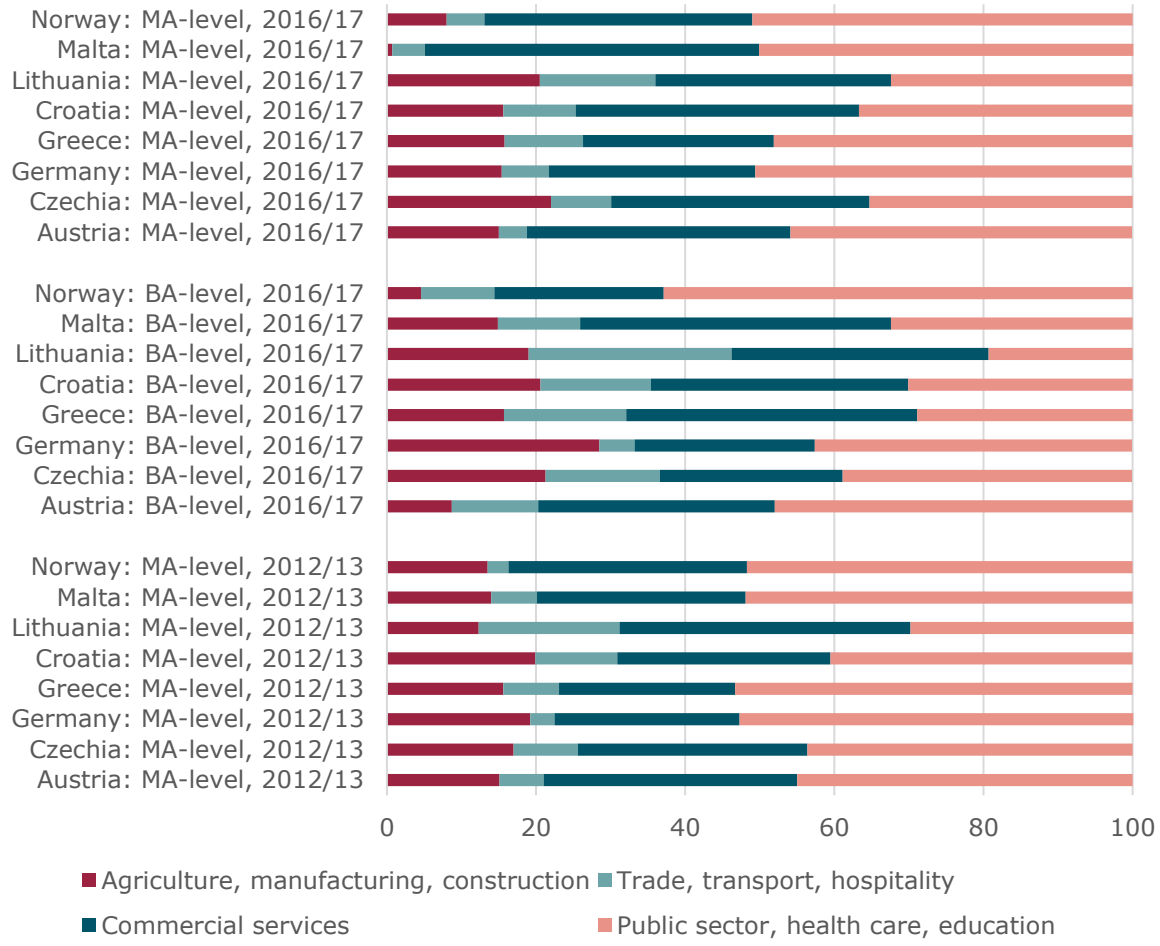
Around 30% of the graduates are employed in the *Commercial services* sector. One year into the labour market, the highest share of graduates working in this sector is found in Lithuania (BA-level graduates: 42% and MA-level graduates: 45%) whereas among BA-level graduates relative low shares are found in Czechia, Germany and Norway (between 23%-25%) and among MA-level graduates in Germany and Greece (between 26%-28%). Five years into the labour market, *Commercial services* employ at least 24% (Greece) of the graduates and at the highest 39% (Lithuania).

Around 15% of the EUROGRADUATE graduates are employed in the *Agriculture, manufacturing and construction* sector. In Malta, only a marginal fraction of the MA-level graduates one year into the labour market is employed in this sector (1%), however, five years into the labour market also in Malta around 15% of the MA-level graduates to work in this sector. Similar, in Norway it is found that the share of MA-level graduates working in this sector is relatively low on year after graduation (8%) and increases to 14% five years after graduation. In the remaining countries, this sector already plays a significant role one year into the labour market.

Five years into the labour market, except for Lithuania, the sector *Trade, transport and hospitality*, form the smallest sector. Between 3% (Norway) and 11% (Croatia) of the MA-level graduates (2012/13) work in this sector. In Lithuania, the sector is responsible for 19% of the employment. Among MA-level graduates (2016/17) one year into the labour market, the shares working in the sector *Trade, transport and hospitality* are rather comparable to the situation five years into the labour market. However, in most countries, the share of BA-level graduates working one year into the labour market in this sector is at least 5%-points higher.

[51] For the underlying figures and figures per field of study, see Table A6.13in Appendix 6.13 of this chapter.

Figure 6.20Economic sector (%)



Source: EUROGRADUATE pilot survey 2018. For the underlying figures, see Appendix 6.13.

EUROGRADUATE allows also for figures for the 2016/17 cohort (BA-level and MA-level graduates combined) by field of study52. Not surprisingly, the data shows that graduates of the study field Education, Arts and Humanities in all countries find in particular work in the sector Public sector, health care and education. In Lithuania, also the sector Commercial services employs one out of three graduates from this sector. Comparable to the graduates of the field Education, Arts and Humanities, also a (large) majority of graduates from the field of Natural sciences (including mathematics) and health are employed in the sector Public sector, health care and education. The Commercial sector is generally the most important employment sector for graduates from the field Business, administration, law and services. In Germany, next to this sector also around one out of three graduates from the field Business, administration, law and services is working in the sector Public sector, health care and education and in Lithuania this holds for the sector Trade, transport and hospitality. The largest share of graduates from the field

[52] For the detailed figures, Appendix 6.13 of this chapter.

Social sciences and journalism is visible in Austria, Czechia, Croatia, Lithuania and Malta in the sector Commercial services. In Greece, a comparable share is found in the sector Commercial services and the sector Public sector, health care and education and in Germany the sector Public sector, health care and education is the largest employment sector. Finally, graduates from the field of Technology and Engineering are found in two sectors, namely Agriculture, manufacturing and construction (on average 38%) and Commercial sector (42%).

6.6.4 Match between education and job

In the transition from study to work, the match between education and occupation is crucial. For the individual graduate as choices made at the beginning of a career may have long-term effects due to hysteresis. For the economy of a country as less than optimal allocations create suboptimal usage of the skills acquired by graduates and might hamper economic growth. The extent to which graduates can apply their skills acquired in higher education is strongly related to both, the vertical and horizontal match between education and job. Graduates allocated to jobs that do not require the degree level they graduated from (vertical mismatch) are generally suspect to a reduced demand for all the higher education skills they acquired. Graduates allocated to jobs that do not fit their field of study (horizontal mismatch) will less likely be able to use the field-specific skills they acquired during their study. This chapter discusses the allocation of graduates and asks the question which groups of higher education graduates are in particular at risk of being misallocated. There are several measures of skill (mis)match or education to employment (mis)match. In Chapter 10 of this report, an overview of the literature and the definitions of skills, competencies and skill mismatch is provided. Moreover, Chapter 10 also provides more in-depth analysis.

Box 6.7: Education – Job match: Definition

The *Education – Job match* is measured on basis of two questions in the EUROGRADAUTE survey:

- What type of education do you feel is most appropriate for this work?
- What field of study do you feel is most appropriate for this work?

Based on these two questions, four types of education-job matches are defined:

1. ***Horizontal and vertical match*** (core domain): Respondent reports that at least the level graduated from is most appropriate & Respondent reports that exclusively the own field of study, or a related field of study is most appropriate.
2. ***Horizontal mismatch***: Respondent reports that at least the level graduated from is most appropriate & Respondent reports that no particular field or a completely different field is most appropriate.
3. ***Vertical mismatch***: Respondent reports that a lower degree level than graduated from is most appropriate & Respondent reports that exclusively the own field of study, or a related field of study is most appropriate.
4. ***Double mismatch***: Respondent reports that a lower degree level than graduated from is most appropriate & Respondent reports that no particular field or a completely different field is most appropriate.

It is important that in this sense, respondents that report that a higher degree level is required than graduated from (e.g. BA-level graduates working in a job that actually requires a MA-level degree) are not considered as vertically mismatched.

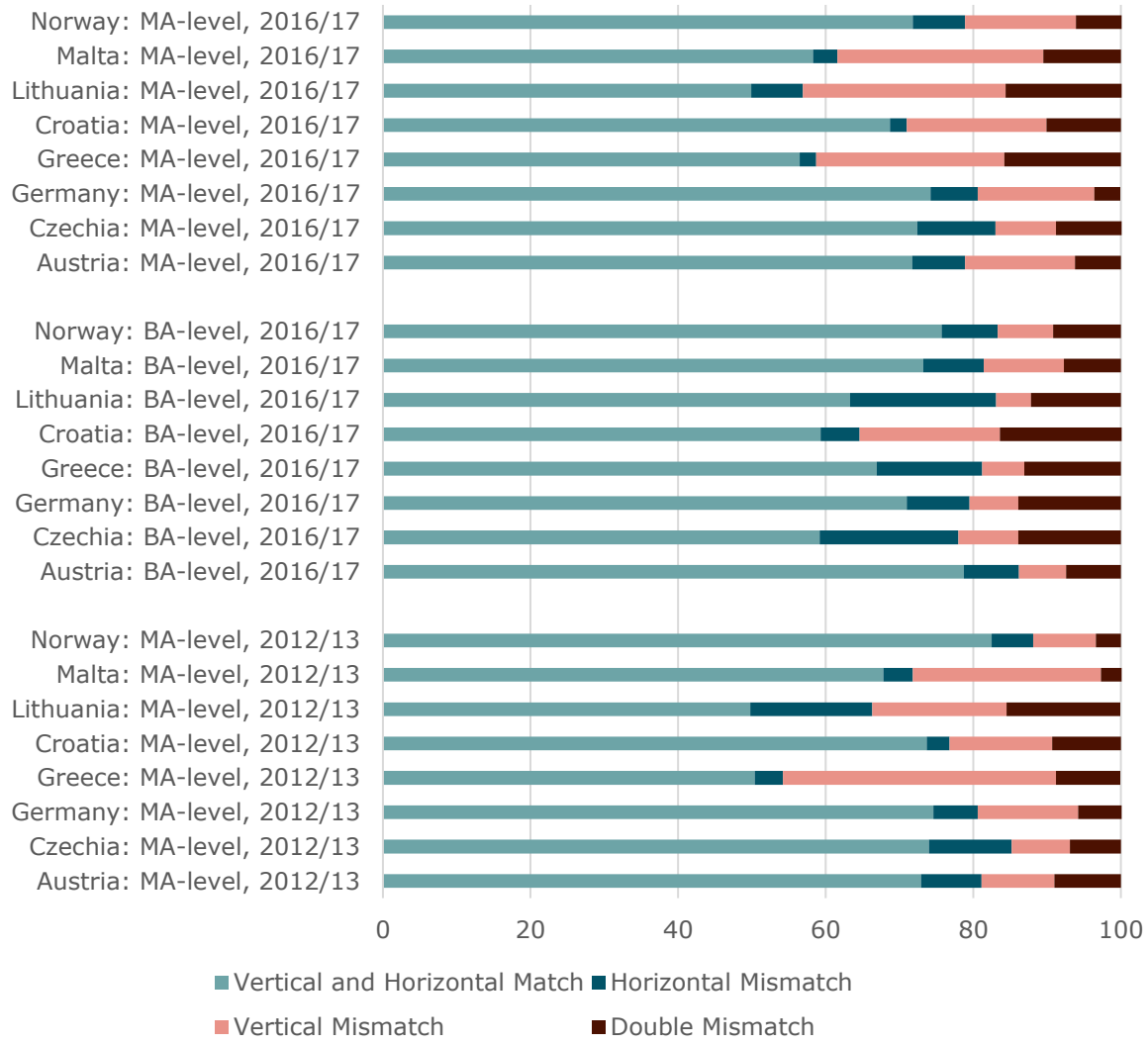
Figure 6.21 presents the match between the study programme graduated from and the current job at time of survey.

Considering first the cohort that graduated in 2016/17 from a MA-level programme, a clear distinction of the eight pilot countries into two groups is visible:

- In Austria, Czechia, Germany, Norway and (slightly to a lesser extent) in Croatia, a clear majority of the employed graduates report a job that matches both their level of degree as well as their field of study.
- In Malta, Greece and Lithuania, with less than 60% the match is in these three countries clearly less optimal.

Combining the 'vertical and horizontal match' with the 'horizontal match', the data shows that in our first group of countries at least around 80% of the graduates work in a job that requires at least a MA-level degree. In contrast to that, in Greece and Lithuania, only around 58% work on the preferred level. Looking at the other side of the spectrum, 16% of the graduates in Greece and Lithuania work in a job that is below their level of degree and outside their field of study expertise. These graduates will hardly be able to use any of their high level of academic competencies (such as problem-solving skills) nor their field-specific skills acquired in higher education.

Figure 6.21 Education – Job Match (%)



Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel. For the underlying figures, see Appendix 6.14

Looking at the BA-level graduates of the cohort 2016/17, in Austria, Germany and Norway, a similar (and even slightly more positive) picture is visible. This is clearly related to the substantial non-research university-oriented type of higher education from which graduating with a BA-level degree and entering thereafter the labour market is the standard. In Malta, the situation of the BA-level graduates is also more positive indicating that there is a demanding labour market for these graduates. Whereas for the MA-level graduates in Czechia a good allocation is found, the match for the BA-level graduates is clearly less promising. With just below 60% of the BA-level graduates in Czechia working in their core domain and nearly 20% working with a horizontal mismatch, the BA-level graduates comparably likely than MA-level graduates to find a job that matches their degree but are clearly much less likely to have a job that matches their field-specific

skills. Finally, the data shows that in Greece and Lithuania those entering the labour market with a BA-level degree more likely find a job that matches their level of degree than those entering with a MA-level degree, whereas the situation in Croatia is rather comparable between MA-level and BA-level graduates.

Comparing finally the situation of MA-level graduates five years in the labour market with the MA-level graduates one year in the labour market, the countries can be divided into generally three groups:

- The first group (Austria, Czechia and Germany) where already one year in the labour market the situation is preferable and where the situation one and five year after graduation is strongly comparable.
- The second group (Croatia, Lithuania, Malta and Norway) where the situation improves over time. Certainly, in Malta and Lithuania, countries with a relative low share of graduates working on at least their own level one year after graduation, this is an important step.
- The final group consists of Greece. In Greece, the share that works in what is considered their core domain, drops between the two cohorts by around 6%-point. At the same time, and as a positive note, the share that reports a double mismatch is also slightly reduced. These yields a relative sharp increase in the share that has a vertical mismatch (from 26% to 37%). Section 6.6 will return in more detail to the impact of the situation one year after graduation on the situation five years after graduation.

Table A6.15 in Appendix 6.15 presents for the cohort that graduated in 2016/17 (with no distinction between BA-level and MA-level graduates) findings for the different fields of study. The best matches are provided by:

- *Natural sciences (incl. mathematics) and health* in Austria, Germany, Greece, Lithuania, Malta and Norway. Graduates from this field of study find in at least 74% of the cases a job that belongs to their core domain (vertical and horizontal match).
- In Czechia, the graduates from *Engineering and Technology* score highest (79%) but also *Natural sciences (incl. mathematics) and health* provides a good labour market entrance (74% work in the core domain).
- In Croatia the graduates from *Education, Arts and Humanities* (77% work in the core domain) and in Lithuania graduates from *Social Sciences and Journalism* (66%) shore highest. However, also in these two countries *Natural sciences (incl. mathematics) and health* programmes score relatively high.

The most critical outcomes are found for:

- *Social Sciences and Journalism* study programmes in Austria (69%), Norway (63%) Germany (58%) and Czechia (51%).
- Study programmes in *Business, Administration, Law and Services* score lowest in Croatia (58%) and Lithuania (55%).
- Finally, study programmes from *Education, Arts and Humanities* provide in Malta (55%) and Greece (45%) relatively the least match.

6.6.4.1. Graduates at risk

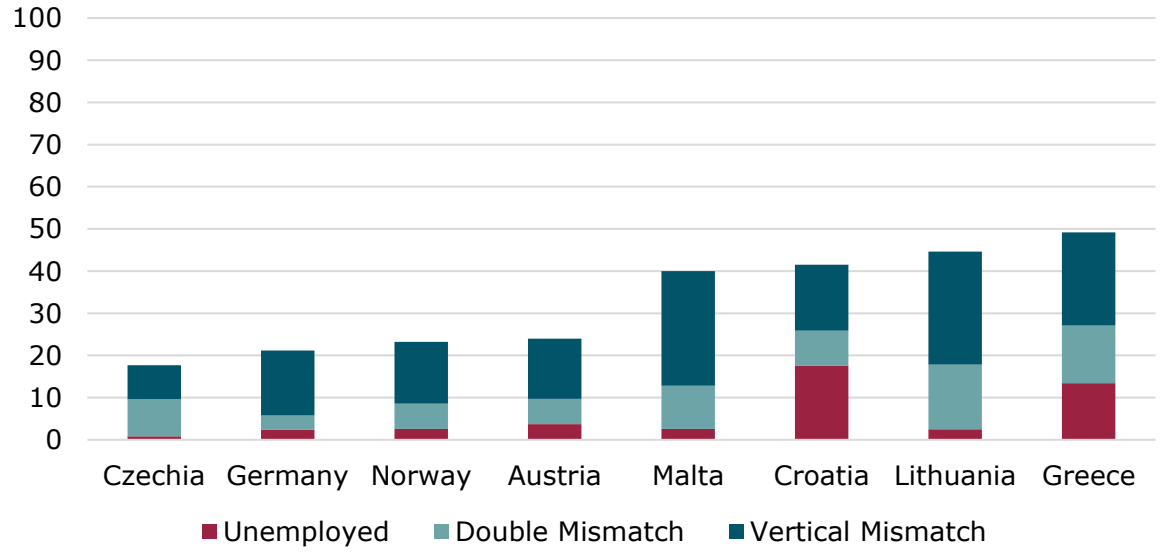
Combining the findings with respect to the match with our earlier findings with respect to the probability to find an occupation, we are now at the stage where we can give an indication of the share of graduates that is one or five years into the labour market in a (very) weak labour market situation:

- A *very weak position* is defined as either being unemployed or being employed with a double mismatch. Hence, this indicates inability to use the competencies acquired in higher education in the labour market.
- A *weak position* is defined as working in a job that is below one's own educational level, as this will restrict the level to which one can use the acquired higher education competencies.

Considering first MA-level graduates one year after receiving their degree, Figure 6.22 shows that the eight pilot countries fall into two clear distinct groups:

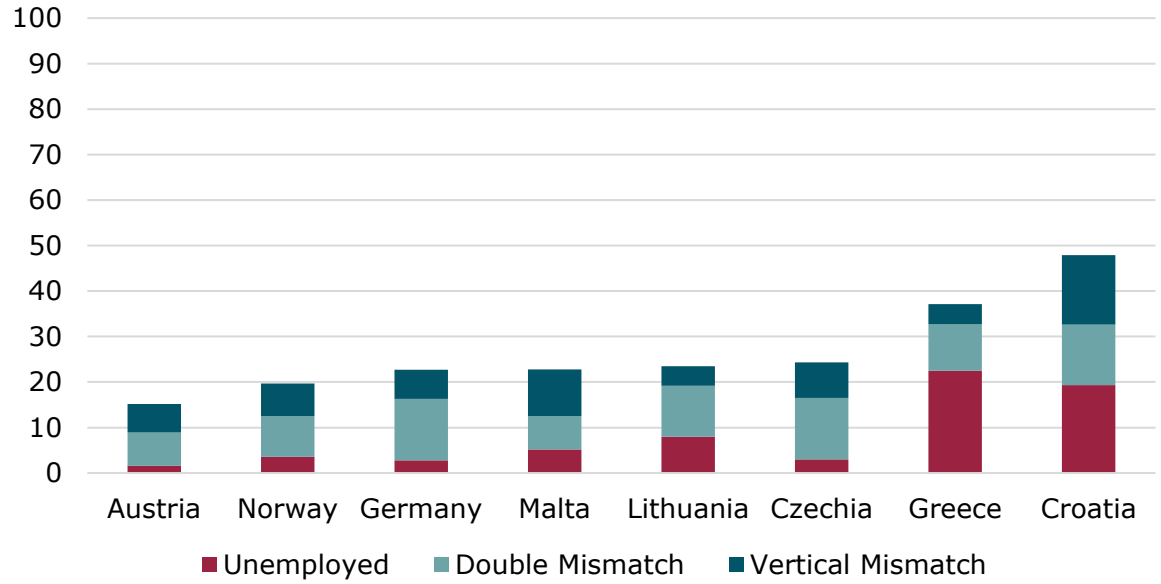
- *Austria, Germany, Czechia and Norway* with less than 25% of the graduates with a (very) weak situation and in all four countries with less than 10% of the graduates in a very weak situation (unemployed or double mismatch).
- *Malta, Croatia, Greece and Lithuania* with at least 40% of the MA-level graduates in a (very) weak situation, ranging from 40% in Malta to nearly 50% in Greece. Within the latter group, a further clear distinction is visible. Malta and Lithuania have less than 20% of the graduates in a very weak position. These two countries are however confronted with a relatively large share of MA-level graduates that have to accept, at least at the beginning of their career, a job below their own degree level. In Croatia and Greece, around 26-27% of the graduates are in a very weak position.

Figure 6.22 Graduates at risk, MA-level graduates, cohort 2016/17 (%)



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

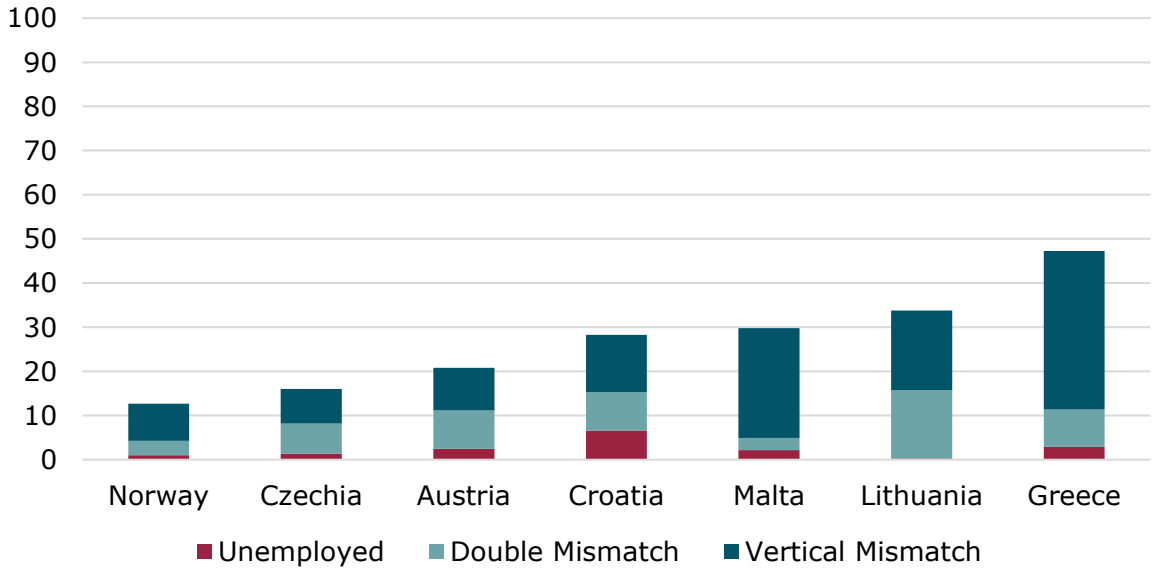
Figure 6.23 Graduates at risk, BA-level graduates, cohort 2016/17 (%)



Source: EUROGRADUATE pilot survey 2018, cohort 206/17

Comparable to the MA-level graduates of the 2016/17 cohort, the data shows that also for the BA-level graduates' two groups within the eight pilot countries emerge (see Figure 6.23). However, this time, Malta and Lithuania fall into the group of countries with a relatively good labour market outcome: all have less than 25% of the graduates in a (very) weak situation. Within the group of six countries, the share of graduates with a very weak labour market position varies between just less than 10% in Austria and close to 20% in Lithuania. The situations in Greece with 37% in a (very) weak position and Croatia (48%) is certainly different from the other six countries. In both countries, around one out of three graduates in the labour force is in a very weak position.

Figure 6.24 Graduates at risk, MA-level graduates, cohort 2012/13 (%)



Source: EUROGRADUATE pilot survey 2018, cohort 2012/13

Finally, Figure 6.24 shows that in the countries that had already one year into the labour market a relatively good position for MA-level graduates, the situation even slightly improves when looking at situation 5 years into the labour market. In the four countries that had a relatively large share of MA-level graduates one year in the labour market in a (very) weak position, in three countries, the situation clearly improves. Sharp drops are found in Croatia, Malta and Lithuania with 10-13%-points. Only in Greece, no overall improvement is found. However, looking closer, also in Greece some improvement is visible. The share of very weak positions drops from 27% to 11% but is counteracted by a sharp increase in the weak position from 22% to 36%.

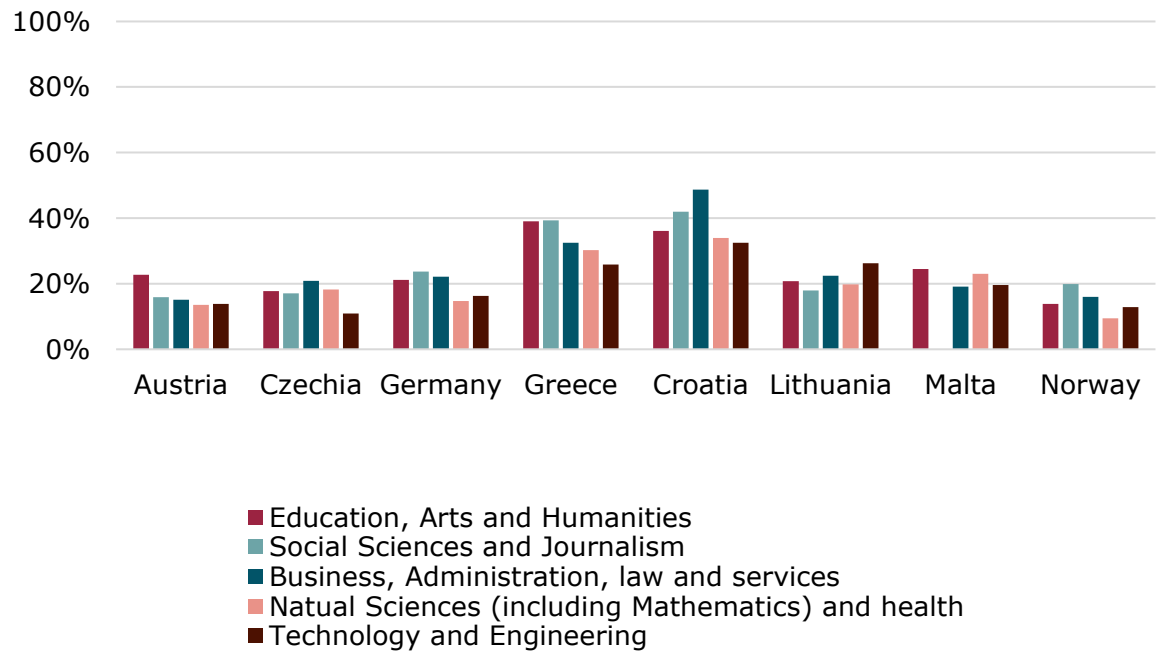
Box 6.8: Graduates at risk: Inpact on non-economic aspects

In Chapter 7, different social outcomes of a higher education study are discussed and determinants of these social outcomes are analysed. The analyses of Chapter 7 show that the labour market position of graduates strongly determines social outcomes indicators. Some main takeaways of these analyses are that graduates ending up in a very weak position (unemployment or double mismatch) are:

- Less happy;
- Report a lower health status;
- Trust less likely other persons;
- Are more negative about immigration;
- Have a more negative view on the European Untion.

What are the study fields that provide their graduates with the least likelihood of being at risk one year after graduation? Figure 6.25 provides with respect to this question further insight. Although country differences are visible, the overall picture provides strong support for a high demand for graduates from *Natural Sciences (including Mathematics) and Health* and graduates from *Technology and Engineering.* This also holds for the unemployment countries as Croatia and Greece.

Figure 6.25 Graduates at risk, cohort 2016/17 (%)



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Finally, multivariate analyses are conducted with '(very) weak position' as outcome variable. Comparable with our analyses on being unemployed, the following effects are investigated:

Personal background

- Sex
- Age
- Education of parents
- Migration background[53]

[53] Graduates are divided into two groups. The group with a migration background is the group of graduates that were not born in the country they graduated. The group with no migration background is the group of graduates that was born in the country they graduated. A possible migration background of the parents is thereby left aside.

Study graduated from

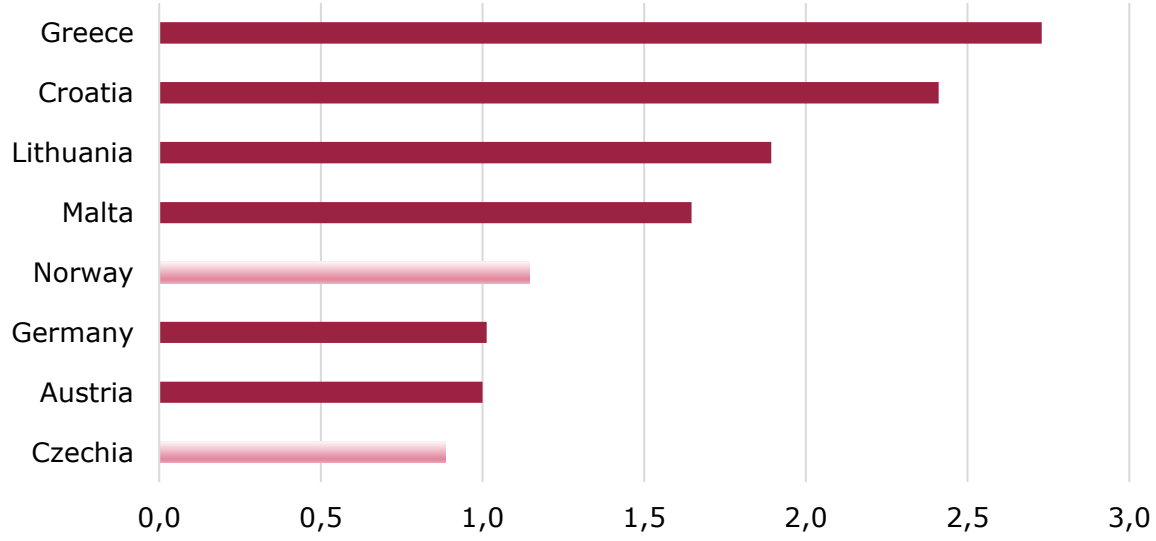
- Type of higher education institution
- Study field

Study experience indicators

- Internship/study related work experience during study period
- Foreign experience during study period (e.g. semester abroad)
- Voluntary work during study period
- Work experience of at least 6 months before entering study programme

The focus is again on the cohort 2016/17 and controls for fixed country effects (see Figure 6.26).

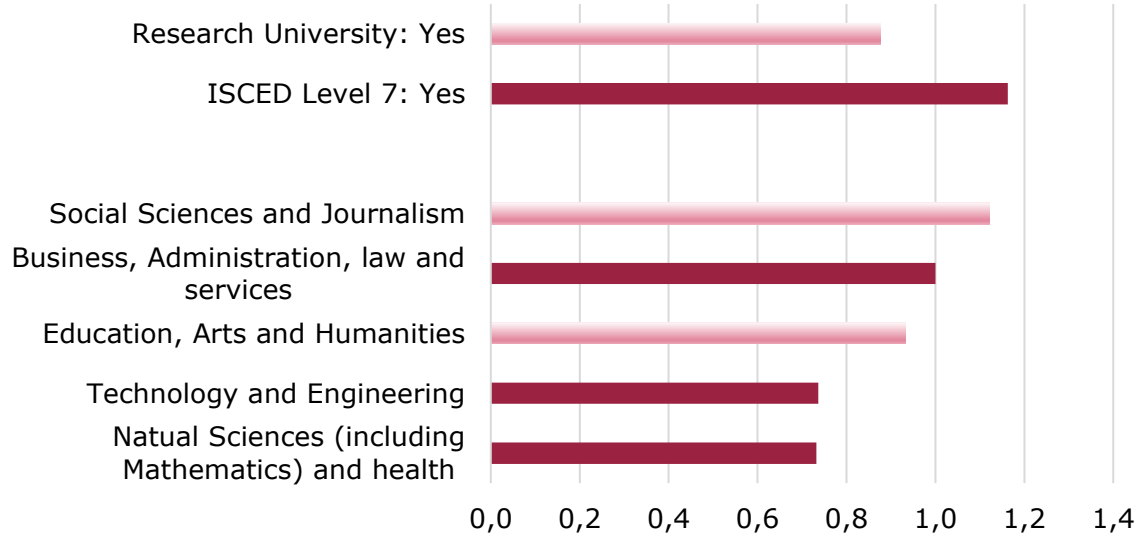
Figure 6.26 Multivariate analyses: Having a (very) weak position, compared to Austria (odds ratio)



Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

Figure 6.26 confirms our first finding that the eight pilot countries fall with respect to the (very) weak position into two groups: Group 1 with Czechia, Austria, Germany and Norway with a significant better situation than group 2 with Malta, Lithuania, Greece and Croatia. In Croatia and Greece, the probability to be in a (very) weak position one year after graduation versus the probability of not being in a (very) weak position is around 2.5 times higher than in Austria.

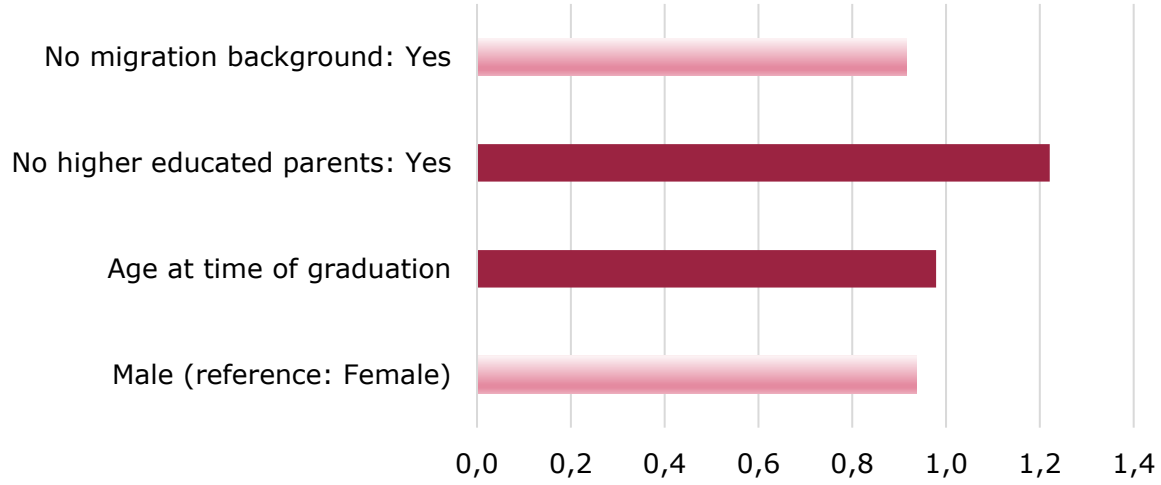
Figure 6.27 Multivariate analyses: Having a (very) weak position- Study programme (odds ratio)



Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

Graduates from the fields *Technology and Engineering* and *Natural Sciences (including Mathematics) and Health* (see Figure 6.27) are significantly less likely in a (very) weak position than the other three fields of study distinguished. Interestingly, the findings confirm that graduates from ISCED level 7 (MA-level programmes) are more likely to be in a (very) weak position one year after graduation than graduates from BA-level are programmes are. To what extent this result is the outcome of a bias in the group of BA-level graduates entering the labour market compared to MA-level graduates is not possible to analyse. Given that opportunity costs of MA-level graduates of entering the labour market are lower than for BA-level graduates, BA-level graduates might not enter the labour market unless they find a matching position

Figure 6.28 Multivariate analyses: Having a (very) weak position, Personal characteristics (odds ratio)

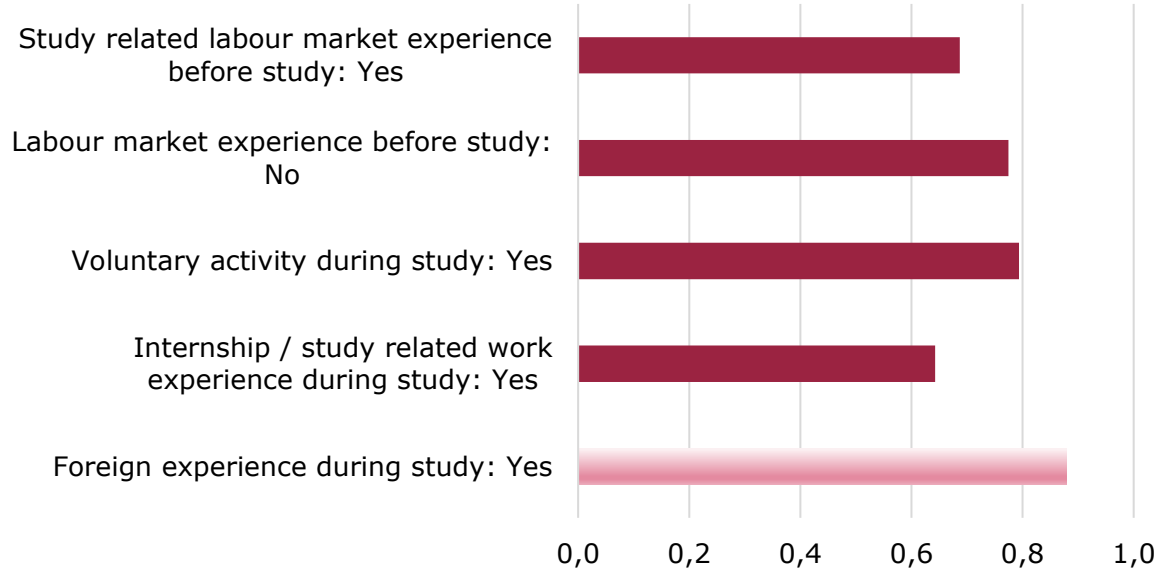


Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

With respect to personal background characteristics, the results show that age has a slightly reducing impact on belonging to the group with a (very) weak labour force position and that the graduates who have no higher educated parents have a significant higher risk on belong to the (very) weak position.

Figure 6.29 shows that having followed an internship or another study-related work experience during the study period reduces the probability of having a (very) weak position one year after the graduation. Given that the earlier analyses did not find an impact of this indicator on the probability of being unemployed, the finding indicate that internships/study-related work experiences during the study period do not directly increase the probability to find a job but have an impact on the type of job one finds. The same seems to hold for voluntary work carried out during one's study period as it reduces the probability of ending up in a (very) weak position. Finally, the analysis show that also work experience of at least 6 months before entering the study period has an impact. Whereas the earlier analyses found that any type of work experience before entering the study programme reduced the likelihood of being unemployed and that study-related work experience had an additional positive effect, this time it is a slightly different picture. Study-related working experience before entering the study programme again reduces the likelihood of being in a (very) weak position. However, this time the analyses find that no work experience is better than non-study related work experience. That might be related to the fact that non-study related work experience is generally not valued when searching for a job that matches the degree-level however helps to find at least a job even though that job is below one's degree level.

Figure 6.29 Multivariate analyses: Having a (very) weak position- Study experience (odds ratio)



Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

6.6.5 Skills

According to the New Skills Agenda (EC, 2016) of the EU, 'skills are a pathway to employability and prosperity. With the right skills, people are equipped for good-quality jobs and can fulfil their potential as confident, active citizens. In a fast-changing global economy, skills will largely determine competitiveness and the capacity to drive innovation. They are a pull factor for investment and a catalyst in the virtuous circle of job creation and growth. They are key to social cohesion'. This is also in line with e.g. the OECD Skills Outlook 2017 (OECD, 2017). However, they also indicate big differences in the extent to which countries, also inside the EU, are equipping their workers with the right skills to benefit from the globalization of production chains. At the same time, the EC recognises that there is a 'mismatch the skills Europe needs and the skills it has: many parts of the EU are experiencing shortages in certain high-skill professions , both in terms of qualifications and the quality of the associated skills. At the same time, too many students graduate with poor basic skills (literacy, numeracy, digital) and without the range of transversal skills (problem-solving, communication, etc.) they need for resilience in a changing world' (EC, 2017b).

The EUROGRADUATE pilot survey uses a direct and subjective approach to measure the knowledge and skills required in the labour market as well as the knowledge and skill level possessed by the graduates. More precisely, the graduates were asked to indicate on a five-point Likert scale, ranging from 1 ('to a very high extent') to 5 ('not at all') the extent to what a particular skill is required in their current work and what their own level with respect to that particular skill at time of survey is.

The main attractiveness of the self-assessment method used here to measure the level of skills required in work, lies in the fact that graduates might be the ones who know best

what is required in the jobs they have. The main disadvantage is related to the significant possibility of measurement errors. First, by asking graduates to judge the work they do, one naturally risks getting answers biased towards pompousness or exaggerated modesty, which might be e.g. country or sex related. Second, one needs to deal with a potential error related to vagueness and/or ambiguity in the question. This may lead to systematic errors because certain graduates interpret an item differently than others. Moreover, one has to deal with the possibility that different graduates (e.g. graduates from different countries, degree level or from different cohorts) use different 'yardsticks' when they answer the questions. For that reason, the reader is advised to refrain from taking too strong conclusions from the required levels of skills and from concluding that the skill levels required in a country are clearly larger/smaller than in another country. Rather than putting too much emphasis on the levels of a specific skill in a specific country, the focus will be on a) relative differences between skills within a group or country and b) on possible shortages or surpluses graduates possess (by comparing the required level with the own level). An in-depth discussion on the acquired level of skills and on the relation between acquired and required skills can be found in Chapter 10 (see Box 6.9 for some main takeaways of these analyses). Here broad and comprehensive analyses on the skills the usability of skills and skill mismatch are provided.

Table A6.16 in Appendix 6.16 presents the share of graduates that report that a skill is required to a (very) high extent in their current job.

The general picture emerging is rather straightforward and holds in principle for all countries and within the countries for all three distinguished cohorts. Out of the nine skills measured, six are reported to be required by a clear majority to a (very) high extent:

- Own field-specific skills
- Communication skills
- Team-working skills
- Learning skills
- Planning and organisation skills
- Problem-solving skills

However, within countries, interesting differences in the extent to which these skills are required are visible. In Croatia, e.g., the results show that both for MA-level and BA-level graduates a relative low share reports to a very high extent own field-specific skills. The same holds for BA-level degree graduates in Germany and Greece compared to MA-level graduates and for MA-level graduates of the younger cohort in Norway. Finally, BA-level graduates in Greece report clearly lower levels of these six skills than the MA-level peers, but the six skills are also among that group the most required one's in the current jobs they hold.

The other three competencies, *Foreign language skills, Customer handling skills* and *Advanced ICT skills* are in all cases reported to a relative lower extent that they are required to a (very) high extent. This is certainly related to the fact that these competencies are rather specific to a) certain jobs or b) jobs carried out by graduates from certain field of studies. For *Advanced ICT skills,* this is confirmed when focussing on graduates from *Technology and Engineering,* including ICT study programmes. Graduates

from this field of study report on average in all countries a significant higher requirement of *Advanced ICT skills* than the averages presented in Table A6.16 in Appendix 6.16.

Box 6.9 Acquistion of skills

In Chapter 10, more detailed analyses on four specific skills, namely field-specific, communication, advanced ICT and problem-solving skills of MA-level graduates are carried out. The main takeaways from these analyses are:

Field-specific skills

- Graduates from different fields of studies rate their own field-specific skills rather similarly.
- The level increases between the cohort one year into the labour market and the cohort five years into the labour market reflecting upskilling while working.
- Problem-based (or project-based) learning and teaching styles promote the acquisition of field-specific skills.
- Internships and study abroad experiences during the study increase field-specific skills, whereas voluntary work has a negative influence. Whereas the former two activities in this sense more than supplement time spent in the lecture hall of the home higher education institution, the latter activity seems to compete with time spent on acquiring field-specific skills.

Advanced ICT skills

- Clear differences between fields of studies are visible with programmes in Natural sciences (including mathematics) scoring highest.
- In contrast to the field-specific skills, a positive influence of more traditional, lecture-based teaching mode is observed.
- Voluntary work but also a study abroad experience influence the ICT skills negatively.

Communication skills

- Communication skills are not at all influenced by differences between study fields.
- The study duration has a positive influence. The longer the study duration the higher is the share of graduates with a high level of communication skills.
- A study programme that is taught in a language other than the country language also increases communication abilities.
- Voluntary activities influence communication skills negatively.

Problem-solving skills

- Some clear study-field differences: Graduates from the fields of Education, Natural Sciences and ICT report an own level of problem-solving skills above average.
- As for the other skills domains, men are found to report a higher level of skills. This is very much in line with prior research stating that men (over)rate their own abilities higher than women do.

Given the required level on the labour market, the question arises to what extent the higher education in the eight pilot countries prepared the graduates for these requirements. Of course, graduates leaving the higher education system will not stop to upskill or re-skill their skills during their labour market career. The focus in this step is on the cohort that is one year into their labour market career and hence on the cohort for which the own level of skills at the time of survey is most comparable to their skill level at time of graduation (MA-level graduates of the cohort 2016/17). Table A6.17 in

Appendix 6.17 of this chapter presents the share that, compared to the required level of a particular skill in their current job reports a) a shortage[54] (the required level is higher than the own level) or b) a surplus (the required level is lower than the own level). Since the shortage is certainly related to the level of job one holds, the table also presents separately the shortage of the graduates working in a job for which at least their degree level is required and the shortage of the graduates working in a job below their degree level.

To start with, the findings presented show that for all distinguished skills, the sum of the shortage and the surplus is on average around the 50% ranging from 26% for *Foreign Languages* in Malta[55] and 61% for Foreign Languages in Austria.[56] In other words, around 50% of the graduates report to have a match between the competencies required and the competencies acquired.

Considering the general shortages, the main findings:

- The highest shortages are found for *Own field-specific skills* and *Problem-solving skills*. In Austria, Czechia, Germany and Lithuania at least 40% of the MA-level graduates report one year after graduation a shortage with respect to the *Own field-specific skills*. With respect to *Problem-solving skills,* the results show again that more than 40% of the graduates report a shortage in Czechia, Germany and Lithuania. Relative low shortages are found in Greece and Croatia which is related to the earlier finding that in these two countries a relative high share of graduates has to accept jobs that require a degree-level lower than the one they graduated from.
- Small overall shortages are found for *Learning skills* and *Team-working skills*, two skills generally required on a high level. These findings indicate that the higher education systems in the eight pilot countries prepare their graduates well for these skills requirements. In addition, small shortages for *Customer handing skills* are visible. This is however clearly related to the relative low requirements in the labour market for this type of skill in graduate jobs.

Comparing the shortages between graduates working in a job that requires at least a MA-level degree and those working below a MA-level degree, the overall finding is that graduates employed in the former jobs report generally higher shortages than graduates employed in the latter jobs. This indicates that the requirements in 'MA-level' jobs are generally higher and that the acquired skills level of the graduates employed in these jobs is not by definition higher than the skills level of the graduates employed in 'non-MA-level' jobs. However, looking in more detail on the differences in shortages, some interesting outcomes are visible:

- First, the highest difference of shortage is found in five countries with respect to *own field-specific skills* (Austria, Czechia, Germany, Croatia and Norway), indicating a clear

[54] It is important to attend the reader to the fact that a shortage not by definition needs to be a large problem. Although a shortage will require from the graduate to upskill him- or herself with respect to a skill and might reduce the productivity of the employee at the beginning, it can also be an indication that the graduate has found a challenging job in which higher education or she can further grow.

[55] Given that English is considered a mother tongue of Malta, it is not surprising to find precisely for this combination the best match.

[56] The total of shortage and surplus in this case consists for two third of a surplus.

distinction in the requirement of these skills between jobs matching and jobs not matching the degree level.

- Secondly, relative high differences in the shortages of *Communication skills* and *Team-working skills*, as well as, *Advanced ICT skills* are found.
- Thirdly, on average, the differences in shortages are relatively large in Austria, Czechia, Germany and Malta. In all these four countries, the average shortage in 'MA-level' jobs are around 10%-points higher than in 'non-MA-level' jobs. In the other four countries, the average difference is clearly smaller. Given that in all countries, 'MA-level' jobs on average require higher levels of competencies than 'non-MA-level' jobs, this indicates that in Austria, Czechia, Germany and Malta graduates are less likely allocated to particular jobs according to their individual skills than graduates in the other four countries.

6.6.6 Earnings

This section turns to the monetary return of higher education and hence to the income situation of the EUROGRADAUTE graduates, one and five year into the labour market, based on two indicators, namely hourly earnings and monthly earnings. Hourly earnings may be seen as an indicator of the earning potential, and by extension the productivity, of graduates. A different way of approaching earnings is to look at the amount earned by graduates each month. The monthly earnings provides a better picture on the financial independence of graduates than the hourly earnings. It is important to understand that the two indicators can provide a different picture as not all graduates work the same number of hours per week in their main job.

Box 6.10 Definitions

Monthly Earnings

The EUROGRADUATE pilot survey asked the employed respondents:

'What are your gross monthly earnings (excluding overtime, bonus or extra payments)? For self-employed (with or without staff) this is after deducting business expenses, but before deducting taxes.'

Respondents were able to indicate from a restricted drop down menu the currency they receive their earnings in. In case the currency was not present, the graduates were provided with a link to an exchange rate calculator to report their earnings in Euros.

Hourly earnings

Hourly earnings have been calculated as follows: Monthly gross earnings * 12 / (52 * number of hours working per week in main occupation).

Purchasing Power Parity

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 considering these differences. 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 correction provides a much better basis for comparing wages across countries than no correction at all.

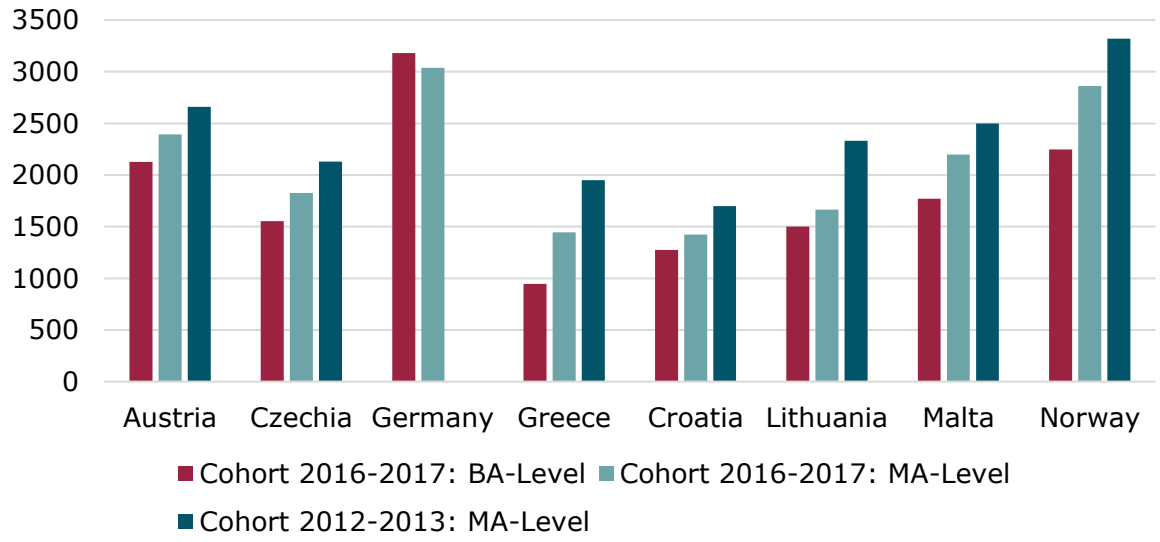
Figure 6.30 and Table A6.18in Appendix 6.18 of this chapter provide with the exception of Germany for all countries a homogenous picture. The lowest median earnings are found one year after graduation for the group that left higher education with a BA-level degree. The highest median earnings are found for the group of MA-level graduates of the cohort 2012/13[57]. Germany is the exception with higher median earnings among the BA-level graduates (cohort 2016/17) than the MA-level graduates (cohort 2016/17). The German result is clearly related to the fact that graduates from universities of applied science (BA-level graduates) at the beginning of their career generally earn higher earnings than graduates of research universities. However, earlier research in Germany (see Briedis,

[57] Comparing the earnings of the 2012/13 MA-level graduates of EUROGRADUATE with the EUROSTAT 2018 figures for the earnings of a single person without children, shows that in Austria and Norway, the EUROGRADUATE respondents earn 5 years into the labour market a comparable gross earning income as the average 20-64 year single without children. In the other five EUROGRADUATE countries, the EUROGRADUATE graduate's earnings are clearly above the earnings of the average 20-64 year of single without children.

Klüver & Trommer, 2016) show that typically research university graduates have caught up or taken over 5 years after graduation.

Comparing the earnings within the cohort 2016/17 presents interesting findings[58]. The benefit of a MA-level degree varies between -4.5% (Germany) and 53% (Greece). Next to Greece, the data shows also a high benefit of a MA-level degree above a BA-level degree in Norway (+27%) and Malta (+24%) whereas in Croatia, Malta and Austria the bonus is around 12%.

Figure 6.30 Median gross monthly earnings (Euro-ppp)



Source: EUROGRADUATE pilot survey 2018, Germany 2012-13 cohort (DZHW graduate panel): not comparable. For the underlying figures, see Appendix 6.18.

Finally, Greece also shows the highest increase when comparing for MA-level graduates the median gross monthly earnings one year and five years after graduation (+54%)[59]

Looking in Table 6.4 at the median monthly earnings per field of study (cohort 2016/17), it is visible that in all countries the highest median monthly earnings are paid to *echnology and Engineering* graduates and the lowest to *Education, arts and humanities* graduates. The difference in percentage of the median earnings of the latter group varies thereby between 16% in Malta and 60% in Croatia.

Given that the monthly gross earnings are strongly influenced by the number of hours the graduates work, and given that the share of part-time employment varies between graduates from different fields of study, it is interesting not only to compare the gross

[58] It is important to mention that the comparison does not control for any further aspects currently such as field of study, type of occupation or match between level of degree and level of job.

[59] Comparing within Greece the median earnings of MA-level graduates five year in the labour market and BA-level graduates one year in the labour market, we see that the former group has median earnings twice as high as the latter group.

monthly earnings but also the gross hourly earnings (see Table 6.5). In Austria, Czechia, Malta and Norway, the gross hourly earnings among the graduates of *Education, arts and* humanities are indeed also the lowest and with the exception of Austria, the gross hourly earnings of the graduates in the field of *Technology and Engineering* are the highest. In Austria, graduates from the field of *Business, administration and law* earn per hour slightly higher earnings. In Germany and Lithuania, one finds further that the graduates from the field of *Natural Sciences (including mathematics) and health* have relatively seen the lowest gross hourly earnings. In Greece, this is the case for the graduates from the fields of *Social sciences and journalism* and *Business, administration and law* whereas in Croatia the lowest gross hourly earnings are found for the graduates of the field *Social sciences and journalism*.

Table 6.4 Median gross monthly earnings (Euro-ppp): Cohort 2016/17

	Austria	**Czechia**	**Germany**	**Greece**	**Croatia**	**Lithuania**	**Malta**	**Norway**
Education, arts and humanities	1862	1521	2411	843	1063	1333	1709	2386
Social sciences and journalism	1950	1703	2748	1084	1126	1666	n.a.	2590
Business, administra-tion, law and services	2527	1825	3375	963	1277	1666	2076	2658
Natural sciences (incl. mathematics) and health	2128	1521	2603	963	1445	1166	1953	2386
Technology and engineering	2571	1915	3675	1204	1700	1916	1984	2999
STEM Fields	2394	1915	3471	1204	1574	1833	1953	2863
Male	2482	2129	3471	1204	1594	1999	2014	2726
Female	2128	1582	2796	903	1233	1333	1831	2386

Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, BA-Level and MA-level graduates, n.a. = not available (too few cases).

A quite common phenomena is that earnings of female employees' lack behind the earnings of their male peers. This is also clearly visible in EUROGRADAUTE when comparing the median monthly earnings one year into the labour market for female and

male graduates. One year into the labour market (cohort 2016/17) the average median monthly earnings of employed female graduates are 10% (Malta) up to 50% (Lithuania) lower than the average median earnings of the employed male graduates. Considering the gross hourly earnings, the differences between male and female graduate earnings are one year into the labour market generally smaller than the differences on basis of the gross monthly earnings. However, only for Malta the difference is fully explained whereas in the other countries, male graduates earn between 10% (Germany and Norway) up to 50% (Lithuania) higher earnings.

Table 6.5 Median gross hourly income (Euro-ppp): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Total								
Education, arts and humanities	12.53	9.20	18.16	6.48	6.74	8.65	10.57	14.45
Social sciences and journalism	14.16	10.53	18.54	6.25	6.25	9.61	n.a.	15.73
Business, administration, law and services	15.34	10.53	20.19	6.25	7.71	9.61	11.27	15.73
Natural sciences (incl. mathematics) and health	13.44	9.47	17.13	6.60	8.46	7.30	10.57	14.98
Technology and engineering	15.09	11.23	21.87	6.95	9.81	11.13	11.27	17.30
Male	15.34	12.28	20.03	6.95	9.34	11.53	10.57	16.52
Female	13.42	9.43	18.16	5.56	7.19	7.69	10.57	14.94

Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, BA-Level and MA-level graduates, n.a. = not available (too few cases).

6.6.6.1 Determinants of earnings

So far, different aspects of the employment at time of survey have passed. The question is to what extent these aspects determine the earnings of the graduates. Naturally, the earnings might not only be influenced by employment characteristics, but also by the study experience as discussed in Chapter 5 or the country one works in. Working experience before or during the study programme or foreign experiences might add to the human capital with which graduates enter the labour market and add to the productivity, and hence earnings, of the graduates. This section discusses a set of analyses that tries to provide insight into what factors determine the earnings of the graduates and to what extent differences between the eight pilot countries can be found.

To do so, multivariate analyses (both for the eight pilot countries together as for each individual country) are conducted in which the effects of in particular the following indicators on the gross hourly earnings measured in purchasing power parity[60] are estimated:

Study experience indicators

- Internship/study related work experience during study period
- Foreign experience during study period (e.g. semester abroad)
- Voluntary work during study period
- Work experience of at least 6 months before entering study programme

Job characteristics

- self-employment versus employed by employer
- Part-time versus full-time working
- Working outside the country one graduated in
- Match between education and job

Personal characteristics and control variables:

- Country of graduation and country of current workplace
- Field of study graduated from
- Type of higher education institution graduated from (research university versus non research university)
- Sex
- Age
- Education of parents
- Migration background

The focus in the analyse is on the cohort 2016/17, as for this cohort the study experience indicators will be of more relevance than for the cohort that is already 5 years into the labour market. Moreover, given the better response rates, the cohort 2016/17 provides a more reliable dataset for such analyses. Given that, the reader still needs to be taking into consideration the fact that samples in countries, and in particular Greece, Lithuania and Malta, are small and the outcomes for these countries need to be treated with some caution.

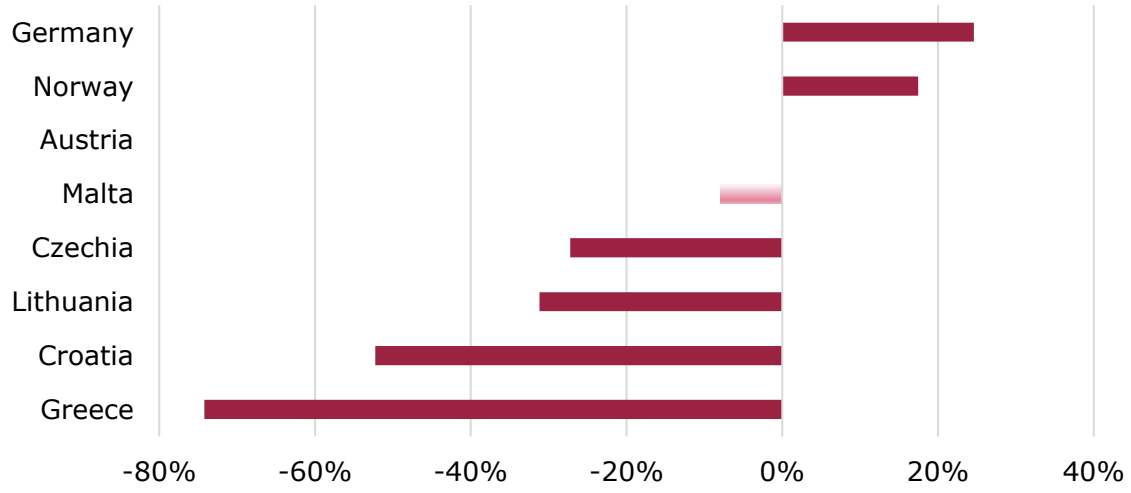
The results based on the overall analyses, including all eight countries, are presented in a series of figures. Figure 6.31 to start, shows the marginal effects of the country dummies with as reference Austria. Comparable to the findings above, rather strong country effects are visible, even if one considers purchasing power parity earnings. Graduates from Germany and Norway earn around 20% higher gross hourly earnings

[60] We measure the hourly earnings as the natural logarithm of the hourly earnings, allowing us to interpret the outcomes in percentages changes.

than the graduates from Austria do. The hourly earnings in Malta do not differ from Austria, whereas graduates from the other four countries earn significantly less. Further analyses show that:

- Graduates from Germany earn slightly more than graduates from Norway,
- The hourly earnings do not differ significantly between the graduates from Czechia and the graduates from Lithuania,
- The earnings of the graduates from Czechia and Lithuania are significantly higher than the earnings of the graduates from Croatia and Greece,
- The earnings of the graduates from Croatia are around 20% higher than the earnings of the graduates from Greece.

Figure 6.31 Multivariate analyses: Hourly gross earnings (Euro-ppp) differences with Austria (Average Marginal Effects (AMEs), see Box 10.1))



Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

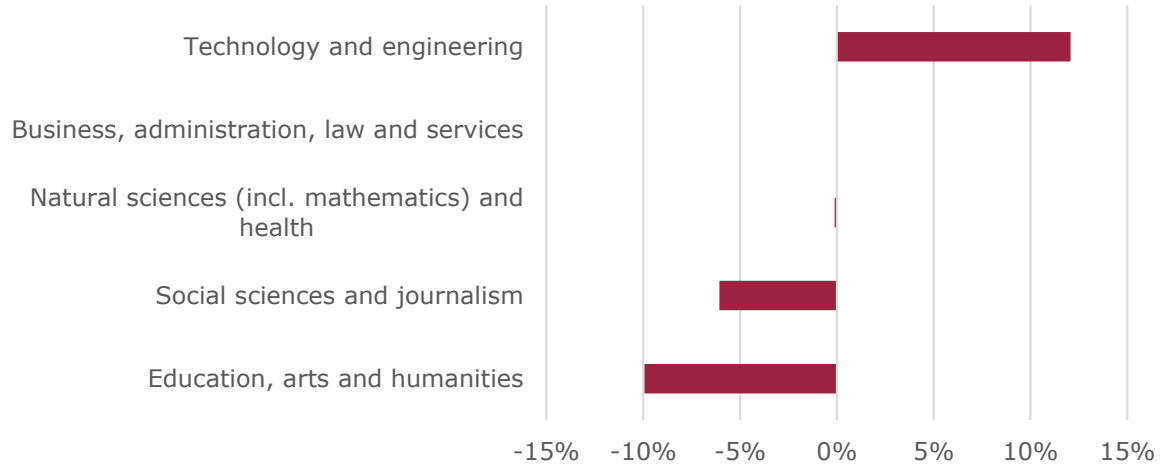
Controlled for the country effect as well as the other indicators, the results show that graduates from the field of *Technology and Engineering* earn nearly 15% more in hourly earnings than the graduates from the field *Business, Administration, Law and Services* (see Figure 6.32). The latter graduates earn the same gross hourly earnings as the graduates from the field of *Natural Sciences (including Mathematics) and health*. Graduates from the field *Social Sciences and Journalism* earn around 6% less per hour and for the graduates of *Education, Arts and Humanities,* the gross hourly earnings is around 10% lower than for the graduates from the field of *Business, Administration, Law and Services*.

Looking at the country-specific analyses, taking into consideration the (relative) small sample sizes, the results show:

- Graduates from field *Education, Arts and Humanities* earn less than graduates from *Business, Administration, Law and Services* programmes in Austria, Czechia, Germany, Croatia, Lithuania and Norway (although only on a 10% significance level).

- In Croatia, also a negative significant earnings effect for graduates from the field of *Social Sciences and Journalism* and a positive significant earnings effect for the graduates from the field Engineering and Technology is found.
- In Czechia and Germany, compared to the graduates of *Business, Administration, Law and Services* programmes a negative earnings effect for graduates from the field *Natural Sciences (including Mathematics) and health* is found whereas in Croatia this effect is positive.

Figure 6.32 Multivariate analyses: Hourly gross earnings (Euro-ppp) differences with Business, administration, law and services field of study (AMEs)

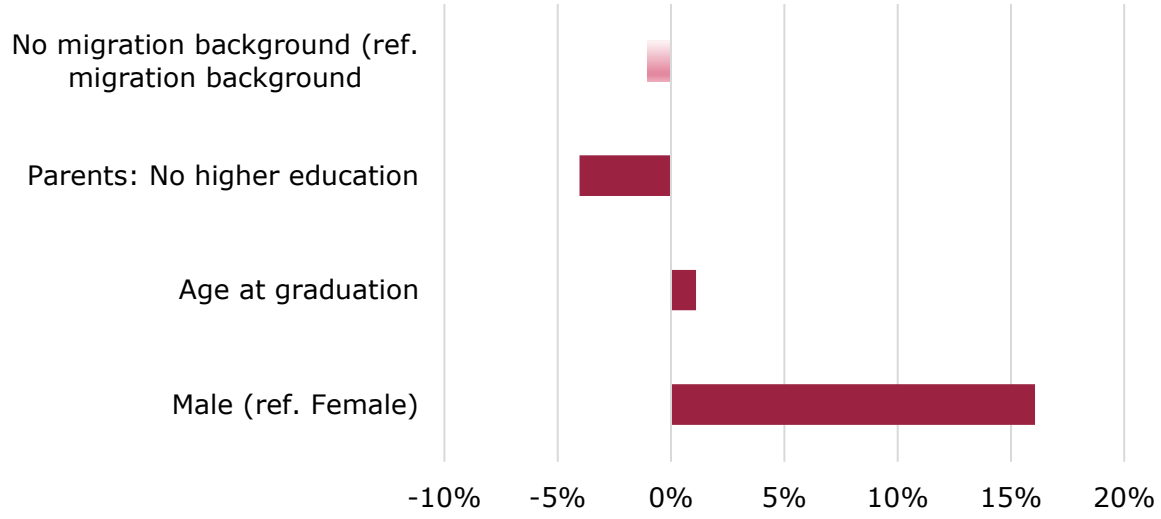


Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

Looking at the set of personal backgrounds (see Figure 6.33), the overall analyses shows that respondents with no higher educated parents earn around 4% less and that, even after controlling for different indicators, still a large (16%) earning difference between male and female graduates is visible.

Within the eight pilot countries, the sex dummy is however only in four countries (Austria, Czechia, Croatia and Lithuania) significant different from zero on at least a 5% level and in Norway on a 10% level. The differences between male and female graduates are thereby in Austria and Norway around 7-8% in favour of the male graduates, in Croatia around 20%, in Czechia around 23% and in Lithuania even around 30%.

Figure 6.33 Multivariate analyses: Hourly gross earnings (Euro-ppp) – Personal background indicators (AMEs)



Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

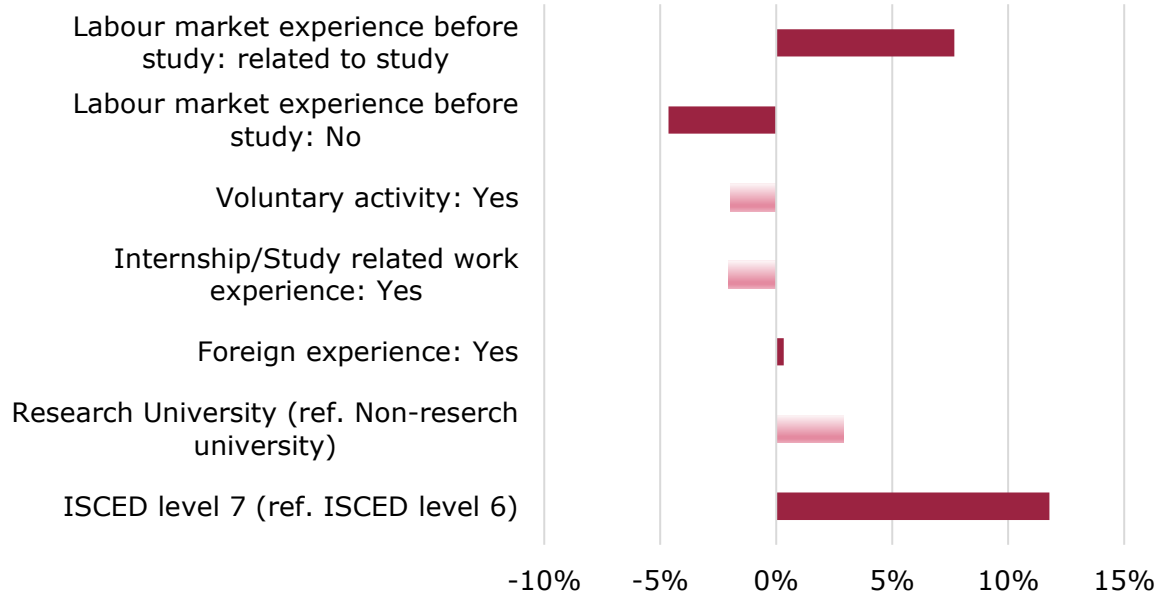
Chapter 5 introduced different study experience indicators. Figure 6.34 presents the results of the multivariate analyses with respect to these indicators and adds the indicator reflecting the type of higher education institution and the level of degree. The findings of the multivariate analyses including all eight pilot countries shows only a significant effect on the hourly gross earnings for the indicator 'labour market experience before study of at least 6 months' and the ISCED level graduated from. With respect to the latter, the results show that graduates from MA-level programmes earn around 12% more an hour than graduates from BA-level programmes. Within the eight pilot countries, the analyses find with respect to this indicator in four countries (Czechia, Croatia, Lithuania and Norway) a significant impact on at least a 5% level, whereas in Austria the effect is only significant on a 10% level. In the first four countries, MA-level graduates earn between around 10-11% (Czechia, Norway) up to 18% (Lithuania) more than BA-level graduates do. In Austria, the difference is around 7% and as indicated not significant on a 5% level[61].

Considering the effect of work experience of at least 6 months before entering the higher education programme, the analysis finds the expected outcomes. No labour market experience before entering the study programme (compared to non-study related work experience) reduces the hourly earnings one year after graduation (-4.6%) and work experience before the study related to the study programme adds a bonus of nearly 8%. In other words, work experience pays off and employers in particularly value study related work experience. Looking at the within country analyses, the former result (non-study work experience) is only found in Croatia as significant whereas the study-related effect is found significant in Austria and Croatia. To what extent this is related to different

[61] The German analysis shows that the earlier presented result that BA-level graduates earnings are higher than MA-level graduate earnings is therefore fully explained by e.g. the field of study graduated from.

valuation of such experience in different countries or is simply the outcome of small sample analyses is unfortunately not possible to analyse.

Figure 6.34 Multivariate analyses: Hourly gross earnings (Euro-ppp) – Study experience indicators (AMEs)

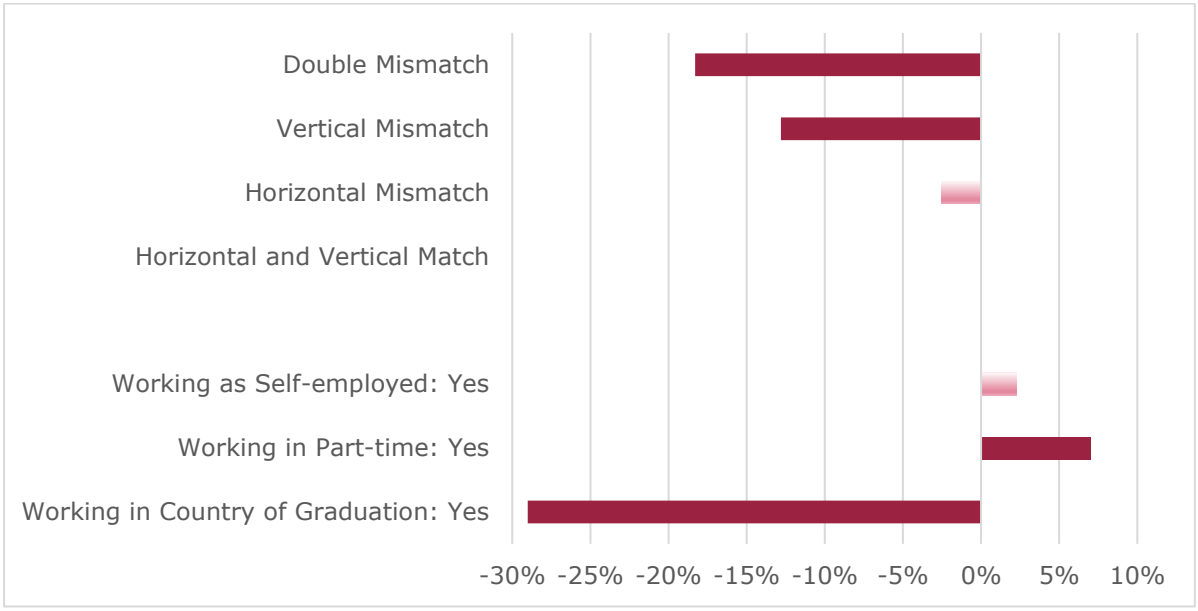


Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

Finally, Figure 6.35 presents the results with respect to a set of employment indicators. First, the analysis finds that the gross hourly earnings of part-timers is on average 7% higher than of full-timers. In the within country analyses, such a significant effect however is only visible in Croatia and Lithuania. A large effect is found for working outside of the country one graduated from[62]. On average, graduates working outside the country they graduated in earn nearly 30% more. Looking at the within country analyses, an interesting picture emerges. For Norway, Germany and Lithuania, no significant effect of the country working in is visible, at least not on a 5% significance level. For German graduates, the analysis shows on a 10% significance level even that the graduates who stayed in Germany get higher earnings. For Germany and Norway, the findings might be related to the fact that they are relative high-earnings countries. In Austria, Czechia, Greece and Croatia, the analyses indeed show that those that left the country have higher earnings. The largest effect is found for Greece, the country established above with the lowest median gross hourly earnings among the eight pilot countries, with those working outside of Greece receiving around 80% higher hourly earnings.

[62] It is important to remind the reader that the samples in the countries might be biased towards graduates that actually stayed in the country they graduated from. To what extent the sample is also biased among the graduates who left the country in terms of labour market success is not clear.

Figure 6.35 Multivariate analyses: Hourly gross earnings (ppp) – employment characteristics (AMEs)



Source: EUROGRADUATE Pilot Survey, Cohort 2016/17, Light red = no significant difference.

Figure 6.35 also shows the impact of an education-job mismatch compared to the 'ideal' situation of working in a job that matches both the degree level of the respondent as well as the field of study graduated from. Whereas working outside one's domain but on the correct level (horizontal mismatch) does not significantly harm the gross hourly earnings, working with a vertical mismatch reduces the gross hourly earnings by around 13% and working with a double mismatch even with around 18%. Considering the results of the within country analyses, and again reminding the reader of the relative small samples, the results with respect to the mismatches show some more diversity. The overall findings presented in Figure 6.34 are also visible in Austria and Croatia. In Germany and Norway, the results show only a significant effect of a double mismatch situation[63]. To what extent the findings of these two countries are a reflection of a good established and well-paid labour market just below the degree the respondent graduate from or a reflection of the small sample sizes is, is difficult to investigate further. Finally, in Lithuania, the analysis shows in line with our general findings that working with a vertical mismatch reduces the gross hourly earnings significantly and in Czechia, it shows that graduates with a horizontal mismatch actually have higher earnings.

6.6.7 Job characteristics and job satisfaction

Job security, a job that matches one's education programme or being able to work the preferred numbers of hours are certainly important aspects determining one's job satisfaction. However, subjective aspects related to the job might play an even more important role. Does the job provide the opportunity to learn new things Do I have the feeling that my work is useful or does the job provide me with a healthy work-life balance

[63] The dummy for 'vertical mismatch' is in Germany indeed negative but only significant on a 10% level.

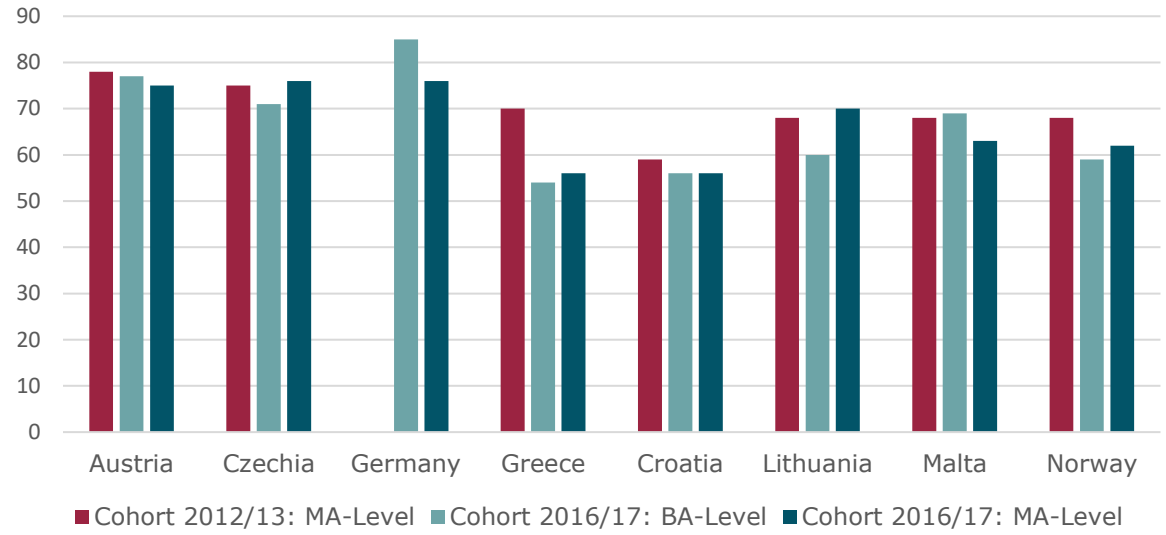
are just three possible characteristics of jobs that will influence the satisfaction with the job. To get more insight into what the labour market offers to graduates and how this influences job satisfaction, the respondents of the EUROGRADAUTE survey were asked to indicate for a set of aspects, both to what extent the aspect applies to their current job as well as the importance they attach to one of the following aspects:

- Work autonomy
- Job security
- Opportunity to learn new things
- High earnings
- New challenges
- Career prospects
- Social status
- Chance of doing something useful for society
- Work-life balance

With respect to the aspect Work-life balance, the report established already earlier that graduates working 'involuntary' in fulltime (and hence would like to reduce their number of working hours) report to a lesser extent that a good work-life balance applies to their job than those working 'voluntary' in fulltime.

To start with, however, Figure 6.36 presents a general indication of the job satisfaction. In all countries, the results show that a majority of the employed graduates are to a (very) high extent satisfied with their current jobs. The highest job satisfaction is found in Austria, Czechia and Germany with shares of above 70%. The lowest job satisfaction is generally found in Greece (particular for the 2016/17 cohort) and Croatia, which might be related to the relative poor labour market situation in these two countries and the relative high share of graduates that have to accept a job below their degree level (see Section 6.5.4). In most countries, the job satisfaction only marginally differs between male and female graduates (cohort 2016/17) with the highest differences in Austria (male graduates +8%-points) and Norway (female graduates +8%-points).

Figure 6.36 Job satisfaction: % (very) satisfied



Source: EUROGRADUATE pilot survey 2018, Germany 2012-13 cohort (DZHW graduate panel): not comparable. For the underlying figures, see Appendix 6.19.

Before discussing in more detail the extent to which job characteristics are offered by the jobs the graduates hold and to which extent this matches the importance attached by the graduates, Figure 6.37 shows to what extent these job characteristics are related to the overall job satisfaction.

With the exception of the job characteristics *Job security* and *High earnings*, a shortage (in the sense that the graduate attaches more importance to the characteristic than is offered by the job) reduces the job satisfaction significantly. The strongest impacts are found for the aspects *Learning new things* and *New challenges.* A shortage in one of these two aspects reduces the likelihood of being (very) satisfied with the current job by about 50%.

Figure 6.37: Odds ratio's on (very) high job satisfaction: shortage in job characteristics

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, light red = not significant. The analyses further controls for country, type of higher education, level of degree, field of study, age and sex.

Table A6.20 in Appendix 6.20 of this chapter presents the share of employed graduates that report that a specific aspect applies to a (very) high extent to their current job. The table also provides for the 2016/17 cohort (BA and MA level combined) the figures for employed male and employed female graduates separately. Table A6.21 in Appendix 6.21 adds to the picture by presenting the share of male and female graduates (cohort 2016/17) that report that the extent to which a specific job characteristic applies to their job is less than the importance they attach to this characteristic. In this sense, the second table provides an indication of the share of graduates that is unsatisfied with a particular job characteristic.

The overall picture is as follows.

- *Work autonomy, Job security, Learn new things* and *New challenges* are the four job aspects that on average are provided to a (very) high extent in at least around 7 of 10 graduate jobs.
- *Doing something useful* and *A good work-life balance* is present on average in around 5 of 10 graduate jobs.
- *High earnings, Career prospects* and *Social status* is to a (very) high extent present in around 4 of 10 graduate jobs.
- No clear differences are found between the jobs MA-level graduates hold 1 year after graduation and the jobs MA-level graduates hold 5 year after graduation.
- MA-level graduates report on average more that *New challenges*, *Social status* and *Doing something useful for the society* apply to their job than BA-level graduates.
- Female graduates report on average less that *High earnings* and *Career prospects* apply to their job but report on average more that *Doing something useful for the society* applies to their job.

- 50% of the graduates report a shortage with respect to *High earnings.* With respect to *Career prospects* and *A good work-life balance*, a shortage is visible for 40% of the graduate jobs. For all three job aspects, the shortage reported is thereby larger among the female graduates than among the male graduates.

In more detail, the following results are found.

Work autonomy

The extent to which the jobs found allow for work autonomy shows quite some differences between the countries. Partially, this might be related to the extent to which graduates in a country are able to find a job that matches the higher education degree level they graduated from. One can assume that higher education degree jobs provide in general more work autonomy than jobs on lower levels. Given that, the data shows that work autonomy seems in particularly to be present in Austria, Norway and Czechia. In these three countries, at least three out of four graduates report that work autonomy applies to a (very) high extent to their job. In contrast, In Greece and Croatia the share is for MA level graduates of the cohort 2012/13 with figures of 56-60% clearly lower. Comparable differences between the countries are found for the two type of graduates from the 2016/17 cohort (MA-level and BA-level). Looking at sex differences, in Czechia, Croatia, Lithuania and to a lesser extent in Malta, it is visible that the jobs hold by male graduates of the 2016/17 cohort provide generally more work autonomy than the jobs hold by their female colleagues. The results indicate that in Czechia, Croatia and Lithuania, this outcome is not related to a self-selection of male and female graduates in different type of jobs, as the share of unsatisfied female graduates with respect to this aspect is around 10%-point higher than the share of male graduates. In Malta, the lower probability of female graduates to find a job with a (very) high extent of work autonomy does not yield a higher probability of being unsatisfied with this aspect. Finally, in Greece, and in particularly among female graduates, the share of employed graduates that is unsatisfied with the work autonomy in their current job is relatively high.

Job security

In line with our earlier finding that job security five years into the labour market, measured by the share of MA-level graduates working under a permanent contract, does not differ strongly between the eight pilot countries, the data shows that the share of MA-level graduates of the cohort 2012/13 that report job security on a (very) high level is comparable between the countries. One year into the labour market, clearly more variation is visible. According to the MA-level graduates, job security applies one year into the labour market to a (very) high extent to 54% of the jobs in Greece and 81% of the jobs in Malta. Among the BA-level graduates, the range is from 44% in Germany to 74% in Austria. That the experienced job security is indeed, and in particularly for the graduates five year into the labour market, related to the question if graduates work under a permanent contract, is visible in further analyses carried out. Graduates one year into the labour market working under a permanent contract show on average a 25% higher share that reports that job security applies to a (very) high extent than graduates working under a fixed-term contract. Among graduates five year into the labour market, the share of those with a permanent contract is even 60% higher.

Focussing on the 2016/17 cohort, only in three countries a (clear) difference between male and female graduates with respect to the reported job security is found. In Germany (+7.5%-points) and Malta (+9.1%-points) female graduates report higher job security than male graduates. In Croatia (-9%-points) it is the other way around. Finally, in Germany 32% of the female graduates report a shortage with respect to the job security, whereas this is only reported by 16% of the male graduates from Czechia. Overall, the shortages reported by the male graduates within a country do not differ strongly from the shortages reported by the female graduates. Exceptions are Germany and Croatia where female graduates more often report a shortage than male graduates do.

Opportunity to learn new things and new challenges

Lifelong learning is crucial to guarantee long-term employability. Looking at the employment five years into the labour market, the data shows that in all countries a clear majority of the employed graduates report that their current job provides to a (very) high extent the opportunity to learn new things. The shares range from 64% in Greece to nearly 80% in Czechia. One year after graduation, the situation is slightly less promising and in Greece, just below 50% of the MA-level graduates report that the job provides ample learning opportunities. However, with this exception, the findings also shows that the jobs hold one year into the labour market in all countries provide a (clear) majority of the graduates with good opportunities to learn new things and hence for upskilling or re-skilling. In Germany and Croatia, it is further visible that for the 2016/17 cohort the jobs held by female graduates outperform the jobs held by male graduates on this aspect whereas in Lithuania and Norway it is the other way around. Although the majority of employed graduates report that they are given in their current job the opportunity to learn new things, the results shows that the share of 'unsatisfied' graduates still ranges from 16% (Male graduates in Norway) up to 36% (Female graduates in Greece). Male graduates in Greece report in nearly one out of three cases that they attach more importance to work autonomy than they are given at their job and also relative high shortages of above 20% are visible for male graduates in Germany, Croatia and Malta and for female graduates in Croatia, Lithuania and Malta.

The findings with respect to new challenges are strongly comparable to the 'opportunity to learn new things'. Again, it is visible that this aspect applies to a (very) high extent in most countries both cohorts for at least 50% of the graduate jobs. In addition, the country and cohort differences are strongly comparable.

High earnings

High earnings is one of the few aspects the employed graduates are generally rather critical about. In all countries and for all distinct groups of graduates, clearly less than half of the respondents report that high earnings apply to a (very) high extent to their current job. In most countries, the shares are even below the 40% and in Norway only 22% of the BA-level graduates of the cohort 2016/17 report that high earnings apply to their current job. Generally speaking, male graduates more likely report high earnings than female graduates do (cohort 2016/17). Relative high differences with respect to this are visible in Lithuania (male: +17%-points), German (+15%-points), Austria (+12%-points) and Malta (+10%-points). That female graduates not by definition apply less importance to a high earning job than their male peers is visible in the data. In most countries the shortage among the male graduate jobs is around 45% (exception is Greece

with a shortage of 54%) whereas the shortage reported by the female graduates is in most countries around 55%.

Career prospects

Apart from high earnings, career prospects is a second aspect the employed graduates are in general rather critical about. Five year into the labour market, only in two countries (Malta and Norway) close to half of the employed MA-level graduates report that their job gives them (very) good career prospects. In contrast to that, in Austria, Czechia, Greece and Lithuania less than 40% report (very) good career prospects. The figures for the 2016/17 cohort are comparable and only a few small differences are found between BA-level and MA-level graduates. However, for the 2016/17 cohort, it is visible in all countries that male graduates (slightly) more likely than female graduates hold a job with good career prospects. Differences are small in Czechia (male: +2%-points), Norway (+5%-points) and Lithuania (+7%-points). Relative high differences are found in Austria (male: +15%-points) and Germany (+10%-points).

Given the fact that the employed graduates are relatively critical about their career prospects in the current job, it is not surprising to find in that a relative high share of the graduates report a shortage with respect to this aspect. Among male graduates, the shortage ranges from around 27% in Norway, up to 42% in Germany and Austria. In Czechia and Greece with, respectively, 39% and 40% also a large share of the male graduates reports a shortage of career prospects. Female graduates report in all countries more often shortages indicating that female and male employees attach in general equal importance to good career prospect. However, as the data shows, female graduates find in general less likely jobs that offer good career prospects.

Social status

Except for Greece, where 56% of the MA-level graduates of the 2012/13 cohort report that social status applies to a (very) high extent to their current job, the data shows with respect to this aspect that graduates are generally critical about it. In Austria, Czechia, Croatia and Norway, the share of the 2012/13 cohort that reports that social status applies to their current job is around 40% and in Malta and Lithuania, it is around 45%. Comparing the jobs of the 2012/13 MA-level cohort with the 2016/17 MA-level cohort, the data illustrates that, except for Greece, the younger cohort is slightly more positive about this aspect. To what extent this is related to either a different moment in their career and hence a different look at social status of jobs or to real changes in jobs is based on the EUROGRADUATE pilot survey not possible to be further analysed. Further, the data shows that jobs held by the MA-level graduates of the 2016/17 cohort in all countries seem to provide to a larger extent social status than the jobs held by the BA-level graduates. Relative large differences are found in this respect in Germany (MA-level: +20%-points), Greece and Norway (+11%-points). Finally, in three of the pilot countries (Czechia, Germany and Lithuania), female graduates of the 2016/17 cohort report (slightly) to a higher extent that social status applies to their current job.

The share of graduates that is 'unsatisfied' about the job social status varies among male graduates between 16% in Germany and 40% in Malta and among female graduates between again 16% in Germany and 34% in Greece and Lithuania. Except for Germany

and Norway, female graduates report thereby to a higher extent a shortage than male graduates up to around 10%-points in Austria, Greece, Lithuania and Malta.

Chances of doing something useful for the society

MA-level graduates of both cohorts in general report in more than half of the cases that they think that their current job allows them to do something useful for the society. In Greece, Malta and Norway five years into the labour market career, this holds even for two out of three graduates. BA-level graduates are slightly less positive about that job aspect with the exception of the BA-level graduates in Austria and Norway what might be related to the rather well established non-research university type of higher education in these countries in which the BA-level degree is the usual final degree before entering the labour market. The data also shows interesting findings when comparing the jobs between male and female graduates. The jobs held by female graduates in generally score in all countries higher with respect to this character with an even staggering difference in 33%-points (Male: 48% / Female: 73%) in Germany. Relative high differences are also found in Czechia, Lithuania and Malta with around 10%-points in favour of the jobs held by female graduates.

Between 16% (Male and Female graduates in Norway) and 34% (Male graduates in Lithuania) and 39% (Female graduates in Greece), report a misallocation with respect to the opportunity to do something useful for the society. The differences in shortages between male and female graduates is thereby in all countries below the 10%-points.

Good work-life balance

Earlier this report addressed the fact that the group of graduates that is 'involuntary' working in fulltime (and hence would like to reduce the number of weekly working hours) reports to work in occupations that are providing less likely a good work-life balance than graduates who are working 'voluntary' in fulltime. A good work-life balance seems to be present in most countries in around 50% of the jobs. An exceptional low percentage of jobs with a good work-life balance is found in the MA-level cohort of 2016/17 in Greece. From this group of graduates, only around one out of three graduates report that a good work-life balance applies to a (very) high extent to their current job. Differences between the work-life balance in jobs held by female and jobs held by male graduates are in all country relative marginal.

The finding that generally no more than 60% of the employed graduates report that a good work-life balance is applicable to their current job yields that a substantial part of the graduates reports a shortage with respect to this aspect. For Male graduates, the shortages range from around 30% in Lithuania, Croatia and Norway up to around 46% in Germany and Greece. For female graduates the reported shortages are generally higher, ranging from 30% In Norway up to 46% in Germany. In Malta and Lithuania, the shortage difference between the jobs held by female graduates and the jobs held by male graduates is even around 10%-point.

6.7 Labour market outcomes: short-term versus mid-term

So far, both the situation one year and the situation five years into the labour market has been analysed with cross -sectional analyses. With two cohorts that graduated in different academic years, a causal relation between the situation one year and the situation five years into the labour market could not be established. In this section, the extent to which the situation one year into the labour market (2014) determines for the cohort that graduated in 2012/13 their situation in 2018 is analysed. For that reason, questions of the EUROGRADUATE pilot survey in which the cohort of 2012/13 retro-prospectively has been asked what their labour market situation in 2014 was are considered.

The available sample sizes in the EUROGRADUATE pilot survey restricts us in this case from analysing within country effects and the focus is therefore on general effects among the respondents of the eight pilot countries, controlled for country effects. Central in our analyses are two questions:

a) Does unemployment one year after graduation predict unemployment five years after graduation?
b) Are graduates that start their working career in a job below their degree level able to improve their situation in the next four years and find a job on at least their degree level?

To analyse these two research questions, two different analyses are carried out:

- In analysis 1, the dependent variable is a dummy for the current labour market situation with 1 = employed and 0 = not employed.
- In analysis 2, the dependent variable is a dummy for the current labour market situation with 1 = holding a job that requires at least the own degree level and 0 = employment in job that requires a lower than the own degree level.

In both analyses, the group of graduates of the cohort 2012/13 is selected that did not follow any further study after graduation in 2012/13

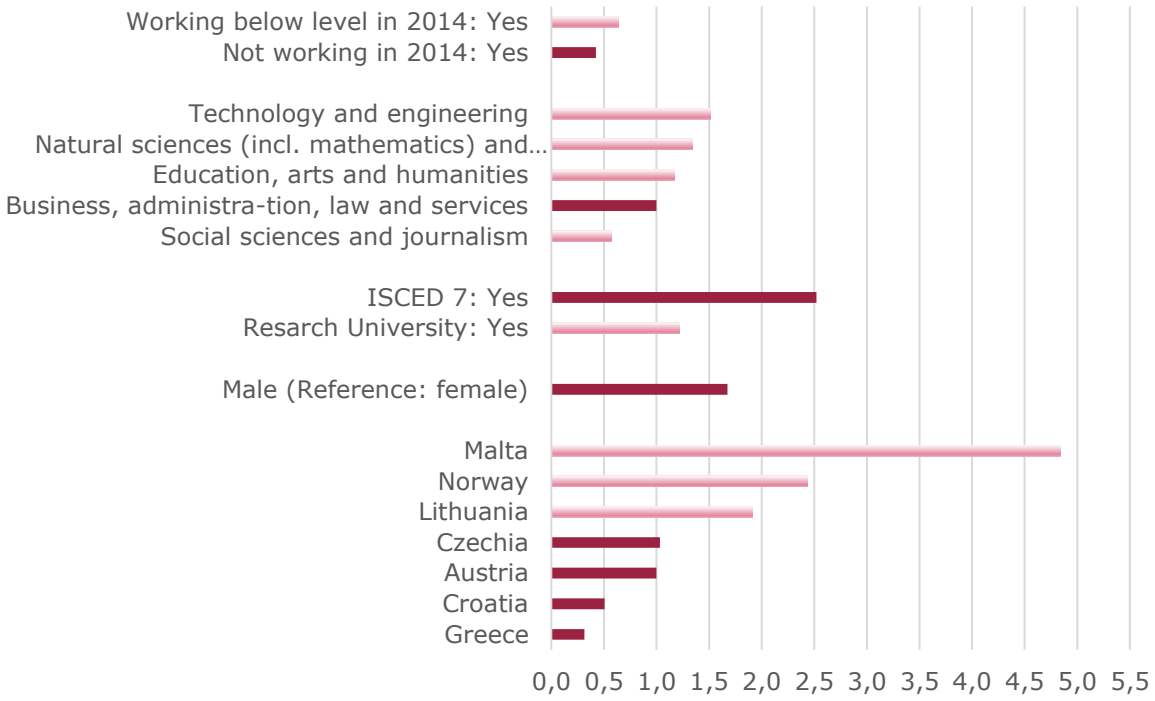
The main independent variables of interest in both analyses splits the graduates into three groups:

1. The group that is not employed in 2014 (including those that do unpaid work in family business)
2. The group that is employed in 2014 in a job that does not require the own degree level
3. The group that is employed in 2014 in a job that does require the own degree level (reference group)

The analyses further control for fixed country effects, fixed study field effects, effects for type of higher education institution (research university versus non-research university), the ISCED level graduated from, age and sex.

Figure 6.38 for Analysis 1 and Figure 6.39 for analysis 2 report on the odds ratios of the multivariate analyses.

Figure 6.38 Multivariate analyses: Employed in 2018 (odds ratio)



Source: EUROGRADUATE pilot survey 2018, Cohort 2012/13

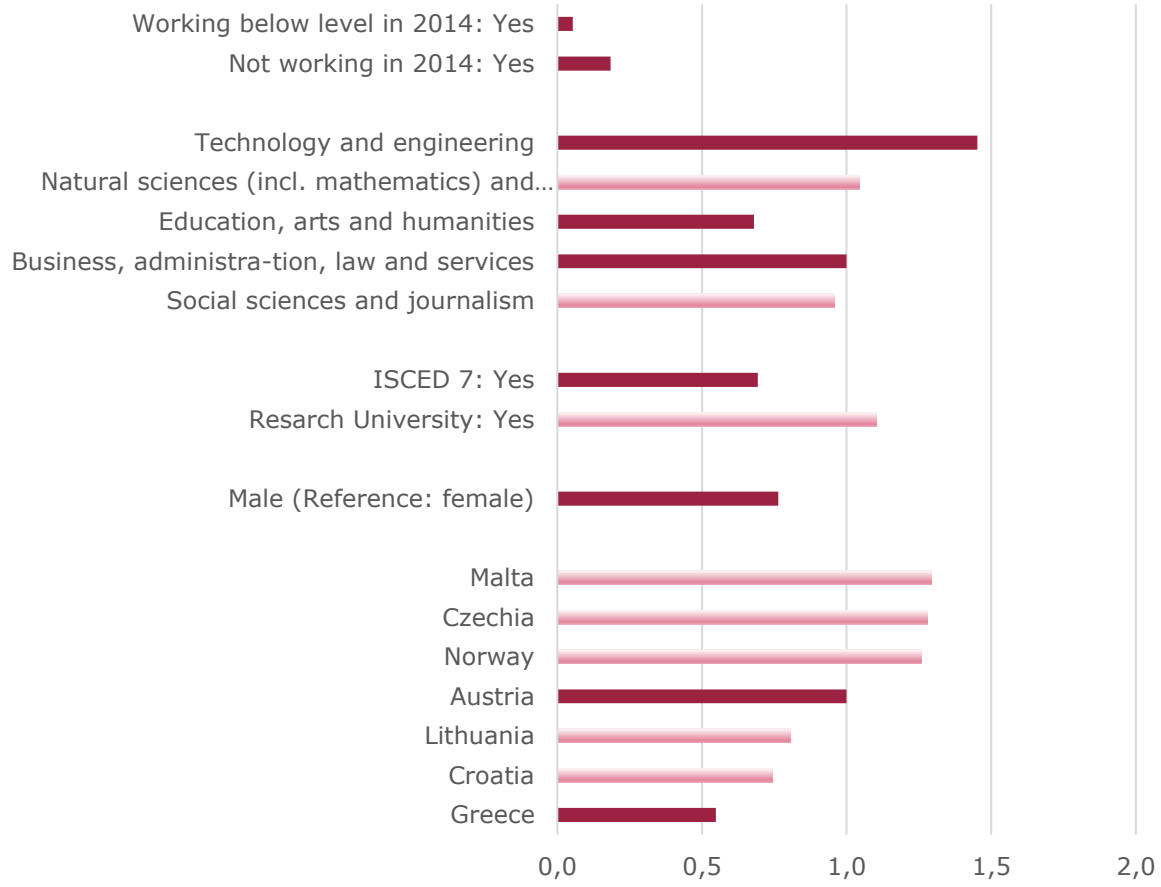
Both analyses confirm that the labour market situation in autumn 2014 is an important determiner of the labour market situation in autumn 2018.

In Analysis 1, not being employed in 2014 influences on a 10% significance level negatively the probability that one is employed (rather than not employed) in autumn 2018.

In Analysis 2, not being employed in 2014 influences on a 1% significance level negatively the probability of having a job that matches one's educational level in 2018. The effect is even stronger for the group that is in 2014 working in an occupation that does not the own degree level.

Summarising, one can, based on these restricted analyses, conclude that there is a clear path-dependency in the first four years on the labour market: finding at the beginning of the career a job, and in particularly a job that matches one's degree level, is important for one's labour market situation four years later on. This confirms again that the direct transition from education to the labour market is of crucial importance.

Figure 6.39 Multivariate analyses: Working on own level (odds ratio)



Source: EUROGRADUATE pilot survey 2018 / Cohort 2012/13

6.8 Conclusions

Higher education aims at preparing students for a successful transition to the labour market, adequate employment, career development and job security. Along this line, this chapter discussed the labour market outcomes of the higher education programmes in the eight EUROGRADUATE pilot countries. In this final paragraph, the main findings are summarised with respect to three questions: *Who are the graduates at risk?, What are the consequences of being at risk?* and *What are the skills requirements?* .

Who are the graduates at risk?

- For MA-level graduates one year after graduation, the eight pilot countries fall into two clear distinct groups:
  - *Austria, Germany, Czechia and Norway* with less than 25% of the graduates with a (very) weak situation and in all four countries with less than 10% of the graduates in a very weak situation (unemployed or double mismatch).

  - *Malta, Croatia, Greece and Lithuania* with at least 40% of the MA-level graduates in a (very) weak situation. Within this group, a further clear distinction is visible. Malta and Lithuania have less than 20% of the graduates in a very weak position. In Croatia and Greece, around 26-27% of the graduates are in a very weak position.
- The situation improves for MA-level graduates after being five years into the labour market.For BA-level graduates one year after graduation, the eight pilot countries fall into two clear distinct groups:
  - *Austria, Germany, Czechia, Lithuania, Malta and Norway* with all less than 25% of the graduates in a (very) weak situation.
  - *Greece* and *Croatia* with around one out of three graduates in the labour force is in a very weak position.
- Graduates from the study fields *Technology, Engineering, Natural Sciences (including mathematics), and health* are least likely are risk.

Graduates with no higher educated parents and no work experience before or during the study programme are more likely at risk.

What are the consequences of being at risk?

- There is a clear path-dependency in the first four years on the labour market: Being in a (very) weak position one year into the labour market has a negative effect on one's labour market position five years after graduation.
- There is a clear financial punishment on working below one's own educational level.
- Working below one's educational level limits clearly the usage of the skills acquired in the higher education study and might trigger skills obsolescence.

Skills

The general picture clearly establishes that graduates of higher education are required to possess a diverse set of skills to succeed in the labour market. Out of the nine skills measured, six are reported to be required by a clear majority to a (very) high extent:

- Own field-specific skills
- Communication skills
- Team-working skills
- Learning skills
- Planning and organisation skills
- Problem-solving skills

With respect to two of these six skills (*Own field-specific skills* and *Problem-solving skills*) a relative high share of graduates reports a shortage and hence will be required after graduation to directly upskill them by formal further training or more informal on-the-job learning.

Small overall shortages are found in particular for *Learning skills* and *Team-working skills* indicating that the higher education systems in the eight pilot countries prepare their graduates well for these skills requirements.

6.9 Appendix

Appendix 6.1

Table A6.1 Real GDP growth rate (%)

	2012	2013	2014	2015	2016	2017	2018
European Union - 28 countries	-0.4	0.3	1.8	2.3	2.0	2.5	2.0
Austria	0.7	0.0	0.7	1.1	2.0	2.6	2.7
Czechia	-0.8	-0.5	2.7	5.3	2.5	4.4	3.0
Germany	0.5	0.5	2.2	1.7	2.2	2.2	1.4
Greece	-7.3	-3.2	0.7	-0.4	-0.2	1.5	1.9
Croatia	-2.3	-0.5	-0.1	2.4	3.5	2.9	2.6
Lithuania	3.8	3.5	3.5	2.0	2.4	4.1	3.5
Malta	2.8	4.6	8.7	10.8	5.6	6.8	6.7
Norway	2.7	1.0	2.0	2.0	1.2	2.0	1.4

Source: EUROSTAT (24-07-2019), Note: Figures for Greece are provisional.

Appendix 6.2

Table A6.2 Unemployment rate EUROSTAT 2018 (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Youth Unemployment rate	9.4	6.7	6.2	39.9	23.8	11.1	9.2	9.7
Unemployment rate	4.9	2.2	3.4	19.3	8.5	6.2	3.7	3.9
Tertiary education unemployment rate	2.8	0.9	1.8	13.3	6.6*	3.0	2.2*	2.1

Source: EUROSTAT (24-07-2019), low reliability.

Appendix 6.3

Table A6.3 Employment rates of recent graduates (ISCED 3-8 aged 20-34) not in education and training, 2008 and 2008 (%)

	2008	2018
EU	82	82
Austria	90	89
Czechia	88	90
Germany	87	92
Greece	68	55
Croatia	78	71
Lithuania	79	85
Malta	96	85
Norway(1)		91

Source: Eurostat (online data code: edat_lfse_24), Note: graduates with an upper secondary & post-secondary non-tertiary education or a tertiary education (ISCED 2011 levels 3–8), having graduated within one to three previous years, Breaks in series, Note: (1) 2008: not available.

Appendix 6.4

Table A6.4 Labour Force by cohort and sex (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13 MA-Level								
Not part of Labour Force	6.5	10.7	n.c.	6.5	5.1	9.9	0.7	3.5
Part of Labour Force	93.5	89.3	n.c.	93.5	94.9	90.1	99.4	96.5
Cohort 2016/17 BA-Level								
Not part of Labour Force	43.7	45.7	58.1	32.6	54.4	15.2	32.8	37.8
Part of Labour Force	56.3	54.3	42.0	67.3	45.6	84.8	67.2	62.2
Cohort 2016-2016 MA-Level								
Not part of Labour Force	9.0	8.5	8.6	17.2	6.5	8.8	6.3	7.0
Part of Labour Force	91.0	91.5	91.3	82.9	93.6	91.2	93.7	93.0
Cohort 2012/13 MA-level: Male								
Not part of Labour Force	2.6	1.8	n.c.	1.8	1.0	2.9	1.5	3.5
Part of Labour Force	97,4	98,2	n.c.	98,2	99.0	97,1	98,5	96,5
Cohort 2012/13 MA-level: Female								
Not part of Labour Force	9.6	16.5	n.c.	13.1	7.8	13.1	0.0	3.4
Part of Labour Force	90,4	83,5	n.c.	86,9	92,2	86,9	100	96,6
Cohort 2016/17 MA-level: Male								
Not part of Labour Force	11.0	6.6	7.8	19.0	3.8	7.2	11.5	7.7
Part of Labour Force	89.0	93,4	92,2	81.0	96,2	92,8	88,5	92,3
Cohort 2016/17 MA-level: Female								
Not part of Labour Force	7.4	9.7	9.4	14.6	8.0	9.7	2.6	6.4
Part of Labour Force	92,6	90,3	90,6	85,4	92.0	90,3	97,4	93,6

Source: EUROGRADUATE pilot survey 2018, n.c = not comparable as the EUROGRADUATE labour force definition is not fully comparable to the definition in the DZHW graduate panel.

Appendix 6.5

Table A6.5 Unemployment rate (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2016/17: BA-Level	1.5	2.9	2.8	22.5	19.1	6.8	5.1	3.5
Cohort 2016/17: MA-Level	3.6	0.8	2.3	13.1	17.4	2.3	2.5	2.6
Cohort 2012/13: MA-Level	2.4	1.3	n.c.	2.8	6.5	0.3	2.2	0.9

Source: EUROGRADUATE pilot survey 2018, n.c = not comparable as the EUROGRADUATE labour force definition is not fully comparable to the definition in the DZHW graduate panel.

Appendix 6.6

Table A6.6 Number of jobs: % graduates that hold more than 1 job a time of survey

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort								
2012/13: MA-Level	8.8	16.0	n.c.	7.6	6.3	34.8	9.5	8.8
2016/17: BA-Level	8.9	18.6	12.6	13.1	7.6	18.6	13.8	20.3
2016/17: MA-Level	8.6	16.3	4.6	8.8	7.3	22.8	7.3	8.6
Cohort 2016/17*								
Education, arts and humanities	15.0	21.2	24.3	9.7	12.0	32.1	17.0	20.7
Social sciences and ialism	8.3	15.9	6.8	13.6	8.6	23.8	n.a.	7.6
Business, administration, law and services	7.1	14.9	4.1	13.9	6.3	18.9	4.3	18.9
Natural sciences (incl. mathematics) and health	5.7	25.3	2.9	13.8	6.8	18.0	19.7	14.8
Technology and ineering	5.6	10.6	1.3	6.7	7.2	13.8	5.7	7.3
Cohort 2016/17*								
Male	8.4	18.2	2.6	12.8	7.7	20.2	6.7	17.8
Female	8.9	16.6	13.0	10.2	7.2	19.7	13.4	13.5

Source: EUROGRADUATE pilot survey 2018, n.a. = not available (too few cases), * BA-Level and MA-Level combined, n.c = not computable in the DZHW graduate panel.

Appendix 6.7

Table A6.7 Self-Employment (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania**	Malta	Norway
Cohort 2012/13: MA-Level								
Self-employed with payed employees	1.9	5.0	5.5	16.3	6.1	7.0	0.0	1.5
Self-employed without payed employees	9.9	14.9	2.1	9.2	4.5	37.9	5.7	6.2
Cohort 2016/17: BA-Level								
Self-employed with payed employees	1.4	7.1	0.6	7.2	7.8	4.7	0.4	0.0
Self-employed without payed employees	6.7	14.0	2.9	8.8	3.5	27.3	6.7	6.3
Cohort 2016/17: MA-Level								
Self-employed with payed employees	2.1	5.0	2.8	9.8	4.7	5.3	0.5	0.9
Self-employed without payed employees	5.8	11.6	3.4	4.4	2.5	31.6	3.5	3.6
Cohort 2016/17*								
Education, arts and humanities	9.5	20.0	12.4	24.1	10.7	51.6	6.3	9.3
Social sciences and alism	11.9	23.8	6.4	11.3	6.5	37.6	n.a.	4.6
Business, administra-tion, law and services	5.9	21.5	6.2	19.1	9.3	29.3	5.1	4.1
Natural sciences (incl. mathematics) and health	6.5	11.6	0.2	8.5	7.9	31.1	7.1	3.3
Technology and neering	8.0	15.4	2.3	14.1	7.9	28.9	3.7	7.4
Cohort 2016/17*								
Male	8.5	22.4	4.2	16.0	10.6	36.6	7.1	8.7
Female	7.5	15.9	5.8	14.6	7.4	31.4	4.5	3.4

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, * Self-employment with or without paid employees, ** low reliability, n.a. = not available (too few cases).

Appendix 6.8

Table A6.8 Type of contract: permanent (Employed graduates / no self-employed) (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
2012/13: MA-Level	81.3	77.5	75.5	76.0	79.1	87.7	79.5	88.9
2016/17: BA-Level	68.3	66.9	77.7	73.7	57.1	88.3	80.2	72.2
2016/17: MA-Level	60.0	69.9	57.5	71.2	47.7	86.0	79.9	78.1
Cohort 2016/17								
Education, arts and humanities	40.0	64.1	59.4	75.5	30.2	81.4	87.5	67.9
Social sciences and alism	66.4	74.8	56.5	79.2	31.7	78.7	n.a.	72.1
Business, administration, law and services	83.4	76.0	95.1	80.4	52.0	90.9	85.0	85.6
Natural sciences (incl. mathematics) and health	44.9	50.4	36.7	51.3	55.5	80.4	75.6	65.0
Technology and neering	82.2	76.9	75.4	82.0	61.7	94.9	77.8	86.9
Cohort 2016/17								
Male	68.7	72.7	75.3	76.3	61.8	91.3	77.2	75.4
Female	60.4	66.3	54.4	68.2	43.5	85.5	82.0	74.4

Source: EUROGRADUATE pilot survey 2018, n.a. = not available (too few cases), Germany cohort 2012/13: DZHW graduate panel.

Appendix 6.9

Table A6.9 Working hours: (Employed graduates)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
2012/13: Part-time MA-Level %	24.1	11.8	n.c	2.9	5.9	18.5	6.1	5.6
2016/17: Part-time BA-Level %	35.7	19.2	30.1	22.4	11.2	13.9	6.6	22.8
2016/17: Part-time MA-Level %	24.4	9.5	21.7	7.9	5.1	10.6	0.4	5.6
Male: Part-time 2012/13 %*	10.9	9.4	n.c.	0.0	3.5	14.0	8.5	4.9
Male: Part-time 2016/17 %*	22.1	12.6	10.8	13.9	7.1	12.1	3.3	12.8
Female: Part-time 2012/13 %*	35.2	13.8	n.c.	7.8	7.5	20.8	4.2	6.2
Female: Part-time 2016/17 %*	34.8	13.8	39.9	23.7	7.5	13.3	3.8	16.8
Mean weekly hours: Male 2016/17*	37.50	38.80	38.33	38.64	40.62	39.81	40.87	37.08
Mean weekly hours: Female 2016/17*	34.78	38.83	34.24	35.26	39.93	38.35	39.54	36.69

Source: EUROGRADUATE pilot survey 2018, * Cohort 2016/17 only, * BA-Level and MA-level graduates. , n.c = not comparable as the EUROGRADUATE kind of question is not fully comparable to the question used in the DZHW graduate panel.

Appendix 6.10

Table A6.10 Working hours: Satisfaction (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Male: Fulltime satisfied*	58.5	67.0	64.2	56.7	73.0	65.5	68.9	68.7
Male: Fulltime want work more*	1.3	1.0	1.3	1.0	3.5	3.6	1.0	9.9
Male: Fulltime want work less*	17.9	19.2	23.7	28.3	16.4	18.7	26.7	8.7
Male: Part-time satisfied*	16.0	10.0	5.6	7.0	4.5	9.2	3.3	4.3
Male: Part-time want work more*	5.1	2.7	4.1	6.0	2.6	1.0	0.0	8.5
Male: Part-time want work less*	1.3	0.0	1.1	1.0	0.0	2.1	0.0	0.0
Female: Fulltime satisfied*	50.1	64.3	40.6	59.3	76.3	62.9	62.9	68.7
Female: Fulltime want work more*	0.4	0.9	0.8	2.6	1.4	1.8	3.5	3.3
Female: Fulltime want work less*	14.6	20.9	18.1	14.3	14.8	22.1	29.8	11.4
Female: Part-time satisfied*	25.0	12.1	33.2	12.7	3.7	8.4	3.8	9.8
Female: Part-time want work more*	8.1	1.2	5.0	9.6	3.7	3.4	0.0	6.4
Female: Part-time want work less*	1.8	0.5	2.2	1.6	0.1	1.4	0.0	0.5

Source: EUROGRADUATE pilot survey 2018, * Cohort 2016/17 only, * BA-Level and MA-level graduates.

Appendix 6.11

Table A6.11 Good work-life balance applies to (very) high extent to current job (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Fulltime satisfied	60	56	51	49	58	55	53	55
Fulltime wants to work less	29	25	36	21	31	28	20	42

Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, BA-Level and MA-level graduates.

Appendix 6.12

Table A6.12 Occupation, ISCO 1 unit (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: MA-Level								
Managers	9	9.2	n.a.	11.5	4.7	10.4	19.5	11.9
Professionals	59.4	55.8	n.a.	46.3	45.4	54.8	58.6	62.8
Technicians and associate professionals	18.3	20.1	n.a.	20.3	31.7	24.3	15	19
Clerical support workers	8.5	8.7	n.a.	8.7	12	4.7	1	2.5
Service and sales workers	2.9	2.8	n.a.	5.9	4.1	2.5	4.5	1.6
Craft and related trades workers	1.5	2.3	n.a.	4.9	0.6	2.9	1.3	1.4
Other	0.4	1	n.a.	2.3	1.5	0.4	0	0.7
Cohort 2016/17: BA-Level								
Managers	5.5	7.3	1	3	4.1	7.7	7.5	5.9
Professionals	56.2	49.1	68.5	45.7	47.3	42.2	67.2	47.4
Technicians and associate professionals	22.2	21	15.8	24.8	18.7	24.4	15.3	26.5
Clerical support workers	10.3	15.3	10	13.9	11.4	12.8	3.8	3.4
Service and sales workers	3.5	4.3	0	10.1	9.4	5.4	5.3	15.9
Craft and related trades workers	1	0.8	2.4	2.2	3.1	4.4	0.9	0.6
Other	1.2	2	2.2	0.3	5.9	3	0	0.3
Cohort 2016/17: MA-Level								
Managers	8.7	5.5	4.9	6.3	4.1	13.3	10.5	11
Professionals	64.8	58.2	82.4	63	55.5	46.7	69.2	67.1
Technicians and associate professionals	12.2	26.3	8.3	6.6	23.1	24.3	17.4	13.9
Clerical support workers	9.8	4.8	2.1	18	9	11.7	2.5	2.6
Service and sales workers	2.9	2.4	1.4	3.4	3.4	1.6	0.4	2.6
Craft and related trades workers	1	1.7	0.9	0.5	2.5	1.1	0	0.5
Other	0.6	1.1	0	2.2	2.4	1.5	0	2.2

Source: EUROGRADUATE pilot survey 2018, n.a. = not available as ISCO codes are not (yet) available in the DZHW graduate panel, Other = Armed forces occupations, Skilled agricultural, forestry and fishery workers, Plant and machine operators and assemblers, Elementary occupations.

Appendix 6.13

Table A6.13 Economic sector (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: MA-Level								
Agriculture, manufacturing, construction	15.1	17.0	19.2	15.6	19.9	12.3	14.0	13.5
Trade, transport, hospitality	5.9	8.6	3.3	7.5	11.0	18.9	6.1	2.8
Commercial services	34.0	30.8	24.8	23.6	28.6	39.0	28.0	32.0
Public sector, health care, education	45.0	43.6	52.8	53.3	40.5	29.9	51.9	51.7
Cohort 2016/17: BA-Level								
Agriculture, manufacturing, construction	8.7	21.3	28.5	15.7	20.6	19.0	14.9	4.6
Trade, transport, hospitality	11.6	15.3	4.7	16.4	14.8	27.2	11.0	9.8
Commercial services	31.7	24.5	24.2	39.0	34.5	34.5	41.7	22.7
Public sector, health care, education	48.0	38.8	42.5	28.9	30.1	19.3	32.4	62.9
Cohort 2016/17: MA-Level								
Agriculture, manufacturing, construction	15.0	22.0	15.4	15.8	15.6	20.5	0.7	8.0
Trade, transport, hospitality	3.8	8.1	6.3	10.5	9.7	15.5	4.4	5.1
Commercial services	35.3	34.6	27.7	25.6	38.0	31.6	44.8	35.9
Public sector, health care, education	45.8	35.3	50.5	48.1	36.7	32.4	50.2	51.0
Education, arts and humanities*								
Agriculture, manufacturing, construction	0.6	8.7	13.0	14.4	1.9	7.3	1.7	0.2
Trade, transport, hospitality	3.4	6.6	4.8	14.5	3.3	13.8	8.0	5.4
Commercial services	18.1	22.2	20.1	19.0	21.4	33.8	20.6	17.3
Public sector, health care, education	78.0	62.5	62.1	52.0	73.5	45.1	69.8	77.1
Social sciences and journalism*								
Agriculture, manufacturing, construction	2.9	6.5	4.0	10.7	6.2	17.8	n.a.	5.0
Trade, transport, hospitality	7.3	10.0	2.5	12.8	12.3	14.3	n.a.	9.3
Commercial services	49.8	44.4	37.3	38.4	53.0	47.7	n.a.	50.2
Public sector, health care, education	40.1	39.2	56.2	38.1	28.6	20.1	n.a.	35.5
Business, administration, law and services*								
Agriculture, manufacturing, construction	16.8	21.2	18.3	10.3	16.3	12.6	1.7	2.5
Trade, transport, hospitality	16.1	20.7	11.4	24.2	20.1	38.6	12.5	19.9
Commercial services	44.5	42.0	35.1	43.7	42.5	35.2	74.7	49.3
Public sector, health care, education	22.7	16.1	35.2	21.8	21.1	13.6	11.0	28.3

Natural sciences (incl. mathematics) and health*								
Agriculture, manufacturing, construction	3.9	14.6	5.4	14.6	12.1	11.7	6.2	1.2
Trade, transport, hospitality	2.9	4.5	0.1	5.7	6.4	17.5	1.3	1.4
Commercial services	19.5	9.6	21.0	20.8	12.0	20.7	12.3	5.7
Public sector, health care, education	73.7	71.2	73.5	58.9	69.6	50.1	80.2	91.7
Technology and engineering*								
Agriculture, manufacturing, construction	34.0	48.1	49.6	29.2	35.5	42.8	30.5	32.3
Trade, transport, hospitality	6.6	6.7	8.8	11.9	4.9	16.6	7.3	3.3
Commercial services	43.3	33.2	25.3	48.0	51.8	33.4	57.5	40.1
Public sector, health care, education	16.1	12.0	16.3	10.9	7.7	7.3	4.7	24.3

Source: EUROGRADUATE pilot survey 2018, * Cohort 2016/17 only, n.a = not available (too few cases, Malta) or not available (cohort 2012/13 Germany as NACE codes are not yet available in DZHW graduate panel).

Appendix 6.14

Table A6.14 Education – Job Match (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: MA-Level								
Double Mismatch	9.0	6.9	5.9	8.7	9.3	15.4	2.8	3.4
Vertical Mismatch	9.9	7.9	13.6	37.0	13.9	18.2	25.5	8.5
Horizontal Mismatch	8.2	11.2	6.0	3.8	3.1	16.5	4.0	5.6
Vertical and Horizontal Match	72.9	74.0	74.6	50.4	73.7	49.8	67.8	82.5
Cohort 2016/17: BA-Level								
Double Mismatch	7.4	13.9	13.9	13.1	16.5	12.2	7.7	9.2
Vertical Mismatch	6.4	8.1	6.6	5.7	19.0	4.7	10.9	7.5
Horizontal Mismatch	7.5	18.8	8.5	14.3	5.3	19.8	8.2	7.6
Vertical and Horizontal Match	78.7	59.2	71.0	66.9	59.3	63.3	73.2	75.7
Cohort 2016/17: MA-Level								
Double Mismatch	6.2	8.9	3.5	15.8	10.1	15.7	10.5	6.2
Vertical Mismatch	14.9	8.2	15.8	25.5	18.9	27.5	27.9	15.0
Horizontal Mismatch	7.2	10.6	6.4	2.2	2.3	7.0	3.3	7.1
Vertical and Horizontal Match	71.7	72.4	74.2	56.5	68.7	49.9	58.3	71.8

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel.

Appendix 6.15

Table A6.15 Education – Job Match (%), by field of study, cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Education, arts and humanities								
Double Mismatch	9.5	12.5	7.0	24.9	7.6	10.7	16.0	9.0
Vertical Mismatch	13.0	8.7	18.2	9.2	10.8	11.2	22.7	9.0
Horizontal Mismatch	5.4	18.5	6.8	20.5	4.8	20.3	6.5	7.4
Vertical and Horizontal Match	72.2	60.4	68.0	45.4	76.8	57.7	54.8	74.6
Social sciences and journalism								
Double Mismatch	11.3	11.9	5.2	16.6	19.8	9.8	n.a.	11.1
Vertical Mismatch	8.7	9.3	21.9	11.1	14.6	13.9	n.a.	16.8
Horizontal Mismatch	11.4	28.0	14.7	12.1	7.1	9.9	n.a.	8.9
Vertical and Horizontal Match	68.5	50.8	58.2	60.2	58.5	66.4	n.a.	63.2
Business, administration, law and services								
Double Mismatch	5.3	12.9	5.3	12.6	15.3	16.8	6.7	10.8
Vertical Mismatch	9.3	8.3	15.1	17.7	23.5	7.4	20.3	12.4
Horizontal Mismatch	7.9	12.7	13.8	12.4	3.6	20.9	5.9	8.5
Vertical and Horizontal Match	77.5	66.1	65.8	57.3	57.6	54.9	67.2	68.3
Natural sciences (including mathematics) and health								
Double Mismatch	3.2	9.5	13.8	9.7	11.0	13	0.0	4.2
Vertical Mismatch	10.8	7.5	1.6	7.0	13.5	11.2	20.8	7.7
Horizontal Mismatch	6.5	9.1	0.2	4.1	2.3	14.8	2.4	7.4
Vertical and Horizontal Match	79.4	73.9	84.4	79.2	73.2	61.1	76.9	80.7
Engineering and technology								
Double Mismatch	5.7	6.8	5.2	10.2	8.7	12.4	12.8	6.1
Vertical Mismatch	12.1	7.2	10.7	11.0	21.0	17.9	13.9	12.2
Horizontal Mismatch	7.3	6.9	5.3	6.2	2.0	10.0	6.4	4.4
Vertical and Horizontal Match	74.9	79.1	78.7	72.5	68.3	59.7	66.9	77.3

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, N.a. = not available (too few respondents)

Appendix 6.16

Table A6.16 % (very) high level required in current job

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: MA-Level								
Own field-specific	84.7	88.2	n.c.	78.1	65.6	81.3	82.5	73.0
Communication skills	85.1	84.7	n.c.	83.1	76.2	77.1	82.7	72.9
Team-working skills	84.8	81.4	n.c.	70.6	71.9	71.1	83.1	79.0
Foreign language skills	46.8	49.0	n.c.	58.4	45.9	59.4	42.8	38.2
Learning skills	82.2	81.9	n.c.	77.6	77.0	79.1	75.9	79.0
Planning and organisation skills	85.2	83.3	n.c.	81.5	78.2	82.3	82.3	74.8
Customer handling skills	56.8	66.4	n.c.	46.0	64.8	61.0	67.7	56.7
Problem solving skills	89.1	94.6	n.c.	86.6	82.0	81.8	83.5	78.9
Advanced ICT skills	36.9	23.5	n.c.	35.8	26.3	32.5	29.1	29.1
Cohort 2016/17: BA-Level								
Own field-specific	88.3	83.3	65.2	60.2	57.8	71.2	75.0	67.8
Communication skills	76.9	79.4	73.4	59.3	66.6	62.4	67.6	68.4
Team-working skills	82.0	79.6	68.0	61.6	74.6	67.5	86.0	75.3
Foreign language skills	39.1	44.4	26.0	49.4	48.5	59.8	36.1	29.8
Learning skills	74.5	79.0	70.6	62.1	74.5	71.9	79.4	74.4
Planning and organisation skills	85.4	75.4	77.5	63.0	73.8	70.9	83.8	71.9
Customer handling skills	49.9	67.2	59.6	56.0	57.9	54.7	61.0	51.6
Problem solving skills	89.0	92.8	80.4	71.3	77.5	75.1	86.3	76.1
Advanced ICT skills	41.9	21.0	32.6	33.8	28.9	42.3	34.5	21.9
Cohort 2016/17: MA-Level								
Own field-specific	84.1	86.7	83.7	75.0	60.9	80.2	83.7	66.4
Communication skills	79.7	77.4	80.4	71.7	71.7	71.3	85.9	64.5
Team-working skills	85.0	74.5	82.5	69.9	71.7	68.6	86.3	72.3
Foreign language skills	49.4	43.7	37.0	46.4	48.9	61.0	35.0	37.1
Learning skills	83.1	83.1	84.6	63.9	74.2	83.7	82.9	73.4
Planning and organisation skills	84.9	77.5	89.5	75.3	74.4	79.5	84.5	70.7
Customer handling skills	44.0	59.2	47.1	61.4	59.5	60.5	64.8	55.6
Problem solving skills	88.6	94.1	88.5	80.9	79.7	86.5	87.1	74.4
Advanced ICT skills	37.3	22.2	47.6	32.2	30.3	41.4	27.0	27.1

Source: EUROGRADUATE pilot survey 2018, n.c = not comparable as skills measure differs in DZHW graduate panel from EUROGRADUATE measure.

Appendix 6.17

Table A6.17 Shortages and surpluses, MA-level graduates, cohort 2016/17 (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Shortage								
Own field-specific	39.9	44.8	40.3	14.3	25.5	41.9	28.0	30.6
Communication skills	32.8	30.0	36.9	23.6	24.7	34.8	23.8	26.8
Team-working skills	15.0	15.4	17.6	18.0	19.3	27.2	17.8	22.6
Foreign language skills	18.8	21.3	16.8	8.9	19.6	33.4	15.1	23.5
Learning skills	18.8	17.5	23.2	9.7	16.4	21.0	13.3	20.7
Planning and organisation skills	29.5	26.9	35.8	20.3	23.8	34.6	26.4	28.5
Customer handling skills	18.2	25.0	21.0	21.7	24.9	26.0	25.2	28.8
Problem solving skills	33.3	45.0	47.0	25.7	29.7	43.3	30.2	31.5
Advanced ICT skills	24.0	18.6	36.2	10.6	19.5	27.9	12.8	23.0
Surplus								
Own field-specific	17.4	10.7	18.6	19.3	26.3	13.6	14.9	25.6
Communication skills	16.9	18.9	19.2	23.5	19.2	21.1	16.6	20.6
Team-working skills	26.1	29.3	27.9	29.4	22.0	24.9	18.0	20.8
Foreign language skills	42.6	33.8	43.8	49.9	31.9	24.7	30.1	36.1
Learning skills	25.6	26.6	23.9	42.5	20.7	18.3	13.5	17.9
Planning and organisation skills	20.5	21.1	13.5	25.9	18.2	16.4	8.6	21.1
Customer handling skills	39.3	27.5	36.0	25.3	23.0	27.3	19.5	26.3
Problem solving skills	13.8	6.6	12.1	16.5	13.9	11.7	12.5	15.1
Advanced ICT skills	24.0	20.9	22.6	42.9	22.7	23.1	21.1	26.6
Shortage working on own level								
Own field-specific	43.7	49.8	44.1	11.4	30.3	47.7	30.4	34.4
Communication skills	35.0	31.5	39.0	24.6	26.5	40.4	26.3	27.8
Team-working skills	25.0	26.9	28.0	24.9	20.3	22.2	20.0	19.6
Foreign language skills	21.4	22.7	17.2	4.5	20.4	40.8	19.2	24.0
Learning skills	20.1	19.1	24.6	5.9	17.3	24.9	17.2	19.8
Planning and organisation skills	30.0	29.2	38.7	19.3	23.6	36.0	30.0	28.3
Customer handling skills	18.7	26.6	21.9	21.2	26.3	28.3	30.3	27.6
Problem solving skills	37.0	47.9	49.1	24.1	31.4	40.0	30.0	31.8
Advanced ICT skills	26.9	21.0	38.5	8.4	19.3	28.2	16.6	23.8
Shortage working below own level								
Own field-specific	25.1	19.7	23.0	18.5	13.5	34.3	24.3	15.6
Communication skills	24.8	22.7	23.2	22.4	19.8	27.9	19.8	23.7
Team-working skills	13.3	8.5	6.7	14.4	17.1	29.8	10.0	22.7
Foreign language skills	9.7	14.9	16.9	15.3	17.4	24.6	8.6	24.4
Learning skills	15.0	10.9	14.2	15.4	13.0	16.9	7.1	22.3
Planning and organisation skills	29.1	15.9	22.2	22.0	24.4	33.2	20.8	27.3
Customer handling skills	17.0	19.3	19.6	22.7	21.6	23.8	17.4	34.7
Problem solving skills	20.4	34.2	38.5	27.2	25.5	48.3	30.6	31.8
Advanced ICT skills	14.3	8.8	21.2	14.0	19.7	26.7	6.6	20.0

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

Appendix 6.18

Table A6.18 Median gross monthly earnings (Euro-ppp)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2016/17: BA-Level	2128	1552	3182	945	1275	1499	1769	2249
Cohort 2016/17: MA-Level	2394	1825	3037	1445	1424	1666	2198	2863
Cohort 2012/13: MA-Level	2660	2129	n.c.	1951	1700	2332	2499	3319

Source: EUROGRADUATE pilot survey 2018, n.c. = not comparable as earning measures differs in DZHW graduate panel from EUROGRADAUTE earning measure.

Appendix 6.19

Table A6.19 Job satisfaction: % (very) satisfied

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
MA-level 2012/13	78	75	n.c.	70	59	68	68	68
BA-level 2016/17	77	71	85	54	56	60	69	59
MA-level 2016/17	75	76	76	56	56	70	63	62

Source: EUROGRADUATE pilot survey 2018, Germany 2012-13 cohort (DZHW graduate panel): not comparable. For the underlying figures, see Appendix 6.19.

Appendix 6.20

Table A6.20 Application of job characteristics (% [very] high)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13 MA-Level								
Work autonomy	94.6	75.3	n.c.	56.4	60.4	66.1	71.4	82.5
ob security	69.5	74.0	n.c.	69.8	63.5	66.7	65.1	67.6
Learn new things	74.5	78.4	n.c.	63.9	65.3	71.2	72.2	74.9
High earnings	36.1	42.7	n.c.	35.1	32.6	39.8	42.1	40.4
New challenges	77.2	63.4	n.c.	47.1	60.4	75.0	71.5	71.9
Career prospects	36.5	32.4	n.c.	38.2	40.6	37.5	49.2	46.2
Social status	42.6	39.2	n.c.	55.6	39.4	45.5	44.4	39.3
Doing something useful	61.7	59.6	n.c.	65.2	41.7	54.8	64.4	66.8
Work-life balance	54.6	53.0	n.c.	53.9	52.9	46.8	57.2	61.4
Cohort 2016/17 BA-Level								
Work autonomy	92.2	64.8	96.1	42.3	59.8	48.2	67.6	71.1
Job security	73.6	73.1	43.7	60.1	65.6	66.5	69.4	64.7
Learn new things	78.1	70.6	71.2	53.5	65.9	69.2	74.0	71.2
High earnings	33.6	42.4	40.5	32.3	34.6	37.3	32.6	22.0
New challenges	75.2	63.2	59.6	49.3	59.8	65.7	73.7	70.2
Career prospects	38.5	41.1	33.9	42.7	46.5	47.0	54.4	43.6
Social status	48.8	40.3	34.5	41.9	39.3	39.8	41.9	28.7
Doing something useful	60.4	56.1	47.1	42.7	42.7	41.0	54.6	64.9
Work-life balance	60.2	44.9	57.1	45.4	54.1	46.4	50.8	47.6

Cohort 2016/17 MA-Level								
Work autonomy	94.6	65.4	96.4	47.0	59.8	57.6	72.1	73.3
Job security	61.1	76.9	68.0	54.1	61.7	75.6	81.0	60.1
Learn new things	78.2	78.1	81.6	48.2	64.2	72.8	67.6	68.6
High earnings	36.9	34.0	32.5	29.8	34.3	37.4	31.4	34.9
New challenges	78.6	70.6	81.3	50.1	60.9	71.9	72.6	67.5
Career prospects	39.9	37.3	42.3	39.2	45.6	45.2	56.6	47.7
Social status	52.2	41.1	54.4	52.1	43.7	46.5	46.9	40.4
Doing something useful	59.9	58.6	61.3	50.7	47.6	54.4	58.2	62.0
Work-life balance	54.8	52.8	46.1	32.9	53.1	50.6	38.2	55.4
Cohort 2016/17 Male								
Work autonomy	92.1	70.8	96.2	42.4	65.7	59.6	72.4	71.2
Table continue								
Job security	68.3	74.5	55.1	57.5	68.3	71.1	69.8	62.6
Learn new things	79.4	74.0	73.4	51.8	65.6	75.5	67.9	69.6
High earnings	42.2	39.2	42.9	30.9	39.5	47.5	36.8	30.0
New challenges	77.2	67.4	66.9	53.0	62.4	71.5	76.1	67.7
Career prospects	48.2	40.2	44.1	45.0	51.4	50.2	61.2	48.4
Social status	54.6	39.5	42.1	50.6	44.6	43.4	35.2	38.3
Doing something useful	56.7	51.8	39.4	45.7	43.0	40.1	50.2	61.9
Work-life balance	56.3	48.8	48.1	41.8	54.7	50.8	47.4	53.5
Cohort 2016/17 Female								
Work autonomy	94.6	61.5	96.4	46.2	55.3	46.0	67.9	72.6
Job security	65.9	76.0	62.6	59.7	59.3	68.6	78.9	62.7
Learn new things	77.4	75.9	82.2	52.1	64.2	67.1	73.1	70.4
High earnings	30.7	36.1	27.8	32.7	30.6	30.5	28.5	26.1
New challenges	77.1	67.8	79.8	44.3	59.1	65.3	71.0	69.9
Career prospects	33.0	37.9	33.8	36.3	42.0	43.8	51.3	43.5
Social status	48.0	41.7	51.9	36.6	40.2	41.2	51.0	31.0
Doing something useful	62.7	61.4	73.3	44.7	47.9	49.3	60.8	64.8
Work-life balance	58.1	50.3	52.5	41.3	52.6	45.9	42.7	49.3

Source: EUROGRADUATE pilot survey 2018, n.c. = not comparable as job aspect measure differs in DZHW graduate panel from EUROGRADUATE measure.

Appendix 6.21

Table A6.21 Shortages of job characteristics, cohort 2016/17 (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2016/17 Male								
Work autonomy	4.5	12.3	2.1	33.6	16.5	16.7	17.3	11.3
Job security	25.7	15.5	23.2	27.3	19.1	16.7	19.4	18.9
Learn new things	17.6	18.5	23.3	32.5	20.4	16.4	28.9	16.0
High earnings	43.6	48.1	45.7	53.6	44.7	40.0	52.3	43.5
New challenges	18.7	18.1	18.1	30.9	22.9	17.3	16.8	17.4
Career prospects	41.9	39.1	42.4	39.7	32.3	35.9	31.5	27.0
Social status	21.4	25.5	15.6	24.3	24.6	23.3	39.8	24.8
Doing something useful	21.5	21.9	21.3	30.4	29.4	34.3	30.1	16.1
Work-life balance	35.1	38.6	47.3	45.2	30.8	29.6	38.7	27.7
Cohort 2016/17 Female								
Work autonomy	3.7	21.7	2.6	38.3	27.0	29.7	20.6	9.5
Job security	30.0	17.6	32.4	29.8	30.4	20.2	15.9	20.9
Learn new things	19.3	19.9	16.5	35.3	25.9	23.0	22.4	16.1
High earnings	55.2	52.1	52.9	54.1	56.7	57.7	58.0	54.5
New challenges	16.5	22.7	16.8	40.6	28.0	21.5	21.1	15.5
Career prospects	46.1	44.1	46.5	48.3	45.0	44.8	37.1	34.8
Social status	32.7	30.3	16.4	34.2	30.9	34.1	28.2	26.5
Doing something useful	28.1	27.2	20.4	38.8	33.5	32.0	22.9	16.5
Work-life balance	38.4	43.0	46.3	43.8	36.0	39.5	48.6	29.4

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17.

7. Social outcomes

7.1 Introduction

There is growing interest in looking beyond the traditional economic measures of individual success, such as income, employment and GDP per capita, towards non-economic aspects of well-being and social progress, such as life satisfaction, civic engagement and health (OECD[64], 2011). A higher education study is not only an investment that aims at providing a monetary return through a strong labour market career or prepares graduates for continuous and lifelong learning. Higher education is expected to promote engaged citizenship and democratic values, such as tolerance, openness and critical thinking, and thus contribute to higher levels of social cohesion and trust. In order to learn more about orientations and active citizenship of higher education graduates, the EUROGRADUATE survey asked the respondents specifically about values, norms and civic engagement. In this chapter, different dimensions of social outcomes are discussed:

- *Personal attitudes and values*

Section 7.1 discusses to how the EUROGRADAUTE graduates consider their health situation, how happy they are with their current life and analyses the question if the graduates think that most people can be trusted or that one cannot be too careful. The section discusses differences between countries with respect to these indicators and analyses to what extent the indicators are related to labour market outcomes.

- *Active Citizenship: Voluntary work*

Section 7.2 looks at the question if graduates, next to their labour market engagement (or their continued study) are actively engaged in voluntary work. The section not only looks at the extent to which graduates are engaged in voluntary activities, and to what extent this is e.g. related to their labour market status, but also discusses differences between the countries with respect to the areas in which graduates carry out voluntary work.

- *Democratic values*

Section 7.3 focuses around attitudes towards different aspects related to democracy, such as free elections, reliable information provided by media or that courts treat everyone the same. Differences between the countries with respect to the view of graduates on such aspects are discussed as well as the question to what extent these aspects, according to the EUROGRADATUE graduates, apply to the country they live in are presented.

- *View on immigration*

How the EUROGRADUATE respondents are looking at immigration is the core focus of Section 7.4. Do they think that immigration is generally bad or good for their country's economy? Is the cultural life generally enriched or undermined by immigration? Does

[64] OECD (2011), Education at a Glance 2011: OECD Indicators, OECD Publishing.

immigration make their country a better place to live in? These are questions at the core of this section. Not only differences between countries but also relations to labour market outcomes, study experience factors (e.g. foreign study experience) and international mobility are discussed.

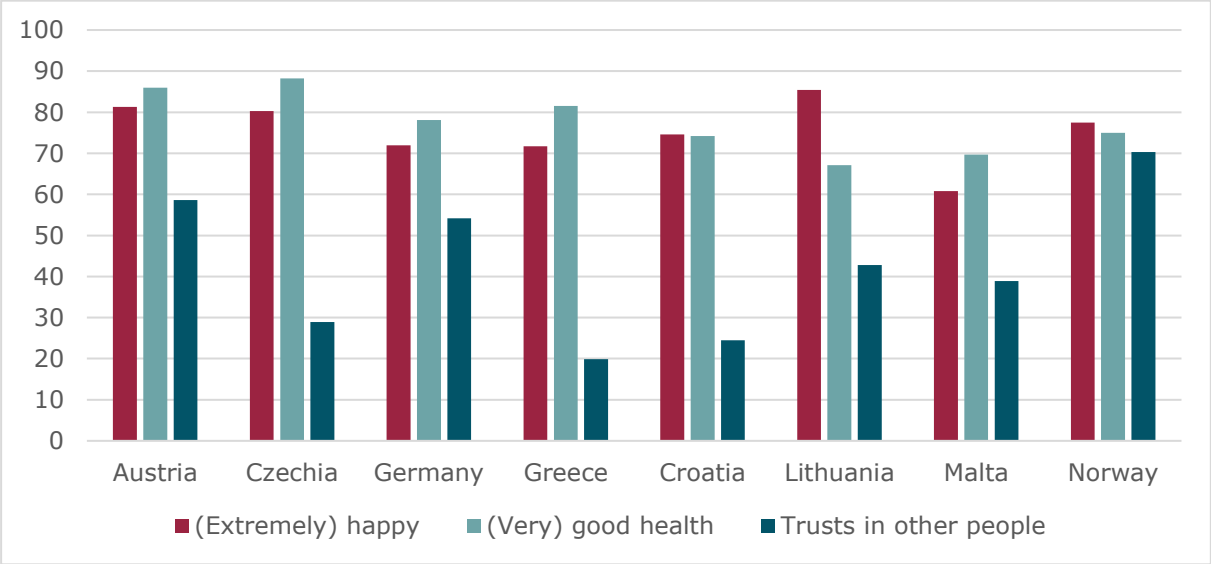
- *Attitudes toward Europe*

The final section (7.5) of this chapter addresses the graduate's attitude towards the European idea and analyses to what extent this is influenced by e.g. international mobility during or after the study period.

7.2 Personal attitudes and values

Overall, a (clear) majority of the EUROGRADUATE respondents reports to be (extremely) happy and in a (very) good health (see Figure 7.1 for the the MA-level graduates of cohort 2016/17 and Table A7.1in Appendix 7.1 of this chapter for further figures). Relatively seen, the data indicates that in Greece and Malta the share among the BA-level graduates (cohort 2012/13) is with around 67% of the graduates reporting to be (extremely) happy relatively low. A similar finding is visible for the BA-level graduates of the cohort 2016/17 in these two countries. However, among this latter group of graduates, the data also show a relative low share of (extremely) happy graduates in Norway (68%). Differences between MA-level and BA-level graduates are generally low with some exceptions. With respect to the health of the graduates, the lowest shares among BA-level graduates is found in Lithuania. However, also in this group at least around two out of three graduates report a (very) good health condition.

Figure 7.1Personal attitudes and values (%): MA-level cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, MA-level cohort 2016/17.

Our third indicator measures the extent to which graduates think that most people can be trusted in contrast to that one cannot be too careful. In all distinguished groups, the highest share of graduates that think that most people can be trusted is found in Norway (ranging from 62% among the BA-level graduates of the cohort 2016/17 to 79% among the MA-level graduates of the cohort 2012/13), followed by Austria and Germany. In the other countries, the data shows that less than half of the graduates think that other people can generally be trusted. In Greece and Croatia, the share of graduates that thinks that other people generally can be trusted is in almost all case even clearly below the 30%.

Box 7.1 Comparison EUROGRADUATE and European Social Survey (ESS): Personal attitutes and values

The three indicators presented in this section are also measured in the European Social Survey (round 8 in 2016). This allows us to compare results from EUROGRADUATE and ESS and to have a brief look to what extent higher education graduates differ from the whole population as surveyed in the ESS. Table B7.1 presents for that reason for the five EUROGRADUATE pilot countries that are included in ESS round 8 the results for the three indicators. First, the result for the whole ESS population, second the result for the group of ESS respondents that holds at least a BA-level degree and are younger than 40 and finally, an average result for the EUROGRADAUTE population based on the figures in Table 7.1 are presented.

Table B7.1 Personal attitudes and values (%)

	Austria	Czechia	Germany	Lithuania	Norway
% (very) happy					
ESS all	78.1	65.6	82.8	54.7	89.1
ESS at least BA and <40 years	76.4	82.8	92.3	77.6	90.7
EUROGRADUATE	81.9	80.1	75.3	82.1	77.5
% in (very) good health					
ESS all	75.6	66.0	59.0	57.9	75.2
ESS at least BA and <40 years	88.1	95.4	78.8	89.9	89.7
EUROGRADUATE	85.5	86.7	80	65.4	74.3
% trust in others					
ESS all	36.9	31.3	32.7	33.1	62.8
ESS at least BA and <40 years	50.5	37.0	50.0	43.4	76.4
EUROGRADUATE	58.0	29.7	50.9	39.0	70.3

Source: ESS (round 8), 2016 (own calculations), EUROGRADUATE pilot survey 2018.

In Czechia, Lithuania and to a lower extent in Germany, we see that according to ESS, the share of (very) happy people among the 'young' graduates with at least a BA-level degree is higher than the share among the whole population. In Austria and Norway, we do not find an impact of the education level. In Germany and Norway, we further find that the EUROGRADAUTE respondents are clearly less happy than the ESS respondents with at least a BA-level degree. To what extent this is related to the fact EUROGRADUATE only considers two cohorts of respondents in contrast to ESS covering all higher education graduates younger than 40 is beyond the current analyses.

Considering the health status of the respondents, we see in all five countries that, based on ESS, the share reporting a (very) good health is clearly higher among those with at least a BA-level degree. In Germany and Austria, the results of the ESS and EUROGRADUATE surveys are strongly comparable. In Czechia, Norway and certainly Lithuania, the share of respondents in (very) good health is (clearly) lower in the EUROGRDUATE data compared to the ESS data.

Finally, we find in all five EUROGRADUATE pilot countries that the share that reports that other persons can in generally be trusted is strongly comparable to the share of 'young' ESS respondents with at least a BA-level degree. Furthermore, we see that the ESS data shows with respect to this indicator a clear relation to the education level of respondents, ranging from a 7%-points difference in Czechia to a 16%-points difference in Germany.

Given the general happiness, health and trustiness of our graduates, it is interesting to see in how far differences in these outcomes are related to the labour market outcomes of the graduate. To do so, three multivariate analyses trying to explain the likelihood that a graduate is (extremely) happy, has a (very) good health and trusts generally in other persons are conducted. The main independent variables of interest included are based on the labour market position of the graduate[65] at time of survey:

- Unemployed
- Working in a job that fits neither the level nor the field of study (double mismatch)
- Working in a job that fits the field of study but not the level (vertical mismatch)
- Working in a job that does not fit the field of study but fits the level (horizontal mismatch)
- Working in a job that fits the field of study and the level (vertical and horizontal match)

All analyses further control for:

- Country
- Cohort (2012/13 versus 2016/17)
- Level of degree (BA-level versus MA-level)
- Type of higher education institution (research university versus non research university)
- Age at time of graduation
- Sex
- Parents with higher education degree (versus parents without higher education degree)
- Migration background[66] (versus no migration background)
- Living in the country of graduation

Table 7.1 presents the significant odds ratio's of key variables in the multivariate analyses[67]. An odds ratio below 1 indicates that graduates with this characteristic are e.g. less happy, less healthy or have less trust in others. An odds ratio above 1 indicates that graduates with this characteristic are e.g. happier, healthier or have more trust in others.

The results show that male graduates are generally less happy than female graduates are. That with age the trust given to other persons grows and that graduates with no migration background also have more trust in others whereas graduates with no higher educated parents are less likely to trust other persons. Finally, those that stay in the country of graduation are less likely (extremely) happy and have less trust in others.

[65] Graduates not currently active on the labour market are not included in the analyses.
[66] Graduates are divided into two groups. The group with a migration background is the group of graduates that were not born in the country they graduated. The group with no migration background is the group of graduates that was born in the country they graduated. A possible migration background of the parents is left aside.
[67] For the full analyses, see Appendix 7.2 of this chapter.

Table 7.1 Multivariate analyses (odds ratio)

	Happy	Health	Trust
Personal characteristics			
Male: yes	0.78		
Age at time of graduation			1.01
First generation HE		0.90	0.80
No migration background			1.18
Lives in country of graduation	0.75		0.78
Labour market characteristics			
No mismatch	Ref.	Ref.	Ref.
Unemployed	0.32	0.71	0.79
Double mismatch	0.46	0.80	0.71
Vertical mismatch	0.68	0.85	
Horizontal mismatch	0.76	0.69	

Source: EUROGRADUATE pilot survey 2018, Germany excluded, only results significant different from 1 are shown.

Considering the labour market situation, some interesting results are visible. All three indicators are indeed related to the labour market situation of the graduates. Those that are unemployed or are working in a job that fits neither their degree level nor their field of study (double mismatch) are significantly less likely (extremely) happy, less healthy and significantly less likely trust other persons. The effects are in particularly strong with respect to the happiness of the graduates. With respect to happiness and health, the results show also that those with a vertical mismatch and those with a horizontal mismatch are less likely happy/healthy than those with a perfect matching job happy/healthy are. Further analyses show that the group that is vertically mismatched does not differ significantly from those with a horizontal mismatch. However, for both holds that they are happier than those with a double mismatch or those that are unemployed.

7.3 Voluntary work

To measure voluntary work activities of the graduates, the EUROGRADUATE survey asked the question *'in the last 12 months, have you done voluntary work in following areas (multiple answers possible)?"*. Graduates were given thereby the possibility to indicate voluntary work in the following areas:

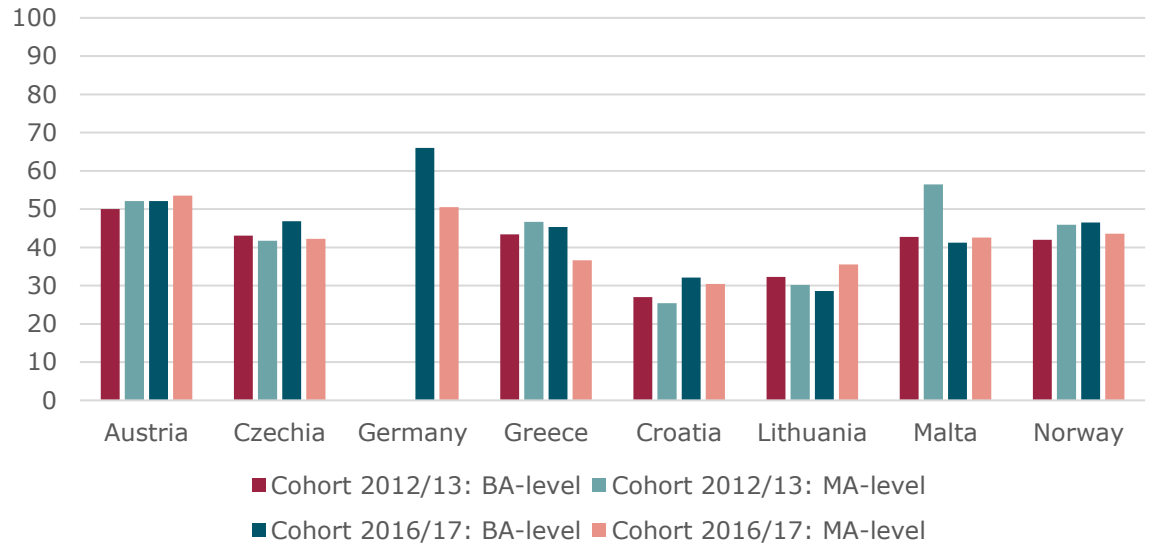
- In the area of sports and exercise,
- In the area of culture and music,
- In the area of leisure and social interaction,
- In the social area, health area, or rescue services,
- In the school or nursery area,
- In the area of youth work outside school or adult education,
- In the area of environment, nature protection or animal rights,
- In the area of politics and political interest groups,
- In the area of professional interest groups,
- In the church or religious area,
- In an area not yet mentioned, namely (please specify) ….

Figure 7.2 shows the share of graduates that have indicated that they carried out voluntary work in at least one of the above-mentioned areas. Overall, the results show that in all

four distinguished groups around 40%-45% of the graduates report voluntary activity in the last 12 months. Voluntary activity 'champions' are the BA-level graduates (2016/17) of Germany with 66%. Next, also for the MA-level graduates (2016/17) in Germany, for all four types of graduates in Austria and for the MA-level graduates (2012/13) in Malta at least half of them report voluntary activities in the last 12 months. The lowest shares of graduates reporting voluntary activities are found in Croatia and Lithuania, where between 25% (MA-level graduates 2012/13 cohort in Croatia) and 36% (MA-level graduate 2016/17 cohort in Lithuania) report voluntary activity in the last 12 months.

Table A7.3 in Appendix 7.3 of this chapter also reports the average number of areas mentioned by graduates who carried out voluntary work. In all countries, the average is around 1.8 and hence, indicates that most of the graduates carry out voluntary work in either one or a maximum two areas. Further looking into the data confirms that in all countries at least 77% of the graduates report less than three areas.

Figure 7.2 Voluntary work (%)



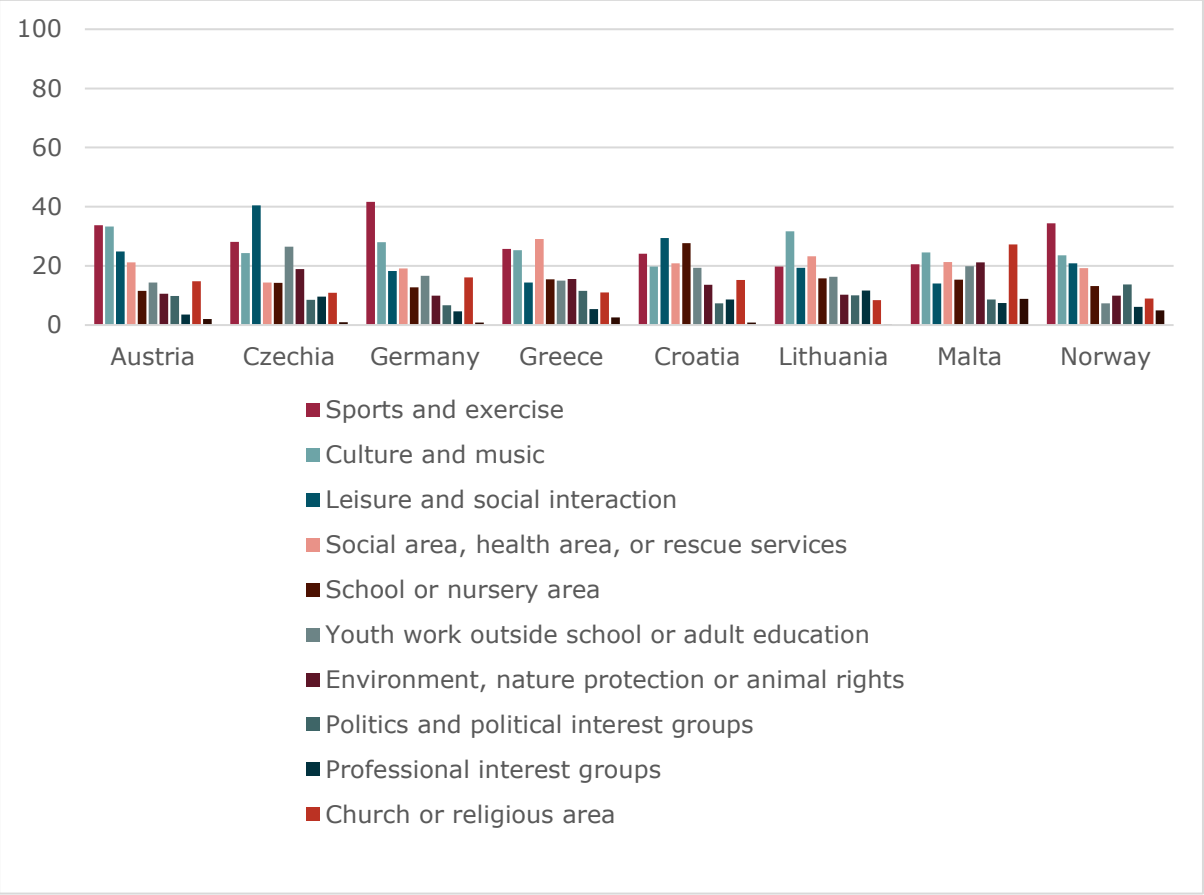
Source: EUROGRADUATE pilot survey 2018, Germany 2012/13 = not available in DZHW graduate panel.

What are the most popular areas to carry out voluntary work? Figure7.3[68] answers that question by presenting for the 2016/17 cohort for the graduates that carried out voluntary work the area in which they did so in the last 12 months. Over all eight countries calculated, *Sports and exercise* is with close to 30% of the voluntary active graduates the most important area. However, looking at the individual countries, *Sport and exercises* is only the most important area only in Austria, Germany and Norway. In Czechia and Croatia, the area of *Leisure and social interaction* has the highest share. In Greece it is the *Social area, health area or rescue services* that attracts the highest share of graduates and in

[68] For the underlying figures, see Table A7.4 in Appendix 7.4 of this chapter.

Lithuania the highest share is visible for *Culture and music.* Finally, in Malta the *Church or religious a*rea attracts the highest share of voluntary activity among the 2016/17 graduates.

Figure 7.3 Voluntary work: areas (%): Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, MA-level and BA-level graduates.

Finally, a multivariate analysis for the group of graduates that are part of the labour force is provided to estimate to what extent labour market outcomes are related to the probability of having carried out voluntary work in the last 12 months (see Appendix 7.5 of this chapter for the full results).

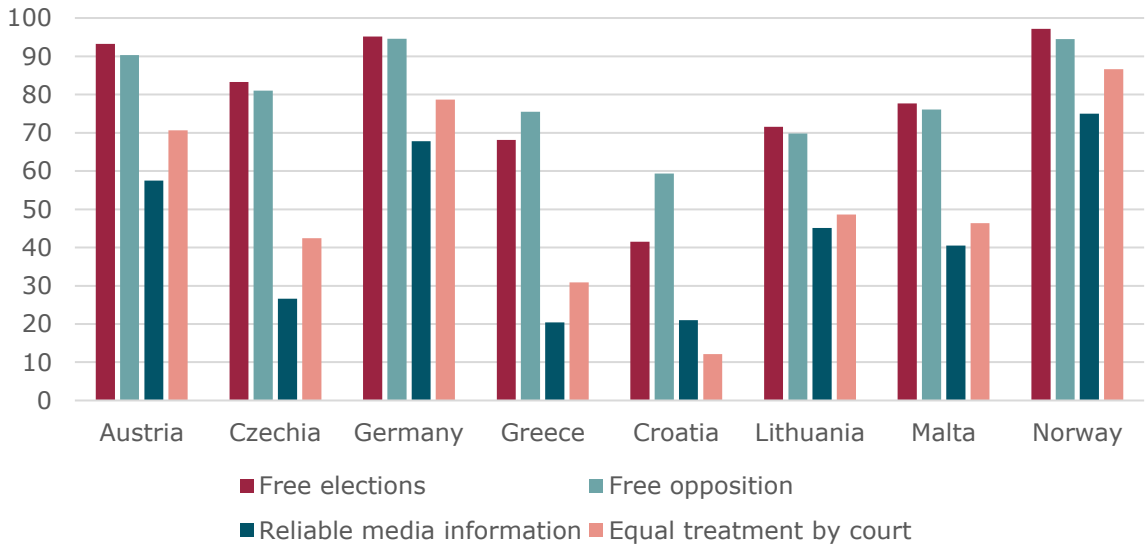
The results confirm that Austrian graduates are relative most likely to carry out voluntary work and that graduates in Croatia and Lithuania are least likely to have carried out voluntary work in the last 12 months. No differences are found between graduates of the two cohorts (2012/13 and 2016/17) and between graduates from MA-level or BA-level programmes. Graduates from research universities are slightly less likely to carry out voluntary work whereas differences between graduates from the distinguished fields of study are small and generally not significant. The exception are graduates from the field *Education, Arts and Humanities* with a significant higher share that carried out voluntary work. With respect to personal background characteristics, male graduates and graduates with no migration background are more likely involved in voluntary activities and the likelihood increases with age.

Finally, the results show that graduates that are unemployed more likely carry out voluntary activities than graduates with an occupation that matches both the level and field of the study. Graduates working in an occupation not matching the level and the field of study (double mismatch) carry out less voluntary work than the optimally matched graduates do. Further analyses show that those that are unemployed at time of survey also carry out more likely voluntary work than those with any type of occupation-study mismatch.

7.4 View on democracy

With respect to the importance for democracy, one can be brief. In all countries, and for both cohorts, at least 80% (and in most cases even more than 90%) of the graduates state that 'free elections, 'free opposition', 'reliable media information' and 'equal treatment by court' are crucial for democracy in general (see Table A7.6 in Appendix 7.6 of this chapter).

Figure 7.4 Application of democratic aspects (%): cohort 2012/13



Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, BA-level and MA-level.

Figure 7.4 shows the answers to the question '*to what extent the graduates think that the aspect applies in the country they are currently living in*'. As analyses have shown that the answers do not differ significantly between MA-level and BA-level graduates, Figure 7.4 presents the combined findings for the cohort 2012/13[69].

Looking at the question to what extent the four aspects apply to the countries, the data shows a different picture that is consistent for both cohorts. Less than half of the EUROGRADUATE respondents that graduated in Croatia state that 'free elections' apply

[69] For the figures of the 2016/17 cohort (only maginally different from the figures of the 2012/13 cohort), see Table A7.6 in Appendix 7.6.

(completely) to their country. This is in sharp contrast to countries such as Austria, Germany and Norway where generally nine out of ten graduates of these countries agree to that statement. In the other countries, the shares range from around 60% to 80%. The picture on 'free opposition' is comparable to the one of 'free elections', although this time also more than half of the respondents that graduated in Croatia think that this applies (completely) in their country. However, relatively seen, the graduates of the Croatian higher education system are still the most critical ones.

With respect to 'reliable media information', except for graduates from Norway and to a lesser extent graduates from Germany and Austria, it is visible that the graduates are very critical. Among the graduates from Malta and Lithuania, less than half of the graduates think that 'reliable media information' applies (completely) to the country they currently live in. Among the graduates of Czechia, it is even less than 30% and among the graduates of Greece and Croatia, the share of graduates that thinks, that 'reliable media information' applies (completely) to their country is 20% or even less.

The graduates of Greece and Croatia are also the most critical ones when looking at the question if 'equal treatment by court' applies to the country they currently live in. No more than one out of eight graduates of the Croatian higher education system think that 'equal treatment by court' applies (completely) to their country. Among graduates of Greece, the share lies between 25%-30%. Further, also among the graduates of Malta, Czechia and Lithuania less than half think that 'equal treatment by court' applies (completely) to their country.

Box 7.2 Comparison EUROGRADUATE and European Social Survey (ESS): Democracy

The most recent results from the ESS with respect to the democracy indicators are from the 2012 ESS survey (round 6). Given that in some countries in the last 8 years (major) changes might have taken place, we need to be careful with comparing the results of ESS and EUROGRADUATE. However, given this warning, we present in Tabel B7.2 and Table B7.3 for two groups of ESS respondents (full population and population younger than 40 years with at least a Bachelor-level degree) the results for four EUROGRADUATE countries.

Table B7.3 Importance for democracy (%)

	Czechia	Germany	Lithuania	Norway
Free elections				
ESS all	87.7	91.4	85.4	94.5
ESS at least BA and <40 years	96.9	95.2	87.6	98.3
EUROGRADUATE	92.4	92.8	92.1	97.2
Free opposition				
ESS all	79.2	88.6	75.3	84.2
ESS at least BA and <40 years	79.8	91.1	78.3	88.9
EUROGRADUATE	82.7	82.5	81.8	88.7
Reliable media				
ESS all	87.4	92.4	83.9	91.9
ESS at least BA and <40 years	86.7	99.3	83.0	99.4
EUROGRADUATE				
Equal treatment by courts				
ESS all	87.4	92.4	83.9	91.9
ESS at least BA and <40 years	86.7	99.3	83.0	99.4
EUROGRADUATE	85.2	92.3	92.5	94.7

Source: ESS (round 8), 2016 (own calculations), EUROGRADUATE pilot survey 2018.

Looking at Table B7.3, the data shows that the differences between the two ESS groups of respondents is in all four countries (relatively) small, indicating that with respect to these four indicators no real education-degree relation is found. Second, also the differences between ESS and EUROGRADAUTE are generally (very) small.

Box 7.2 continued

Considering the extent to which according to the respondents these aspects apply to their current country of living, a slightly more diffuse picture is visible. With respect to 'free elections' the ESS data shows with the exception of Norway a (small) effect related to the education level achieved. For Germany this is also visible for the indicator 'free opposition'. Secondly, for both indicators, in Lithuania a clear difference between the ESS results and the EUROGRADAUTE results are visible. To what extent the results of EUROGRADUATE reflect the changes in the constituency system implemented in 2015, after the existing system was declared unconstitutional, is outside the current analysis. Similar to the picture for the first two indicators, the data shows also for the indictor 'equal treatment by courts' that in Lithuania and, although to a lower extent, in Czechia, the ESS results for the 'young' higher educated graduates differ from the EUROGRADUATE results. Again, given that ESS is measured in 2012 and EUROGRADUATE in 2018, this might reflect real changes in these countries.

Finally, the ESS data confirm the EUROGRADUATE outcomes that respondents in Czechia and Lithuania are relatively seen more critical about the extent to which the media provides reliable information. However, in Czechia the share of EUROGRADUATE respondents that state that the media provides reliable information is with 27% clearly lower than the share of 'young' ESS higher educated respondents (44%). A similar (but less extreme) difference is visible in Germany, whereas in Norway the EUROGRADAUTE respondents are actually more positive about the reliability of the media. Again, it is difficult to estimate to what extent these differences are related to real changes in the last 6 years or in some countries to the current discussion on media reliability and the 'fake news' hype.

Table B7.3 Applies to current country of living (%)

	Czechia	Germany	Lithuania	Norway
Free elections				
ESS all	68.4	85.3	34.7	92.3
ESS at least BA and <40 years	76.8	93.8	41.2	95.9
EUROGRADUATE	79.8	87.5	71.7	95.3
Free opposition				
ESS all	66.1	85.4	50.4	86.2
ESS at least BA and <40 years	63.5	93.1	54.6	88.3
EUROGRADUATE	79.4	86.2	69.2	91.2
Reliable media				
ESS all	39.7	58.5	40.5	67.8
ESS at least BA and <40 years	43.9	64.1	46.9	67.1
EUROGRADUATE	27.2	55.1	43.8	73.9
Equal treatment by courts				
ESS all	19.7	56.7	14.4	81.8
ESS at least BA and <40 years	27.6	71.6	14.7	84.2
EUROGRADUATE	42.3	71.4	49.0	83.5

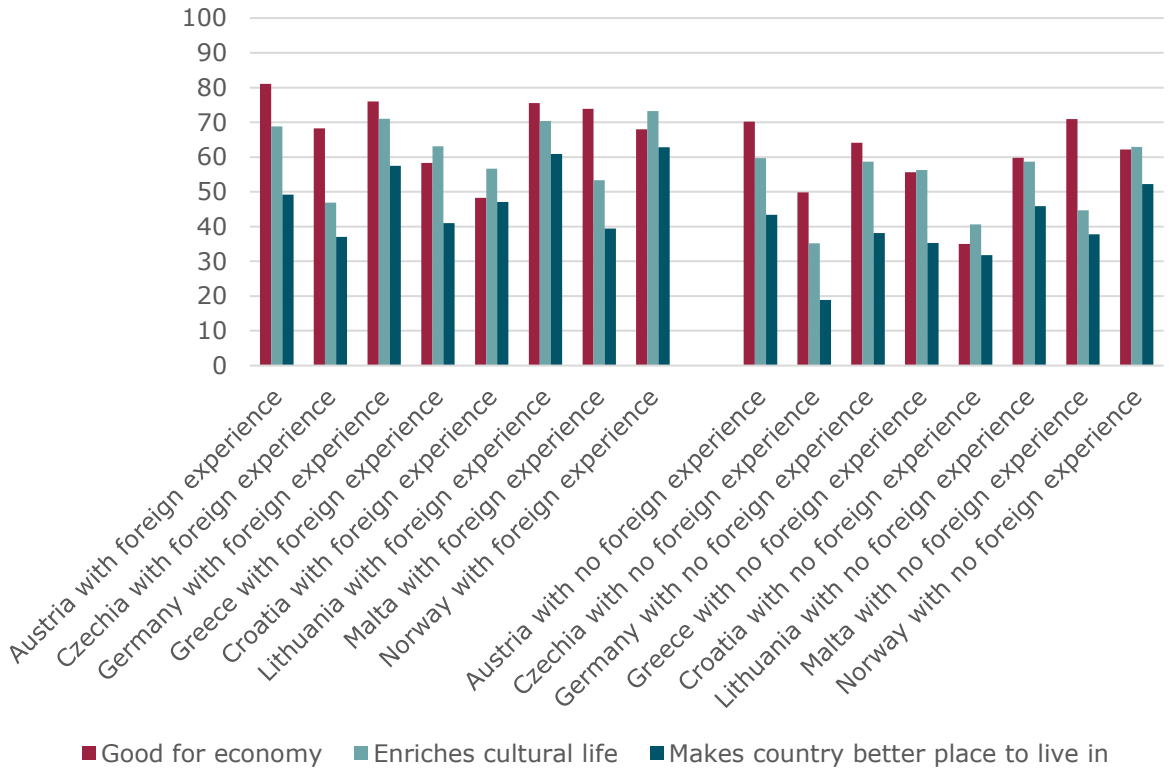
Source: ESS (round 6), 2012 (own calculations), EUROGRADUATE pilot survey 2018.

7.5 View on immigration

Except for Croatia, a (clear) majority of graduates from both cohorts state that it is generally good for the economy of the country that people from other countries immigrate (see Table A7.7 in Appendix 7.7 of this chapter). The countries with the highest shares of graduates that have a positive view on the economic impact of immigration are Austria and Malta (with shares just above 70%). Graduates are generally more critical if it comes to the question if immigration enriches the cultural life in their country. Next to Croatia, the data shows for Malta and Czechia that less than half of the graduates think that immigration enriches the cultural life. The relative highest share of graduates who think that immigration enriches the country's cultural life come from higher education institutions in Norway, Lithuania, Austria and Germany with shares (just) above 60%. Although in a majority of countries graduates think that immigration is beneficial for the economy and in most countries at least half of the graduates think that migration enriches the cultural life, in nearly all countries less than 50% of the graduates think that immigration makes their country a better place to live in.

Does mobility during the study (e.g. Erasmus programme or internship followed abroad) change the view on immigration? Figure 7.5 for the cohort 2016/17 and Table A7.7 in Appendix 7.7 make clear that graduates with foreign experience during the study programme indeed differ with respect to their view on immigration from graduates without foreign experience. Whereas on average around 60% ('good for economy'), 53% ('enriches cultural life) and 38% ('makes country better place to live in) of the graduates without foreign experience during the study period have a positive view, the figures for those with foreign experience are around 70% ('good for economy'), 65% ('enriches cultural life') and 50% ('makes country better place to live in'). If the differences propose a causal relation between following a foreign experience during one's study period and the view on immigration or if graduates with a positive view on immigration more likely follow a foreign experience is thereby not possible to establish based on the EUROGRADAUTE pilot survey.

Figure 7.5 View on immigration (%): Cohort 2016/17 by foreign experience



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, Foreign experience: Study period abroad (e.g. Erasmus) or internship abroad during study period.

As previously with respect to the general happiness, health and trustiness of the graduates, it is interesting to see in how far differences in the views on immigration can be found related to the labour market outcome of the graduate. To do so, three multivariate analyses are carried out trying to explain the likelihood that a graduate thinks that immigration is positive for 'the economy' that immigration enriches the 'cultural life' and that immigration makes the country a 'better place to live in'.

Table 7.2 reports for the key variables the odds ratios for the three analyses (for the full results, see Appendix 7.8 of this chapter). Whereas male graduates more likely see a positive impact of immigration on the economy of the country, they less likely than their female peers see that immigration might enrich the culture of a country. With increasing age, the graduates more likely see a positive impact on all three aspects of immigration. Next, the analyses show that both, those with no higher educated parents as well as those with no migration background have a less positive view on all three aspects of immigration. Finally, the results show that those that live in another country than they graduated from, and hence migrated after graduation or return from a foreign study after graduation, are more likely to see positive impacts of immigration.

Considering the foreign experience during the study period, the results of all three analyses confirm the findings of Table 7.2 that graduates that have spent some time during their study period abroad (be it for a study exchange or be it for an internship) have a more positive view on immigration. Again, the finding cannot confirm that foreign experience is the trigger for this positive view or that the positive view was the trigger for the foreign experience.

Finally, the analyses also give us insight into how the labour market situation of the graduates might influence their view on immigration. With respect to the benefits for the economy, the analysis finds that the graduates that are unemployed or are working in a job that fits neither the degree level nor the field of study (double mismatch) differ significantly from the group with a matching job. The fact that they could not find a job or that they work in jobs they did not study for, seems to influence negatively their view on the effect of immigration on the economy of the country. Graduates that are unemployed also less likely than well-matched graduates think that immigration enriches the cultural life of the country. No significant result for the group with a double mismatch is found. Finally, however, both groups (those that are unemployed and those with a double mismatch) significantly less likely state that immigration makes the country a better place to live in.

Table 7.2 Multivariate analyses: Impact of immigration on

	Economy	Culture	Life
Male: yes	1.24	0.80	
Age at time of graduation	1.01	1.01	1.01
First generation HE	0.77	0.75	0.10
No migration background	0.84	0.84	0.82
Lives in country of graduation	0.48	0.55	0.55
No mismatch	Ref.	Ref.	Ref.
Unemployed	0.79	0.82	0.74
Double mismatch	0.70		0.81
Vertical mismatch			
Horizontal mismatch			
Foreign experience during study	1.41	1.47	1.49

Source: EUROGRADUATE pilot survey 2018, Germany excluded, **/* significant different from 1 on 1%/5% level.

Box 7.3 Comparison EUROGRADUATE and European Social Survey (ESS): View on immigration

In the ESS round 7 (2014), the respondents were asked to express their view on immigration with identical questions as the EUROGRADUATE population. The picture presented in Table B7.4 is interesting from two points of view.

First, in most countries and for most indicators, we see based on the ESS data an education-level effect. 'Young' respondents with at least a Bachelor-level degree are generally more positive about the effects of immigration. This holds for all five EUORGRADUATE pilot countries included in the ESS round 7 for the indicator 'good for economy' and for Austria, Germany and Norway also for the indicators 'enriches cultural life' and 'makes country a better place to live in'. In Czechia and Lithuania we see no real education-level effect for the latter two indicators.

Second, in all five countries, we find that EUROGRADUATE respondents have generally on all three indicators a (clearly) more positive view on immigration than the ESS respondents with a higher education degree that are younger than 40 years. The question is what these differences might drive. Although further analyses will be necessary to confirm it, it is interesting to add to the figures presented in Table B7.4 a further statistic, namely the number of asylum seekers in the European Union. In 2011 and 2012, the number of asylum seekers in the European Union was just above 300.000 per year. In 2013, the number increased to above 400.000, in 2014 to above 600.000 and in 2015 with around 1.3 million asylum seekers in one year, a recent top was reached. In 2016 the number was slightly lower but still close to 1.3 millions and dropped thereafter sharply to just above 700.000 in 2017 and around 640.000 in 2018. With respect to the view on immigration, it might be important to realize that the fieldwork of the ESS round 7 generally started towards the end of 2014 and lasted in some countries until mid 2015 and hence in the period the number of asylum seekers (started to) increase(d) dramatically in the European Union. The fieldwork of the EUROGRADUATE survey (end of 2018 – beginning of 2019) on the other hand took place in a period where the number of asylum seekers had already sharply dropped again and is expected to drop further.

Table B7.4 View on immigration (%)

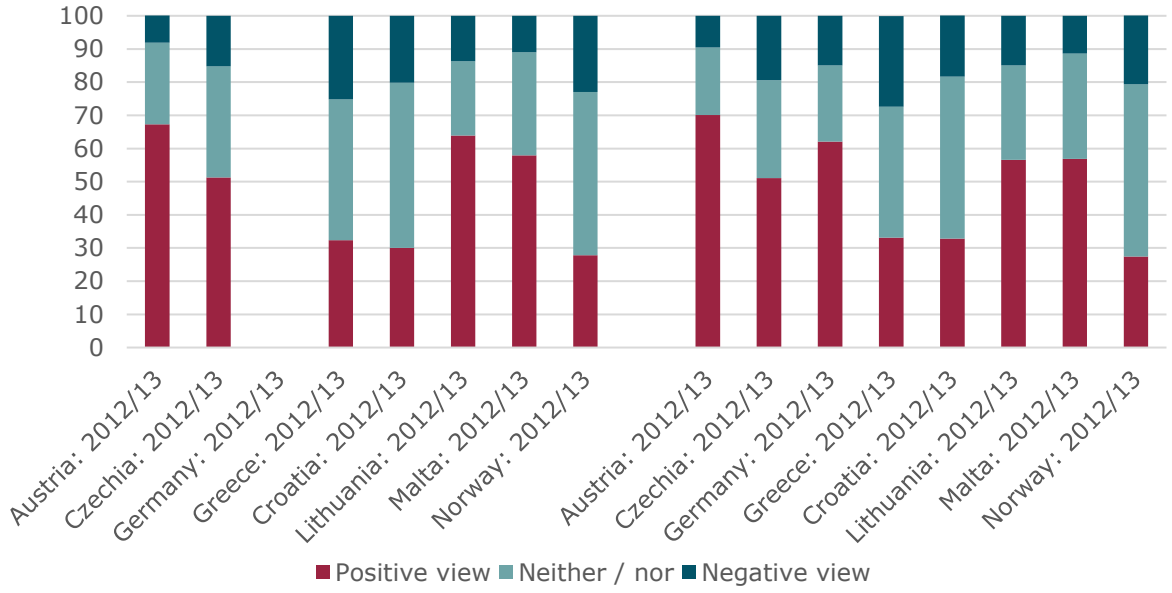
	Austria	Czechia	Germany	Lithuania	Norway
Good for economy					
ESS all	25,2	12,8	42,8	27,6	36,2
ESS at least BA and <40 years	40,3	21,5	62,6	39,1	53,9
EUROGRADUATE	72,4	56,7	71,8	67,4	63,6
Enriches cultural life					
ESS all	26,1	9,9	45,2	22,3	42,8
ESS at least BA and <40 years	45,9	12,6	67,9	23,3	60,7
EUROGRADUATE	62,6	41,6	65	64,1	65,8
Better place to life					
ESS all	15,9	9,5	28,2	18,3	32,3
ESS at least BA and <40 years	26,3	9,4	43,7	21,5	41,4
EUROGRADUATE	48,2	32,2	53,7	57,5	57,9

Source: ESS (round 7), 2014 (own calculations), EUROGRADUATE pilot survey 2018

7.6 View on the EU

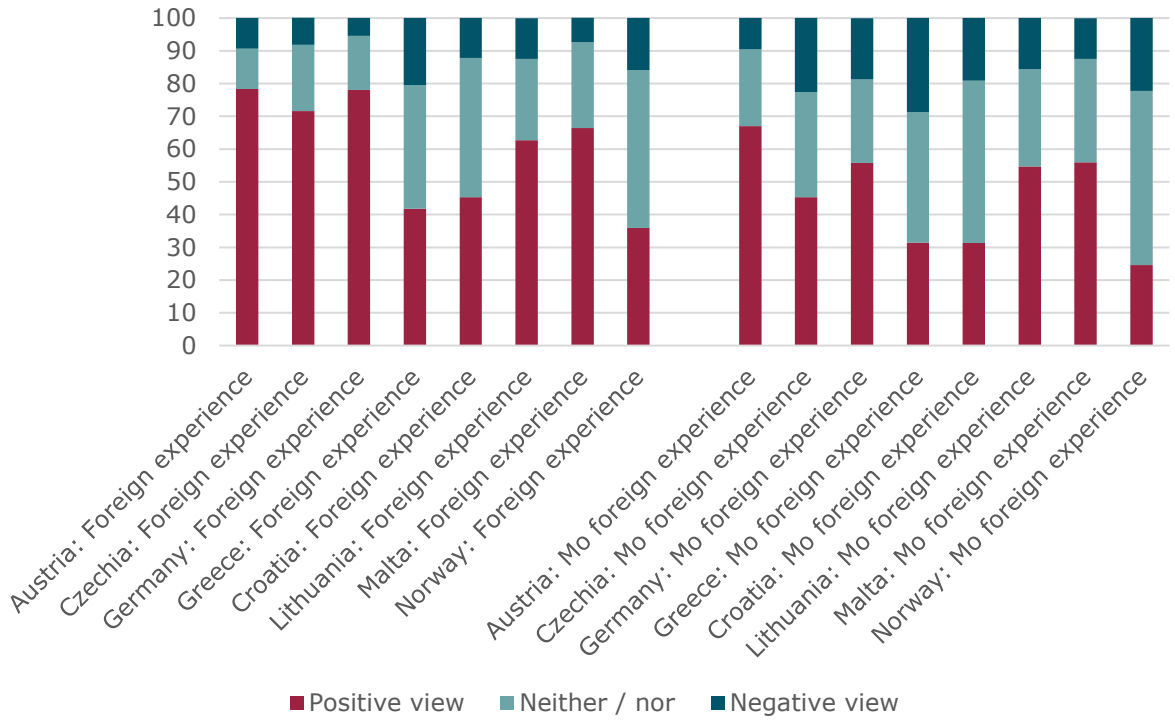
Close to fifty percent of the EUROGRADUATE respondents state that the EU does conjure for a (very) positive image. Figure 7.6 shows that the image of the EU in general does not to differ significantly within a country between the two cohorts of graduates, but does differ significantly between countries. Leaving for the moment the only non-EU country (Norway) aside, the results show that in Austria, Lithuania, Malta, Germany and Czechia, at least 50% of the graduates have a positive view of the EU. In Austria, this holds even for around 70% of the graduates. In this group of countries, less than 20% of the graduates have a negative view of the EU. In Greece and Croatia, the share of graduates with a positive view is around one out of three and at the same time, up to 27% (Croatia, cohort 2016/17) have a negative view of the EU. Finally, in Norway the majority of the graduates answer that they have neither a positive nor a negative view of the EU, which is certainly related to Norway not being a member of the EU.

Figure 7.6 View on the EU (%) by cohort



Source: EUROGRADUATE pilot survey 2018, Germany 2012/13. = not available in DZHW graduate panel. For the underlying figures, see Table A7.9 in Appendix 7.9.

Figure 7.7 View on the EU (%) by foreign experience: cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17. For the underlying figures, see Table A7.9 in Appendix 7.9.

For the cohort 2016/17, Figure 7.7 provides the view on the EU for those graduates that have during their study period spent some time abroad (e.g. Erasmus programme or internship abroad) and those that did not spent some time abroad. In all countries, those that spent some time abroad more likely have a positive view on the EU and less likely a negative view.

Finally, the findings of a multivariate analyses[70] show that male graduates, graduates from research universities as well as graduates from a MA-level programme have more likely a positive view of the EU. Those with no higher educated parents are less likely positive and this also holds for the group of graduates that stayed in the country they graduated in. Those with a foreign experience during the study significantly more likely have a positive view of the EU. Finally, the analysis shows that the labour market situation at time of survey also influences the view of the EU. Graduates that are unemployed and graduates with a double or a vertical mismatch have a more negative view on the EU than those that have found a job that matches both their level and field of study graduated from.

[70] See Appendix 7.10of this chapter for the full results.

7.7 Conclusions

Higher education study is not only an investment that aims at providing a monetary return through a strong labour market career or prepares graduates for continuous and lifelong learning. Higher education is expected to promote engaged citizenship and democratic values, such as tolerance, openness and critical thinking, and thus contribute to higher levels of social cohesion and trust. The results presented in this chapter shows that social outcomes are first of all determined by three main indicators.

Country graduated in:

Social outcomes differ strongly between countries. This holds in particular with respect to the trust graduates have in other persons, their view on the democratic processes in the country they live in, the extent to which they think that immigration enriches their country and their view on the idea of the European Union.

Labour market situation

The labour market position of graduates strongly determines social outcomes indicators. In particularly, the results show that unemployed graduates and graduates with a double mismatch are less happy, report a lower health status, trust less likely in other persons, are more negative about immigration and also are more negative about the European Union. Given that these graduates also more likely lose out in further skills development and are financially strongly disadvantaged, these results again proof the importance of a well-functioning higher education system preparing students for the occupations available in a dynamic labour market.

Mobility

Graduates that report international mobility during the study period (be it by studying partially abroad or following an internship abroad) as well as graduates with post-graduation international mobility are more positive about immigration and the European Union. Mobility can therefore be an important trigger to provide a more international view. However, as indicated before, it is difficult from the data at hand to establish that mobility is the trigger and not the outcome of an already established more positive view on e.g. immigration and the EU.

7.8 Appendix

Appendix 7.1

Table A7.1 Personal attitudes and values (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: BA								
(Extremely) happy	79.7	79.2	n.a.	66.9	80.2	84.8	66.9	79.5
(Very) good health	82.9	86.2	84.8	74.0	69.1	64.5	73.1	74.3
Trusts in other people	57.3	29.5	63.8	23.1	25.4	36.3	43.9	70.1
Cohort 2012/13: MA								
(Extremely) happy	84.9	83.2	n.a.	75.2	79.3	83.3	75.6	85.3
(Very) good health	88.1	87.3	87.1	79.4	69.9	70.5	68.0	80.1
Trusts in other people	60.6	32.6	64.4	31.9	24.8	43.2	48.0	78.7
Cohort 2016/17: BA								
(Extremely) happy	81.5	77.7	78.6	67.9	79.8	75.0	62.7	67.8
(Very) good health	85.1	85.3	81.9	71.4	70.4	59.5	72.8	67.7
Trusts in other people	55.6	27.9	47.6	24.1	21.5	33.8	36.9	61.9
Cohort 2016/17: MA								
(Extremely) happy	81.3	80.3	71.9	71.7	74.6	85.4	60.8	77.5
(Very) good health	86.0	88.2	78.1	81.5	74.2	67.1	69.7	75.0
Trusts in other people	58.6	28.9	54.2	19.9	24.5	42.8	38.9	70.3

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, n.a. = not available in DZHW graduate panel.

Appendix 7.2

Table A7.2: Full results multivariate analyses: Happy, Health and Trust

	Happy		Health		Trust	
	Odds ratio	S.E	Odds ratio	S.E	Odds ratio	S.E
Austria	Ref.		Ref.		Ref.	
Czechia	0.85	0.10	1.01	0.11	0.28**	0.08
Greece	0.63**	0.11	0.59**	0.12	0.25**	0.10
Croatia	0.90	0.08	0.40**	0.09	0.25**	0.07
Lithuania	1.21	0.12	0.32**	0.11	0.50**	0.09
Malta	0.48**	0.12	0.47**	0.13	0.43**	0.11
Norway	0.80*	0.09	0.45**	0.10	1.69**	0.08
Cohort 2016/17: yes	0.89*	0.05	0.97	0.05	0.85**	0.05
Research University: yes	1.04	0.07	1.09	0.06	1.21**	0.06
MA-level degree: yes	1.09	0.06	1.18**	0.06	1.13*	0.05
Business, administration, law and services	Ref.		Ref.		Ref.	
Education, arts and humanities	0.88	0.08	0.76**	0.07	1.13	0.07
Social sciences and journalism	0.90	0.09	0.87	0.09	1.51**	0.08
Natural sciences (incl. mathematics) and health	1.00	0.08	1.13	0.08	1.14	0.07
Technology and engineering	0.93	0.08	1.01	0.08	1.10	0.07
Male: yes	0.78**	0.06	1.04	0.06	0.97	0.05
Age at time of graduation	1.00	0.00	1.00	0.00	1.01**	0.00
First generation HE	0.97	0.05	0.90**	0.05	0.80**	0.05
No migration background	1.00	0.07	1.10	0.06	1.18**	0.06
Lives in country of graduation	0.75**	0.11	1.03	0.10	0.78**	0.09
No mismatch	Ref.		Ref.		Ref.	
Unemployed	0.32**	0.09	0.71**	0.09	0.79*	0.09
Double mismatch	0.46**	0.09	0.80*	0.09	0.71**	0.09
Vertical mismatch	0.68**	0.08	0.85*	0.08	0.92	0.08
Horizontal mismatch	0.76**	0.10	0.69*	0.09	0.86	0.09
Constant	9.04**	0.16	6.65**	0.16	1.15	0.14

Source: EUROGRADUATE pilot survey 2018, Germany excluded, **/* significant different from 1 on 1%/5% level.

Appendix 7.3

Table A7.3 Voluntary work (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: BA-level	50.0	43.1	n.a.	43.4	27.0	32.3	42.7	42.0
Cohort 2012/13: MA-level	52.1	41.7	n.a.	46.7	25.4	30.2	56.5	45.9
Cohort 2016/17: BA-level	52.1	46.8	66.0	45.3	32.1	28.6	41.2	46.5
Cohort 2016/17: MA-level	53.5	42.2	50.5	36.6	30.4	35.5	42.6	43.6
Average number of areas	1.7	1.9	1.8	1.7	1.9	1.6	1.8	1.6

Source: EUROGRADUATE pilot survey 2018, n.a. = not available in DZHW graduate panel.

Appendix 7.4

Table A7.4 Voluntary work: areas (%): Cohort 2016/17

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Sports and exercise	33.8	28.1	41.6	25.7	24.1	19.8	20.6	34.4
Culture and music	33.3	24.3	28.0	25.3	19.8	31.7	24.5	23.6
Leisure and social interaction	24.9	40.5	18.3	14.4	29.4	19.4	14.1	20.9
Social area, health area, or rescue services	21.2	14.4	19.1	29.1	20.9	23.3	21.3	19.3
School or nursery area	11.6	14.3	12.8	15.5	27.7	15.8	15.4	13.2
Youth work outside school or adult education	14.4	26.5	16.7	15.0	19.4	16.3	19.9	7.3
Environment, nature protection or animal rights	10.6	18.9	9.9	15.6	13.6	10.3	21.2	9.9
Politics and political interest groups	9.8	8.5	6.7	11.6	7.3	10.1	8.6	13.7
Professional interest groups	3.6	9.6	4.6	5.4	8.6	11.7	7.4	6.2
Church or religious area	14.8	10.9	16.1	11.0	15.2	8.4	27.3	9.0
Other area	2.0	1.0	0.8	2.6	0.9	0.3	8.9	5.0

Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17, MA-level and BA-level graduates.

Appendix 7.5

Table A7.5: Full results multivariate analyses: Voluntary work in last 12 months

	Voluntary work	
	Odds ratio	S.E.
Austria	Ref.	
Czechia	0.77**	0.08
Greece	0.67**	0.10
Croatia	0.36**	0.07
Lithuania	0.39**	0.10
Malta	0.68**	0.12
Norway	0.58**	0.08
Cohort 2016/17: yes	1.00	0.05
Research University: yes	0.83**	0.06
MA-level degree: yes	1.05	0.05
Business, administration, law and services	Ref.	
Education, arts and humanities	0.63**	0.07
Social sciences and journalism	0.64**	0.08
Natural sciences (incl. mathematics) and health	0.70**	0.07
Technology and engineering	0.56**	0.08
Male: yes	1.13*	0.05
Age at time of graduation	1.02**	0.00
First generation HE	0.97	0.05
No migration background	1.14*	0.06
Unemployed	1.26**	0.09
Double mismatch	0.83*	0.12
Vertical mismatch	1.04	0.11
Horizontal mismatch	0.89	0.12
Constant	4.29**	0.05

Source: EUROGRADUATE pilot survey 2018, Germany excluded, **/* significant different from 1 on 1%/5% level.

Appendix 7.6

Table A7.6 Importance and application of democratic aspects (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13:								
Importance for democracy								
Free elections	97.1	93.3	98.6	94.3	91.1	92.8	93.7	97.8
Free opposition	95.7	83.9	98.3	94.1	84.8	82.9	92.8	92.1
Reliable media information	95.5	86.6	98.4	92.9	91.9	93.4	88.8	95.6
Equal treatment by court	96.7	88.6	98.1	92.4	93.6	93.2	88.9	96.9
Applies to country								
Free elections	93.2	83.3	95.2	68.1	41.5	71.6	77.7	97.2
Free opposition	90.3	81.0	94.6	75.5	59.3	69.8	76.1	94.5
Reliable media information	57.5	26.6	67.8	20.4	21.0	45.1	40.5	75.0
Equal treatment by court	70.6	42.4	78.7	30.9	12.1	48.6	46.4	86.6
Cohort 2016/17:								
Importance for democracy								
Free elections	96.1	91.4	92.8	94.0	88.8	91.4	91.8	96.6
Free opposition	94.8	81.4	92.5	89.9	82.9	80.7	89.4	85.3
Reliable media information	94.5	79.7	92.3	91.9	88.7	91.6	88.4	93.8
Equal treatment by court	95.6	86.6	93.7	93.9	91.3	92.8	90.8	94.9
Applies to country								
Free elections	91.3	76.3	87.5	63.4	43.4	71.7	73.7	93.4
Free opposition	88.5	77.8	86.2	74.0	54.1	68.6	73.8	87.8
Reliable media information	54.0	27.7	55.1	16.6	17.7	42.5	33.8	72.7
Equal treatment by court	70.3	42.2	71.4	25.6	13.5	49.3	35.7	80.3

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, BA-level and MA-level.

Appendix 7.7

Table A7.7 View on immigration (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13:								
Good for economy	71.6	59.4	79.0	52.3	43.4	71.6	73.6	63.6
Enriches cultural life	63.0	45.4	71.5	50.0	47.8	66.7	48.2	66.1
Makes country better place to live in	47.2	27.3	55.7	35.4	38.7	54.1	39.0	52.9
Cohort 2012/13: no foreign experience								
Good for economy	68.2	55.4	77.2	49.9	42.4	68.4	73.0	61.2
Enriches cultural life	58.8	40.6	68.7	47.8	46.8	65.9	46.6	64.8
Makes country better place to live in	43.6	23.1	53.2	33.9	37.6	52.5	38.6	48.5
Cohort 2012/13: with foreign experience								
Good for economy	78.3	76.3	83.3	68.3	58.3	83.4	79.4	70.3
Enriches cultural life	71.2	67.4	78.4	64.3	62.9	69.5	65.5	70.0
Makes country better place to live in	54.4	46.9	61.8	45.1	55.9	60.0	43.5	65.4
Cohort 2016/17:								
Good for economy	73.2	53.9	67.4	56.0	36.4	63.2	71.2	63.6
Enriches cultural life	62.2	37.7	62.2	57.4	42.2	61.5	46.0	65.5
Makes country better place to live in	45.0	22.8	43.7	36.2	33.3	49.4	38.0	54.8
Cohort 2016/17: no foreign experience								
Good for economy	70.2	49.8	64.1	55.6	35.0	59.8	70.9	62.2
Enriches cultural life	59.7	35.2	58.7	56.3	40.6	58.7	44.7	62.9
Makes country better place to live in	43.4	18.9	38.1	35.3	31.8	45.9	37.8	52.2
Cohort 2016/17: with foreign experience								
Good for economy	81.1	68.3	76.0	58.3	48.3	75.5	73.9	68.0
Enriches cultural life	68.8	46.9	71.0	63.1	56.7	70.4	53.3	73.2
Makes country better place to live in	49.2	37.0	57.5	41.0	47.1	60.9	39.4	62.8

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, BA-level and MA-level, Foreign experience: Study period abroad (e.g. Erasmus) or internship abroad during study period.

Appendix 7.8

Table A7.8: Full results multivariate analyses: View on immigration

	Economy		Culture		Life	
	Odds ratio	S.E	Odds ratio	S.E	Odds ratio	S.E.
Austria	Ref.		Ref.		Ref.	
Czechia	0.45**	0.09	0.39**	0.08	0.38**	0.00
Greece	0.50**	0.10	0.88	0.10	0.80*	0.02
Croatia	0.27**	0.07	0.57**	0.07	0.83*	0.01
Lithuania	0.99	0.10	1.26**	0.10	1.55**	0.00
Malta	1.00	0.12	0.55**	0.11	0.80	0.06
Norway	0.77**	0.08	1.29**	0.08	1.63**	0.00
Cohort 2016/17: yes	0.84**	0.05	0.82**	0.05	0.85**	0.00
Research University: yes	1.25**	0.06	1.29**	0.06	1.25**	0.00
MA-level degree: yes	1.11*	0.05	1.08	0.05	1.08	0.14
Business, administration, law and services	Ref.		Ref.		Ref.	
Education, arts and humanities	0.97	0.07	1.39**	0.07	1.22**	0.00
Social sciences and journalism	1.25**	0.08	1.50**	0.08	1.39**	0.00
Natural sciences (incl. mathematics) and health	0.98	0.07	1.14*	0.07	1.07	0.32
Technology and engineering	1.00	0.07	1.12	0.07	0.95	0.44
Male: yes	1.24**	0.05	0.80**	0.05	0.96	0.37
Age at time of graduation	1.01**	0.00	1.01**	0.00	1.01**	0.00
First generation HE	0.77**	0.05	0.75**	0.05	0.10**	0.00
No migration background	0.84**	0.06	0.84**	0.06	0.82**	0.00
Lives in country of graduation	0.48**	0.10	0.55**	0.09	0.55**	0.00
No mismatch	Ref.		Ref.		Ref.	
Unemployed	0.79**	0.12	0.82*	0.09	0.74**	0.00
Double mismatch	0.70**	0.11	0.86	0.09	0.81*	0.01
Vertical mismatch	0.88	0.11	0.95	0.07	0.92	0.24
Horizontal mismatch	0.96	0.09	1.05	0.09	1.07	0.43
Foreign experience during study	1.41**	0.06	1.47**	0.06	1.49**	0.00
Constant	4.16**	0.17	2.36**	0.15	1.19**	0.22

Source: EUROGRADUATE pilot survey 2018, Germany excluded, **/* significant different from 1 on 1%/5% level.

Appendix 7.9

Table A7.9 View on the EU (%)

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13								
Positive view	67.3	51.3	n.a.	32.4	30.0	63.9	57.9	27.8
Neither / nor	24.6	33.5	n.a.	42.4	49.8	22.4	31.1	49.2
Negative view	8.2	15.2	n.a.	25.2	20.2	13.7	11.0	23.0
Cohort 2016/17								
Positive view	70.1	51.1	62.1	33.1	32.8	56.6	56.9	27.4
Neither / nor	20.4	29.5	23.0	39.5	48.9	28.5	31.7	52.0
Negative view	9.5	19.4	14.9	27.3	18.4	14.9	11.4	20.7
Cohort 2016/17: Foreign experience								
Positive view	78.3	71.6	78.1	41.8	45.3	62.7	66.4	35.9
Neither / nor	12.4	20.2	16.5	37.7	42.5	24.8	26.2	48.2
Negative view	9.3	8.3	5.4	20.5	12.2	12.4	7.5	15.9
Cohort 2016/17: No foreign experience								
Positive view	67.0	45.3	55.8	31.4	31.3	54.7	56.0	24.6
Neither / nor	23.5	32.1	25.5	39.9	49.6	29.7	31.5	53.2
Negative view	9.5	22.6	18.6	28.7	19.1	15.6	12.4	22.2

Source: EUROGRADUATE pilot survey 2018, n.a. = not available in DZHW graduate panel.

Appendix 7.10

Table A7.10 Full results multivariate analyses: Positive view on EU

	Positive view of EU	
	Odds ratio	S.E
Austria	Ref.	
Czechia	0.44**	0.08
Greece	0.20**	0.10
Croatia	0.24**	0.07
Lithuania	0.78**	0.10
Malta	0.79*	0.12
Norway	0.16**	0.08
Cohort 2016/17: yes	0.99	0.05
Research University: yes	1.33**	0.06
MA-level degree: yes	1.10*	0.05
Business, administration, law and services	Ref.	
Education, arts and humanities	0.79**	0.07
Social sciences and journalism	1.02	0.08
Natural sciences (incl. mathematics) and health	0.76**	0.07
Technology and engineering	0.83**	0.07
Male: yes	1.71**	0.05
Age at time of graduation	1.00	0.00
First generation HE	0.71**	0.05
No migration background	0.91	0.06
Lives in country of graduation	0.50**	0.09
No mismatch	Ref.	
Unemployed	0.81*	0.09
Double mismatch	0.72**	0.09
Vertical mismatch	0.85*	0.07
Horizontal mismatch	0.87	0.09
Foreign experience during study	1.67**	0.06
Constant	3.63**	0.15

Source: EUROGRADUATE pilot survey 2018, Germany excluded, **/* significant different from 1 on 1%/5% level.

8. Further studies and continuous learning

8.1 Introduction

Graduation from a higher education programme is not the end of the learning journey. Rather, it is an important crossroad. Do I continue (directly) to study at a higher education institution? Do I enter the labour market and upskill me by learning by doing or by following further training related to the occupation? Will I re-enter higher education after some period on the labour market?

This chapter discusses these decisions in more detail for the graduates of the eight countries of the EUROGRADUATE Pilot survey. The setup of the chapter is as follows. What share of graduates (directly) continued to study and what their reasons for this decision were is the first question analysed. Next, the chapter discusses to what extent the graduates think that the study programme graduated from prepared them for the further learning. Thirdly, the chapter analyses to what extent up-skilling takes place (continuation on a higher study level) and to what extent re-skilling (change in field of study) takes place. It also analyses the reasoning for possible re-skilling. Moreover, the level at which the further study takes place is discussed. Fourthly, the chapter analyses the question if graduates continue to study at the higher education institution they graduated from in 2012/13 or if they move, and if they move if this includes international mobility. Finally, the chapter looks at the highest degree level the graduates have gained at time of survey, and hence 5 years after graduation from the BA-degree level.

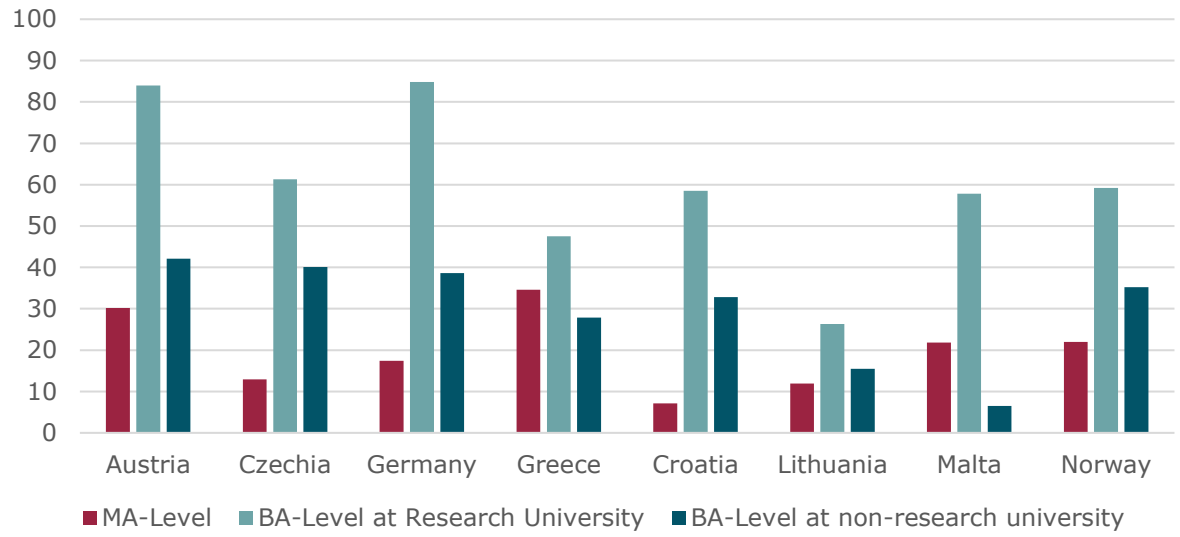
8.2 Continuation of learning at a higher education institution

That graduation from a higher education programme does not imply leaving the higher education system is cearly visible in the EUROGRADUATE data. . A clear majority of the BA-level graduates continues to study and, in some countries a substantial share of the MA-level graduates has entered a further higher education study after receiving their MA degree (see Figure 8.1 and Table A8.1 in Appendix 8.1). Among BA-level graduates of the cohort 2012/13, the share that continued ranges from 38% in Lithuania to 74% in Austria. For the BA-level graduates of the cohort 2016/17, the share ranges from 22% in Lithuania to 65% in Austria[71]. The question if a BA-level degree is seen as the entrée ticket to the labour market or generally the entrée ticket for further study is strongly related to the question if the BA-level programme has been followed at a non-research university or at a research university. The former one more likely providing professionally orientated BA-level programmes. The findings confirm that (see Figure 8.1). BA-level graduates from

[71] Given that the time frame for the cohort that graduated in 2012/13 to start a further study within the EUROGRADAUTE survey is four years longer than for the cohort that graduated in 2016/17, it is not surprisingly to find that the share of graduates that continued to study in the former cohort is (slightly) higher than the share in the latter cohort.

research universities in all countries more likely continue to study than BA-level graduates from non-research universities. In Austria and Germany, with around 85% of the BA-level graduates from research universities to continue to study, entering the labour market with a BA-level degree is rather the exception than the rule. For MA-level graduates of the cohort 2012/13, the shares finally range from 21% in Lithuania and Croatia to around 45% in Greece and Malta.

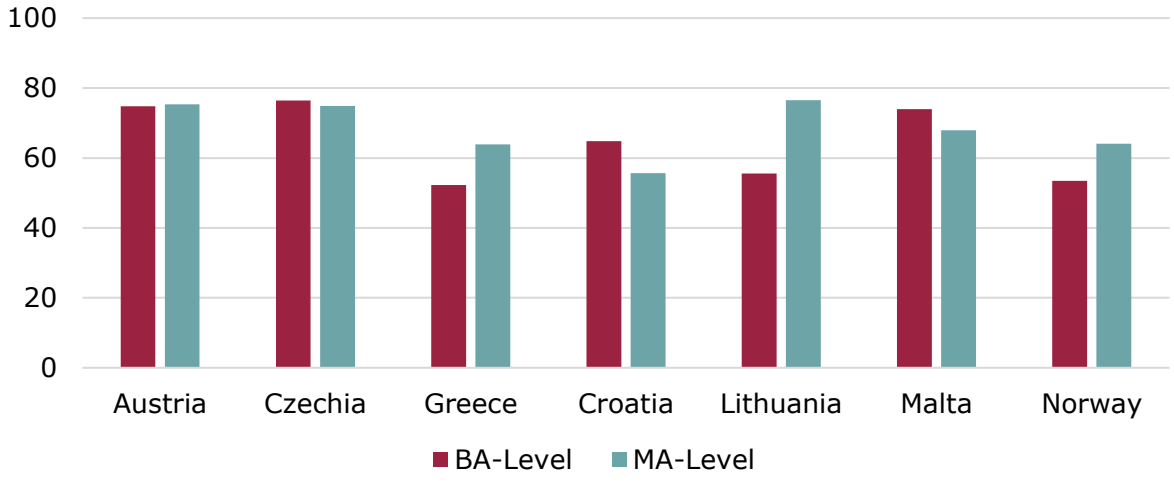
Figure 8.1 % of graduates that continued to study: cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, Cohort 2016/17. For the underlying figures, see Appendix 8.1.

Given that a substantial share of our EUROGRADAUTE pilot graduates continues to study, it is of crucial importance that the study programme they graduated from prepares them well for further learning. Figure 8.2 presents the share of graduates that continued to study and indicates that the study programme they graduated from in 2012/13 provided them with a (very) good basis for further learning. In all countries, and for both BA-level and MA-level graduates, a majority reports that the study programme provided a (very) good basis. However, for MA-level programmes, the majority is relatively small in Greece, Lithuania and Malta. At the BA-level, graduates from Austria, Czechia, Lithuania and to a slighter extent Malta are the most satisfied graduates with respect to this indicator. In these countries around or even above 70% of the graduates, report that the study programme provided a (very) good basis for further learning.

Figure 8.2 Study programme provided (very) good basis provided by programme (%): Cohort 2012/13



Source: EUROGRADUATE pilot survey 2018, cohort 2012/13. For the underlying figures, see Appendix 8.2

8.2.1 Which graduates continue, what are their reasons?

Having established that, among BA-level graduates, a significant share of the EUROGRADUATE pilot survey graduates continued to study, this section looks in more detail into the questions '*who are the graduates that continue*' and '*what are the reasons for continuing*'. To start with, Table 8.1 presents for the BA-level 2012/13 cohort insights into differences between five distinguished fields of study.

Table 8.1 % of BA-level graduates that continued to study by field of study

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13 BA-Level								
Education, arts and humanities	64.0	69.6	59.7	63.8	61.4	47.9	64.5	65.4
Social sciences and journalism	81.5	80.7	64.3	n.a.	n.a.	44.9	n.a	71.2
Business, administration, law and services	76.6	61.1	52.0	62.4	43.2	35.0	78.9	56.3
Natural sciences (incl. mathematics) and health	71.2	53.9	56.5	57.2	73.0	39.5	51.1	59.6
Technology and engineering	84.3	84.3	48.4	46.1	58.7	29.4	52.4	45.2
All programmes	74.2	68.6	54.6	57.2	56.6	37.8	65.9	60.1

Source: EUROGRADUATE pilot survey 2018, cohort 2012/23, Germany cohort 2012/13: DZHW graduate panel, n.a. = not available (too few cases).

To get a step further into the question '*who are the graduates that continue to study*', a multivariate analysis is carried out with as dependent variable a dummy for further learning (1 = continued to study, 0 = did not continue to study). Next to fixed effects for country and field of study, five personal background (age, sex, a dummy for higher educated

parents, a dummy for no migration background and the financial situation of the parents[72]) and three judgements about the study programme graduated from (basis to start working[73], basis for further career and basis for further learning) are included. Table 8.2 presents for the key variables the odds ratios for the analyses carried out[74]. An odds ratio of below 1 indicates thereby that a graduate with this characteristic less likely continued to study further whereas an odds ratio of above 1 indicates that a graduate with this characteristic more likely continued to study. Only odds ratio's significant different from 1 are presented.

Table 8.2 Multivariate analyses for BA level graduates on probability to continue to

	2016/17 cohort	2012/13 cohort
Research university: Yes	3.52	3.51
Age at time of graduation	0.98	0.97
No higher educated parents: Yes	0.66	0.62
Financial situation of parents during study time		0.86
Study programme was a (very) good basis for starting to work: Yes	0.79	n.a.
Study programme was a (very) good basis for further learning: yes	1.98	1.99
Study programme was a (very) good basis for future career: Yes		

Source: EUROGRADUATE pilot survey 2018, Note: Germany is excluded, only outcomes significant different from 1 are shown.

The first finding confirms our earlier finding that BA-level graduates from research universities have a significant higher likelihood to continue to study than BA-level graduates from non-research universities. With respect to personal background characteristics, the analyses show that graduates with no higher educated parents less likely continue to study and with increasing age at time of graduation the likelihood to continue to study also decreases. Given that the analyses control for the financial situation of the parents, the former finding is not related to the fact that graduates with no higher educated parents are less financially well off and hence have fewer opportunities to continue to study. With respect to the financial situation, the results show for the 2012/13 cohort that graduates from less wealthy parents indeed less likely continue study after the BA-level degree. Finally, with respect to the respondent's judgement on the study programme graduated from, those that continued to study in general are more critical about the basis the study programme provided to start working (cohort 2016/17) and are more satisfied about the basis the study programme provided for further learning. The former result seems to indicate that graduates critical about the basis to start working and

[72] The financial situation of the parents is measured on a 5-point Likert scale on basis of the following question: 'How well-off financially do you think your parents (guardians) were during your time as a student compared with other families?' with 1 = 'very well off' to 5 = not at all well off.

[73] The basis to start working was only asked for the graduates of the cohort 2016/17.

[74] For the full results, see Appendix 8.3 of this chapter.

hence, graduates that might be afraid of failing during the transition from higher education to the labour market, more likely postpone the labour market entrance.

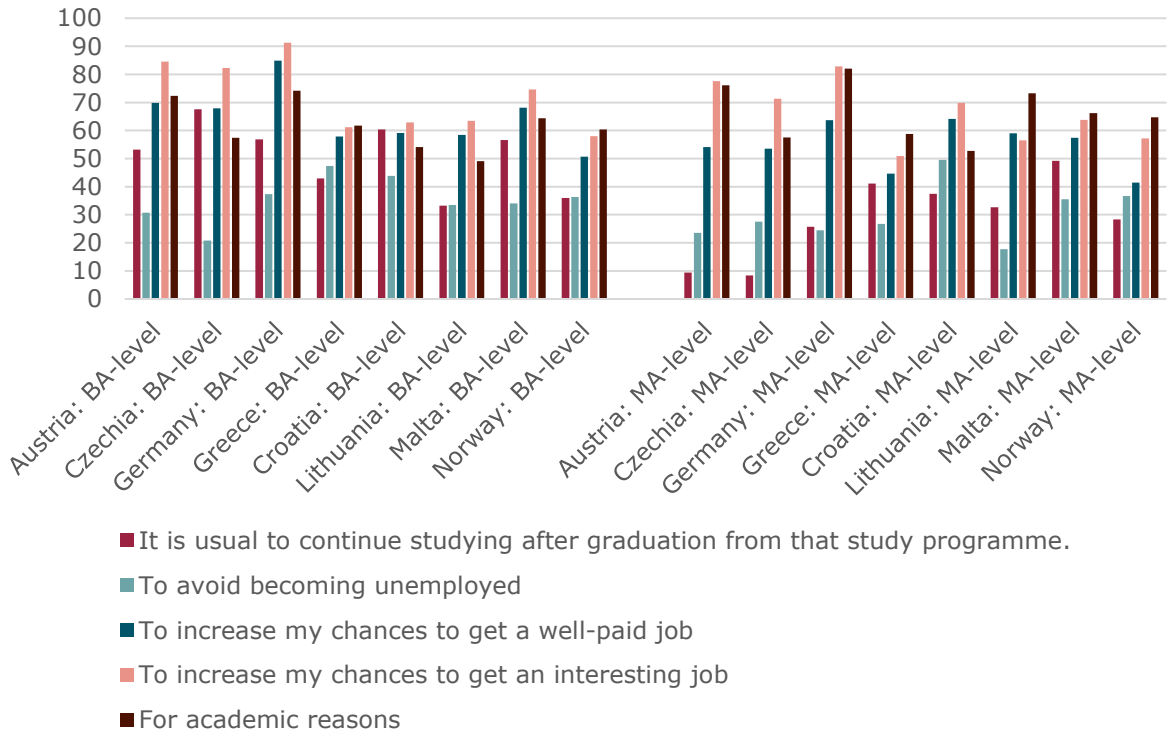
Next to the outcomes of the multivariate analyses on the probability to continue to study, the EUROGRADUATE pilot survey allows us also to investigate the reasons for further study in a more direct manner. Graduates that continued to study were asked to indicate on a 5-point Likert scale how important a restricted set of reasons were for their decision to continue to study. Figure 8.3 presents the share of graduates that indicated that a certain reason was of (very) high importance in their decision. For comparison reasons, the table also presents the findings based on the MA-level graduates of the same cohort. The five reasons distinguished can be divided into three types.

First, the question if continuing to study is seen as usual in a country for the type of graduates. In Norway and Lithuania (two of the countries with a relative low share of BA-level graduates that continued to study), as expected, the findings show that this reason is not anticipated by a large share of the graduates as an important reason why they continued to study. In Czechia on the other hand, two out of three BA-level graduates indicate that this reason was (very) important. Not surprisingly, for MA level graduates the results show in nearly all countries that a (significant) lower share of the graduates mentioned that reason.

A second type of reason is that graduates might continue for academic reasons. In other words, if graduates are interested in an academic career, a MA-level (or often a PhD) is required to enter the world of academia. Both, for BA-level and MA-level graduates, in all countries a (clear) majority of the graduates who continued to study indicate that this was a (very) important reason.

Finally, Figure 8.3 shows the answers on three labour market related reasons. The first, to avoid unemployment, seems to be the least important of the labour market related reasons. Only in Greece and Croatia more than 40% of the BA-level graduates (and in Croatia nearly 50% of the MA-level graduates) report this as a (very) important reason. This finding is in line with the relative high unemployment rates in these two countries. In the other countries, with (relative) low unemployment rates, avoiding unemployment is not a major reason for graduates to continue to study. More likely, the graduates hope to increase their chances to find through the further study a well-paid and interesting job. In all countries, except for Norway most of the graduates report that '*to increase my chances to get a well-paid job*' and '*to increase the chances to get an interesting job*' is a (very) important reason for further study.

Figure 8.3 Reasons for further study (%): Cohort 2012/13



Source: EUROGRADUATE pilot survey 2018, Cohort 2012/13, Germany cohort 2012/13: DZHW graduate panel. For the underlying figures, see Appendix 8.4.

8.2.2 Up-skilling or re-skilling?

Having made the decision to continue to study, the second step is to decide on the level of the study programme and if one continues in the field of study graduated from or changes to another field of study.

That continuation after the BA-level degree not one-by-one means a MA-level programme is visible in Table 8.3. In Austria, Czechia, Germany, Greece and Croatia, indeed the majority of the BA-level graduates enter a MA-level programme and within these countries, this holds for all fields of study. In Malta and Lithuania, it is still the first choice for nearly 70% of the BA-level graduates. However, among the Lithuanian graduates of *Business, Administration, Law and Services,* nearly half of the graduates continue to study with a second BA-level programme. Finally, just slightly above 50% of the Norwegian start as first follow-up study a MA-level degree programme. Looking within Norway at the different fields of study, the data shows that the average is clearly influenced by the graduates from *Education, Arts and Humanities* programmes. Among these graduates, only around 40% continue on the MA level. Looking further into the data, it is visible that a substantial part of these graduates continues to study in short-cycle programmes providing further professionalization.

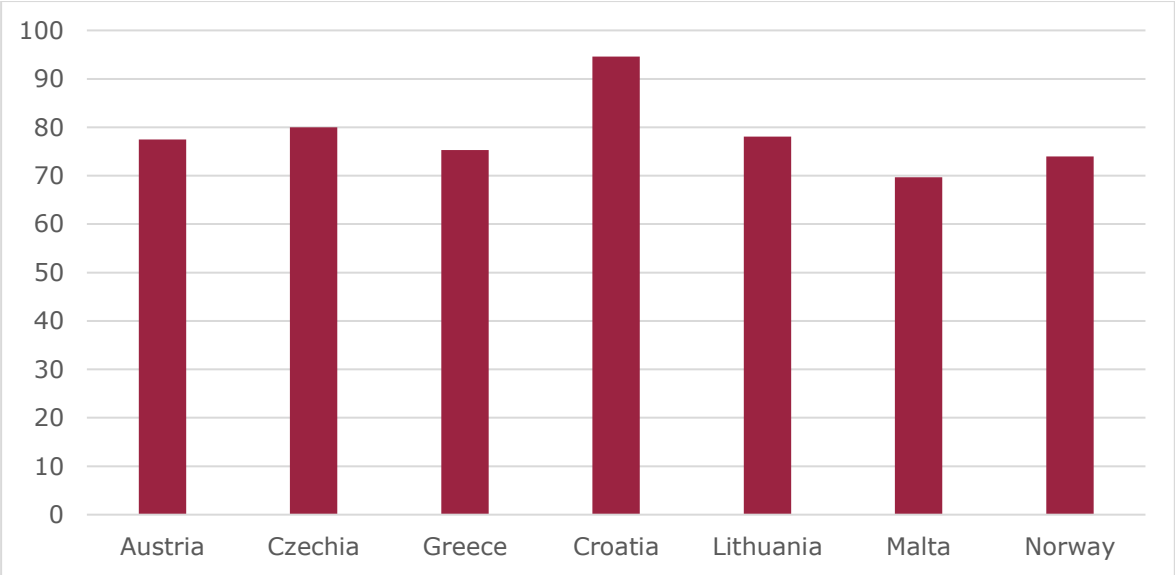
Table 8.3 Share of BA-level gradates that continue to study on MA-level (As % of share that continued to study): Cohort 2012/13

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Education, arts and humanities	74.7	96.5	92.3	89.1	93.0	n.a.	61.3	39.9
Social sciences and journalism	85.8	85.8	92.9	88.0	100.0	n.a.	n.a.	74.0
Business, administration, law and services	92.8	94.1	93.8	78.5	99.3	n.a.	70.7	51.9
Natural sciences (incl. mathematics) and health	92.6	87.6	88.0	58.4	95.8	74.5	n.a.	54.4
Technology and engineering	98.8	98.5	92.4	84.3	93.9	80.3	n.a.	67.0
All programmes	87.9	93.7	92.1	79.1	96.7	69.7	68.8	53.9

Source: EUROGRADUATE pilot survey 2018, BA-level cohort 2012/13, Germany: DZHW graduate panel.

Graduates also have to make the choice between continuing in the field of study they graduated from or re-skilling themselves by changing the field of study. Figure 8.4 shows that a clear majority of the graduates that continued to study stays in the field of study they graduated from[75].

Figure 8.4 % of BA-level graduates that continued to study in same field (As % of share that continued to study): Cohort 2012/13



Source: EUROGRADUATE pilot survey 2018, BA-level cohort 2012/13 that continued to study, Germany: not comparable as measure differs in DZHW graduate panel from EUROGRADUATE measure. For the underlying figures, see Appendix 8.5

[75] For further figures split by study field, see Appendix 8.5.

Who are the graduates that more likely change the field of study? To get more insight into that question, multivariate analyses on the probability to stay in the field of study graduated from with the same independent variables as in our earlier analyses are conducted. Table 8.4 reports on the odds ratios for the key variables (for the full results, see Appendix 8.6 of this chapter).

Table 8.4 Multivariate analyses for BA level graduates on probability to continue to study in same field

	2016/17 cohort	2012/13 cohort
Research university: Yes	2.57	1.81
Study programme was a (very) good basis for starting to work: Yes		n.a.
Study programme was a (very) good basis for further learning: yes	1.44	1.23
Study programme was a (very) good basis for future career: Yes	1.75	1.56

Source: EUROGRADUATE pilot survey 2018, BA-level cohort, Note: Germany is excluded, only outcomes significant different from 1 are shown.

With respect to the type of higher education institution graduated from, the analyses show that BA-level graduates from research universities significantly more likely stay in the field of study they earlier graduated from. This again confirms that for BA-level graduates from non-research universities, the degree is more likely final station and continuing to study often means changing the field of study whereas for graduates from research universities, the BA-level programme is the preparation for the MA-level programme they intended to study from the beginning on. The analyses further show that graduates that are critical about the basis the BA-level programme provided for the future career more likely switched from field of study. Hence, in line with our previous finding that continuing to study might be related to the expectation to have a difficult start on the labour market with the BA-level degree, this expectation also will more likely yield a change in the field of study. Finally, for the cohort 2016/17 it is visible that if the study programme has provided a (very) good basis for further learning, graduates more likely continue in the field of study and less likely change the study field.

8.2.3 Stay on in the same higher education institution?

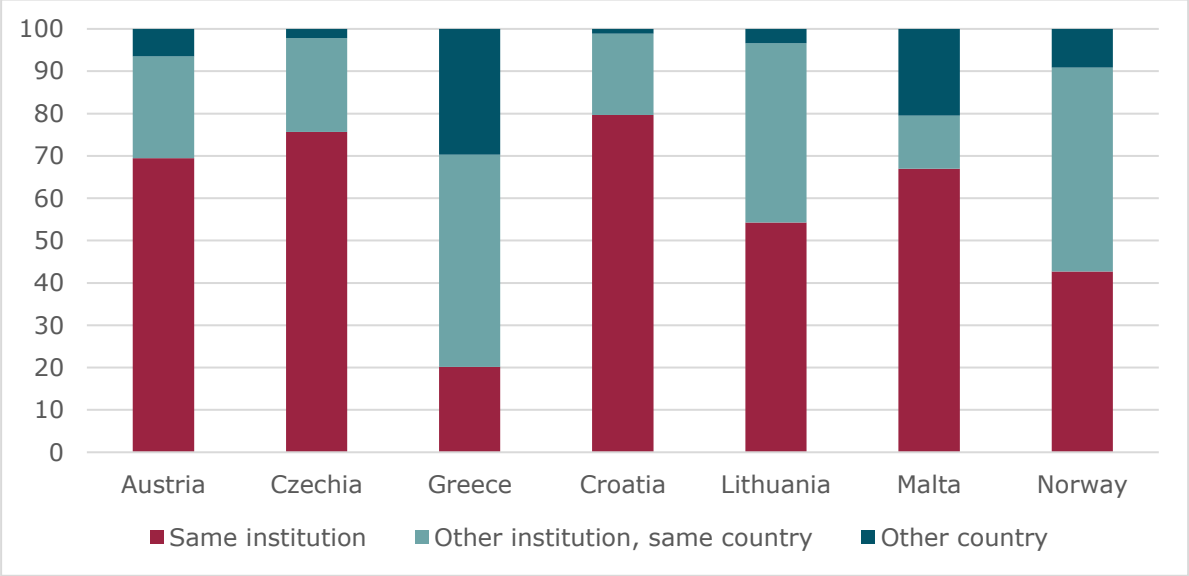
A final decision the graduates have to make is if they continue to study at the institution they graduated from their BA-level degree or if they switch to another institution. In case of the latter, the switch might also include crossing international borders. Figure 8.5 shows what share of BA-level graduates according to the EUROGRADUATE pilot survey continued their study at the same higher education institution, what share moved to another institution in the same country and what share left the country in which they have gained their BA-level degree[76].

Except for Greece and Norway, a (clear) majority of graduates continues to study at the same institution as they received their BA-level degree. In Greece and Norway, around 50% of graduates switch to another higher education institution inside the country.

[76] For figures split by the field of study, see Appendix 8.7.

Crossing international borders for the further study is finally done by a significant share in Greece (30%) and Malta (21%). In all other countries, the share of graduates with international mobility for further study is below 10%.

Figure 8.5 BA-level graduates that continued to study: Location of higher education institution (%): Cohort 2012/13



Source: EUROGRADUATE pilot survey 2018, BA-level cohort 2012/13, Germany = not available in DZHW graduate panel.

What determines if graduates move abroad to continue their study[77]. Table 8.5 shows for the key variables, based on multivariate analyses, that the likelihood of crossing boarders for further study is only influenced by a small number of indicators. Graduates with no higher educated parents are less likely to move abroad and this holds for the 2012/13 cohort also for graduates with no migration background. For the 2016/17 cohort, it is visible that that graduates with less wealthy parents indeed less likely move abroad for further study[78]. Finally, for the 2012/13 cohort the analysis shows that graduates from study programmes that provided a (very) good basis for further learning are less likely to cross international borders for further studies and hence more likely stay.

[77] For the full results, see Appendix 8.8 of this chapter.

[78] Further analyses show for the 2012/13 cohort that comparing graduates who indicate on the 5-point Likert scale that their parents were during the study '(very) well off' (answer category 1 and 2) are more likely crossing the border for further study than graduates who indicate that their parents were 'not well of at all' (answer category 4 and 5).

Table 8.5 Multivariate analyses for BA level graduates on probability to continue to study in another country

	2016/17 cohort	2012/13 cohort
Male respondent (Ref. = Female)		
Age at time of graduation		0.98
No higher educated parents: Yes	0.55	0.67
No migration background: Yes		0.49
Financial situation of parents during study time	0.82	
Study programme was a (very) good basis for starting to work: Yes		n.a.
Study programme was a (very) good basis for further learning: yes		0.60
Study programme was a (very) good basis for future career: Yes		

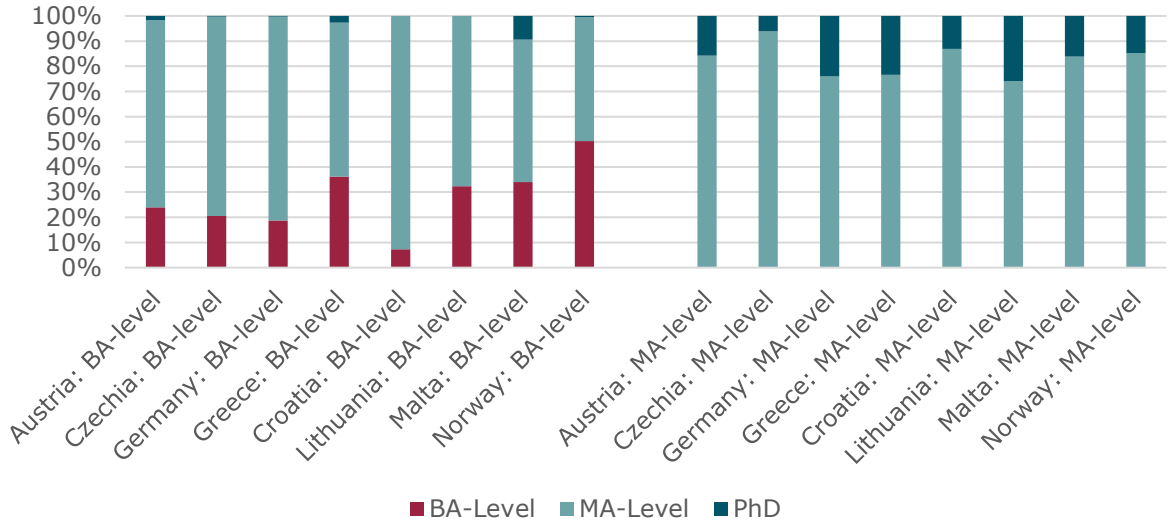
Source: EUROGRADUATE pilot survey 2018, BA-level cohort, Note: Germany is excluded, only outcomes significant different from 1 are shown.

8.2.4 Highest obtained degree

To finish the chapter, the highest degree the graduates of the 2012/13 cohort have gained at time of the survey (autumn 2018) is discussed. Figure 8.6 provides for the group that continued to study the highest level of degree obtained. Between 49% (Norway) and 93% (Croatia) of the BA-level graduates that continued to study have received a MA-level degree. A small percentage has in the period under consideration also finished a PhD. At the same time, between 7% (Croatia) and 50% (Norway) still hold as highest degree a BA-level degree. It is important to clarify that this does not mean that the latter group of graduates did not successfully finish a further study, but it includes both, the respondents that did not graduate from the further study and the respondents that did not continue on a MA-level. The finding for Norway is thereby in line with our previous finding that a high share of graduates (in particularly from non-research universities) continue their study in short-cycle programmes to further specialize their professional skills.

With respect to the MA-level graduates that continued to study, between 6% (Czechia) and 26% (Lithuania) of those that continued to study have at time of survey a PhD title. Except for Croatia, the figures are thereby for all countries (clearly) above 10%.

Figure 8.6 Graduates that continued to study: Highest degree at time of survey (%): Cohort 2012/13



Source: EUROGRADUATE pilot survey 2018, cohort 2012/13, Germany cohort 2012/13: DZHW graduate panel. For the underlying figures, see Appendix 8.9.

8.3 Conclusion

Graduation from a higher education programme is not the end of the learning journey. The results presented in this chapter show that in particular for BA-level graduates from research universities, the BA-level degree is generally the entrée ticket for a higher-level study. How likely one validates that entrée ticket is related to the socioeconomic background, graduates without higher educated parents and graduates with less wealthy parents less likely continue to study as well as to one's expectation of the value of the BA-level degree on the labour market. Graduates that continued to study are generally more critical about the basis the previous study programme provided to start on the labour market than graduates that entered the labour market. The results also show that re-skilling next to up-skilling (changing the field of study when entering a new study programme) more likely takes place if graduates are critical about the preparation for one's labour market career.

Summarising, the results show that labour market perspectives of the study programme graduated from, strongly influence the decision to continue to study or not and the decision to continue in the same field of study or not. Finally, the results indicate that the socio-economic background, and in particular the education level of the parents and the wealth situation of the parents has a significant impact on the likelihood that graduates are during their study career international mobile.

8.4 Appendix

Appendix 8.1

Table A8.1 % of graduates that continued to study

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13								
BA-Level	74.2	68.6	54.6	57.2	56.6	37.8	65.9	60.1
MA-Level	33.8	22.4	21.5	44.9	21.0	20.6	44.1	30.8
BA-Level at Research University	85.9	70.4	67.0	69.3	70.0	41.1	71.0	76.3
BA-Level at non-research university	57.2	n.a	37.0	36.7	41.2	31.8	n.a.	52.9
Cohort 2016/17								
BA-Level	65.4	58.7	60.3	41.0	47.7	22.1	50.3	44.9
MA-Level	30.2	12.9	17.4	34.6	7.1	11.9	21.8	22.0
BA-Level at Research University	84.0	61.3	84.8	47.5	58.5	26.3	57.8	59.2
BA-Level at non-research university	42.1	40.1	38.6	27.9	32.8	15.5	6.5	35.2

Source: EUROGRADUATE pilot survey 2018, Germany cohort 2012/13: DZHW graduate panel, N.a. = not available (too few cases).

Appendix 8.2

Table A8.2 Study programme provided (very) good basis provided by programme (%): Cohort 2012/13

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
BA-Level	74.8	76.4	n.a	52.3	68.8	55.6	74.0	53.5
MA-Level	74.9	74.9	n.a.	63.9	55.7	76.5	67.9	64.1

Source: EUROGRADUATE pilot survey 2018, cohort 2012/13. For the underlying figures, see Appendix 8.2

Appendix 8.3

Table A8.3: Full results of multivariate analyses: BA-level graduates on probability to continue to study

	2016/17 cohort		2012/13 cohort	
	Odds ratio	S.E.	Odds ratio	S.E.
Austria	Ref.		Ref.	
Czechia	0.41**	0.15	0.38**	0.18
Greece	0.25**	0.14	0.33**	0.18
Croatia	0.41**	0.11	0.51**	0.17
Lithuania	0.14**	0.15	0.18**	0.19
Malta	0.38**	0.18	0.37**	0.20
Norway	0.45**	0.15	0.76	0.17
Research university: Yes	3.52**	0.08	3.51**	0.12
Education, Humanities and Arts	0.78*	0.10	0.54	0.14
Social Sciences and Journalism	1.08	0.12	1.19	0.19
Business, Administration, Law and Services	Ref.		Ref.	
Natural sciences (incl. mathematics) and health	0.85	0.10	1.09	0.15
Technology and engineering	1.08	0.10	0.97	0.15
Male respondent (Ref. = Female)	0.94	0.07	1.02	0.11
Age at time of graduation	0.98**	0.01	0.97**	0.01
No higher educated parents: Yes	0.66**	0.07	0.62**	0.11
No migration background: Yes	0.93	0.08	1.04	0.13
Financial situation of parents during study time	1.03	0.03	0.86**	0.05
Study programme was a (very) good basis for starting to work: Yes	0.79**	0.08	n.a.	n.a.
Study programme was a (very) good basis for further learning: yes	1.98**	0.08	1.99**	0.11
Study programme was a (very) good basis for future career: Yes	1.01	0.08	0.89	0.11
Constant	1.95**	0.22	4.42**	0.32

Source: EUROGRADUATE pilot survey 2018, Note: Germany is excluded, **/* significant different from 1 on 1%/5% level.

Appendix 8.4

Table A8.4 Reasons for further study (%): Cohort 2012/13

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: BA								
It is usual to continue studying after graduation from that study programme.	53.2	67.6	56.8	42.9	60.4	33.3	56.6	36.0
To avoid becoming unemployed	30.7	20.8	37.3	47.4	43.9	33.5	34.0	36.3
To increase my chances to get a well-paid job	69.8	67.9	84.9	57.9	59.1	58.4	68.1	50.7
To increase my chances to get an interesting job	84.6	82.3	91.3	61.2	62.9	63.5	74.6	58.0
For academic reasons	72.4	57.4	74.2	61.8	54.1	49.1	64.4	60.4
Cohort 2012/13: MA								
It is usual to continue studying after graduation from that study programme.	9.4	8.4	25.7	41.1	37.5	32.7	49.2	28.4
To avoid becoming unemployed	23.5	27.5	24.5	26.8	49.5	17.7	35.5	36.7
To increase my chances to get a well-paid job	54.1	53.6	63.7	44.6	64.1	59.0	57.4	41.5
To increase my chances to get an interesting job	77.6	71.3	82.8	50.9	69.9	56.5	63.8	57.2
For academic reasons	76.1	57.5	82.1	58.8	52.8	73.3	66.2	64.7

Source: EUROGRADUATE pilot survey 2018, Cohort 2012/13, Germany cohort 2012/13: DZHW graduate panel.

Appendix 8.5

Table A8.5 % of BA-level graduates that continued to study in same field (As % of share that continued to study) : Cohort 2012/13

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Education, arts and humanities	71.2	75.6	n.c.	84.4	90.5	n.a.	74.8	84.9
Social sciences and journalism	78.4	85.3	n.c.	56.0	100.0	n.a.	n.a.	59.6
Business, administra-tion, law and services	73.6	82.5	n.c.	89.4	92.8	n.a.	88.9	58.8
Natural sciences (incl. mathematics) and health	83.4	62.2	n.c.	54.5	92.0	86.0	n.a.	82.8
Technology and engineering	82.9	87.2	n.c.	83.9	99.9	82.1	n.a.	67.2
			n.c.					
All programmes	77.5	80.0	n.c.	75.3	94.6	78.1	69.7	74.0

Source: EUROGRADUATE pilot survey 2018, BA-level cohort 2012/13 that continued to study, n.c = not comparable as measure differs in DZHW graduate panel from EUROGRADUATE measure.

Appendix 8.6

Table A8.6 Full results of multivariate analyses: BA-level graduates on probability to continue to study in same field

	2016/17 cohort		2012/13 cohort	
	Odds ratio	S.E.	Odds ratio	significance
Austria	Ref.		Ref.	
Czechia	0.70	0.21	0.92	0.22
Greece	0.86	0.21	0.79	0.23
Croatia	4.05**	0.19	3.29**	0.30
Lithuania	0.52**	0.25	0.74	0.27
Malta	0.72	0.28	0.47**	0.25
Norway	1.68*	0.24	0.96	0.22
Research university: Yes	2.57**	0.16	1.81**	0.18
Education, Humanities and Arts	0.55**	0.20	0.80	0.21
Social Sciences and Journalism	0.44**	0.21	0.74	0.25
Business, Administration, Law and Services	Ref.		Ref.	
Natural sciences (incl. mathematics) and health	0.90	0.20	1.08	0.22
Technology and engineering	1.43	0.22	1.16	0.23
Male respondent (Ref. = Female)	1.04	0.14	1.01	0.15
Age at time of graduation	0.99	0.01	0.10	0.01
No higher educated parents: Yes	1.14	0.13	0.99	0.15
No migration background: Yes	1.04	0.16	1.00	0.18
Financial situation of parents during study time	1.00	0.06	1.08	0.07
Study programme was a (very) good basis for starting to work: Yes	1.08	0.15	n.a.	n.a.
Study programme was a (very) good basis for further learning: yes	1.44**	0.14	1.23	0.16
Study programme was a (very) good basis for future career: Yes	1.75**	0.15	1.56**	0.15
Constant	1.38	0.35	1.55	0.40

Source: EUROGRADUATE pilot survey 2018, BA-level cohort, Note: Germany is excluded, **/* significant different from 1 on 1%/5% level.

Appendix 8.7

Table A8.7 BA-level graduates that continued to study: Location of higher education institution (%): Cohort 2012/13

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13 : BA-Level								
Education, arts and humanities								
Same institution	70.9	75.7	n.a.	25.4	79.3	n.a.	86.2	45.1
Other institution, same country	27.0	18.5	n.a.	35.4	20.7	n.a.	4.0	47.1
Other country	2.1	5.9	n.a.	39.2	0.0	n.a.	9.8	7.7
Social sciences and journalism								
Same institution	70.8	91.7	n.a.	8.0	100.0	n.a.	n.a.	50.1
Other institution, same country	16.6	8.3	n.a.	68.1	0.0	n.a.	n.a.	32.0
Other country	12.6	.0	n.a.	23.9	0.0	n.a.	n.a.	18.0
Business, administration, law and services								
Same institution	54.2	57.6	n.a.	11.5	62.1	n.a.	77.6	46.1
Other institution, same country	35.1	40.1	n.a.	72.1	34.9	n.a.	14.0	39.8
Other country	10.7	2.3	n.a.	16.4	3.0	n.a.	8.4	14.1
Natural sciences (incl. mathematics) and health								
Same institution	67.8	63.6	n.a.	24.9	89.9	61.0	n.a.	39.6
Other institution, same country	29.0	34.6	n.a.	57.0	10.1	35.4	n.a.	57.4
Other country	3.2	1.9	n.a.	18.1	0.0	3.6	n.a.	3.0
Technology and engineering								
Same institution	81.0	94.7	n.a.	25.7	87.5	74.3	n.a.	25.5
Other institution, same country	14.3	5.3	n.a.	25.4	12.4	18.3	n.a.	66.6
Other country	4.7	0.0	n.a.	48.9	0.1	7.4	n.a.	7.9
All programmes								
Same institution	69.5	75.8	n.a.	20.2	79.7	54.3	67.0	42.7
Other institution, same country	24.0	22.1	n.a.	50.1	19.2	42.3	12.5	48.2
Other country	6.5	2.2	n.a.	29.7	1.1	3.4	20.5	9.1

Source: EUROGRADUATE pilot survey 2018, BA-level cohort 2012/13, n.a. = not available in DZHW graduate panel.

Appendix 8.8

Table A8.8: Full results of multivariate analyses: BA-level graduates on probability to continue to study another country

	2016/17 cohort		2012/13 cohort	
	Odds ratio	S.E.	Odds ratio	significance
Austria	Ref.		Ref.	
Czechia	1.68	0.39	0.38	0.51
Greece	12.01**	0.31	11.12**	0.29
Croatia	1.38	0.31	0.39	0.51
Lithuania	2.18	0.43	0.75	0.52
Malta	3.87**	0.44	6.71**	0.32
Norway	1.79	0.38	1.77	0.33
Research university: Yes	0.70	0.23	0.94	0.27
Education, Humanities and Arts	1.05	0.30	0.64	0.30
Social Sciences and Journalism	2.14*	0.27	1.33	0.33
Business, Administration, Law and Services	Ref.		Ref.	
Natural sciences (incl. mathematics) and health	1.04	0.27	0.52*	0.32
Technology and engineering	1.41	0.26	1.08	0.29
Male respondent (Ref. = Female)	0.83	0.18	1.28	0.20
Age at time of graduation	1.00	0.01	0.98*	0.01
No higher educated parents: Yes	0.55**	0.18	0.67*	0.20
No migration background: Yes	0.74	0.21	0.49**	0.23
Financial situation of parents during study time	0.82*	0.09	1.02	0.10
Study programme was a (very) good basis for starting to work: Yes	1.33	0.19	n.a.	n.a.
Study programme was a (very) good basis for further learning: yes	0.97	0.19	0.60*	0.21
Study programme was a (very) good basis for future career: Yes	0.81	0.21	0.95	0.21
Constant	0.13***	0.49	0.29*	0.54

Source: EUROGRADUATE pilot survey 2018, BA-level cohort, Note: Germany is excluded, **/* significant different from 1 on 1%/5% level.

Appendix 8.9

Table A8.9 Graduates that continued to study: Highest degree at time of survey (%): Cohort 2012/13

	Austria	Czechia	Germany	Greece	Croatia	Lithuania	Malta	Norway
Cohort 2012/13: BA-Level								
BA-Level	24.0	20.5	18.8	36.1	7.3	32.4	34.0	50.3
MA-Level	74.4	79.3	81.0	61.2	92.7	67.6	56.6	49.2
PhD	1.6	0.2	0.2	2.7	0.0	0.0	9.4	0.5
Cohort 2012/13: MA-level								
MA-Level	84.2	93.9	76.0	76.6	86.9	74.1	83.8	85.3
PhD	15.8	6.1	24.0	23.4	13.1	25.9	16.2	14.7

Source: EUROGRADUATE pilot survey 2018, cohort 2012/13, Germany: DZHW graduate panel.

9. Mobility

9.1 Introduction

In recent years, international mobility is regarded a powerful mean to add to intercultural understanding, but also to expand on competencies and work options of graduates. Moreover, mobility across European labour markets aims at achieving a better allocation of highly skilled labour. Since the establishment of the Eramus+ programme, which provides grants for a wide range of actions including the opportunitiy to study abroad and obtain work experience abroad a growing body of higher education students is actively encouraged to collect abroad experiences.

The first part of this chapter will concentrate on *causes* and *forms* of mobility behaviour. A closer look will be taken at the mobility behaviour both inside and outside the country of graduation. The focus is on study experiences abroad during and after graduation. With respect to study experience abroad during the study period, a differentiation is made between programmes that are part of the EU mobility programme (mostly ERASMUS +) and other programmes. A multivariate analysis will show which factors determine the chance of participating in one of these mobility programmes. Further, the general mobility behaviour inside and outside the country of graduation will be considered. Lastly, the reasons for leaving the country of graduation and the main destination countries will be shown.

The second part of this chapter will address the *impact of mobility behaviour* on labour market relevant outcomes. It will be analysed whether different forms of mobility behaviour contribute to better employment prospects, higher wages and a lower risk of skill mismatch. Thus, this chapter overlaps in some regards with the analyses in Chapter 6, in which labour market outcomes are specifically addressed. Also, some overlaps with the analyses of in Chapter 10 on skills and skill mismatch can be observed. However, this section makes a valuable contribution to the comparative report since it draws specific attention to the role of graduates' mobility behaviour on labour market relevant outcomes.

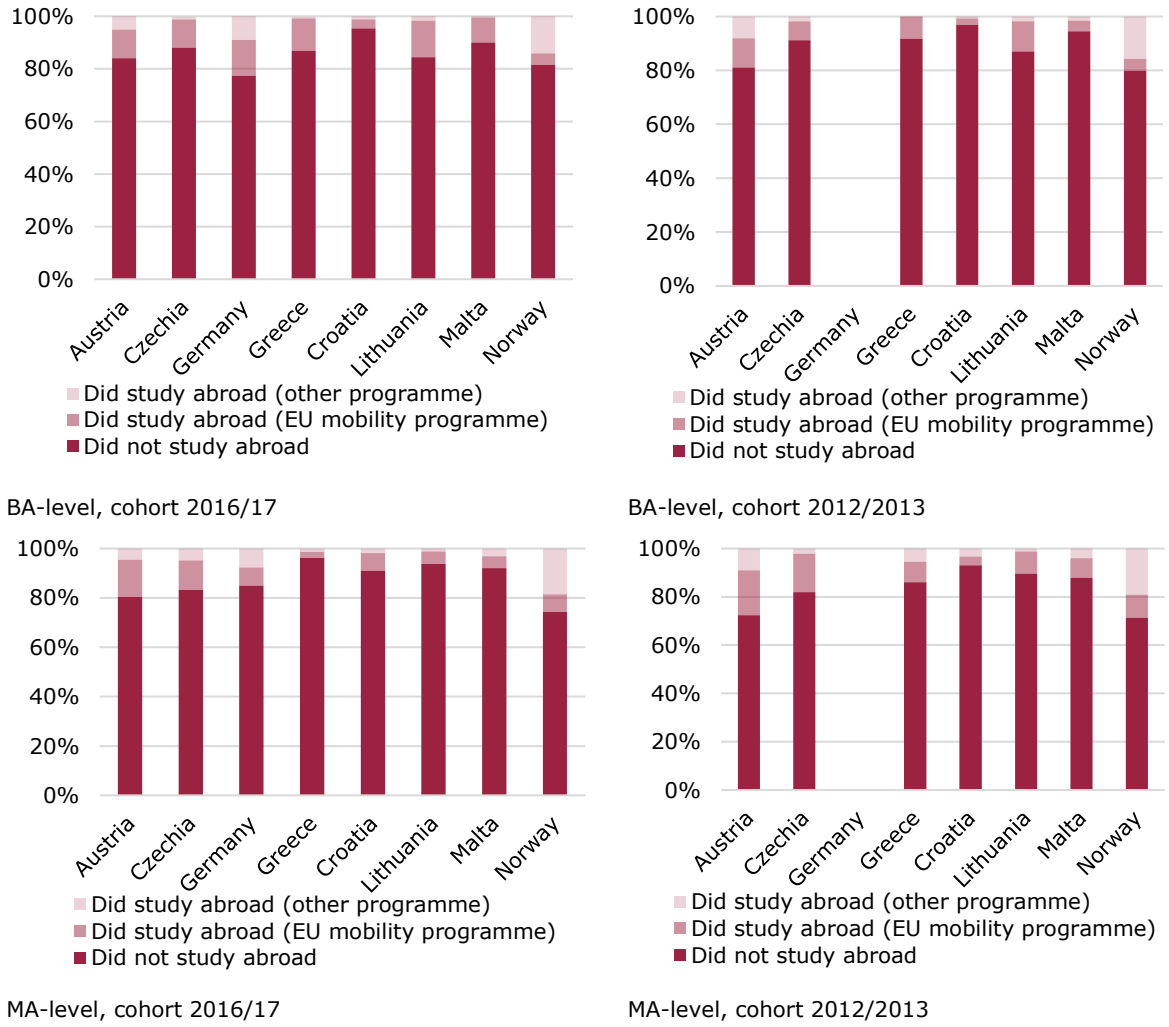
9.2 Causes and forms of mobility

9.2.1 Studying abroad

In total 13% of all respondents of the EUROGRADUATE, pilot survey experienced a study abroad phase. However, there are differences between countries and graduation cohorts. Figure 9.1 shows study experiences abroad for both cohorts and on both BA-level and MA-level comparatively in the eight pilot survey countries. The figure shows that the majority in all countries does not participate in study-abroad experiences. The highest share of graduates participating in study-experiences abroad is found in Norway (mostly above 20%), followed by Germany (if available) and Austria. While the overall share of participation in studying abroad is comparatively high in Norway, the share of those participating in EU mobility programmes is low, which reflects the fact that Norway is not part of the EU and students in Norway mostly use other programmes than the ERASMUS or ERASMUS+ programmes to study abroad. With the exception of Norway, the share of students participating in study abroad programmes that are part of the EU mobility

programme is much higher than share of students that participate in other programmes. This holds in particular true for students in Greece, Czechia, Croatia, Lithuania and Malta[79].

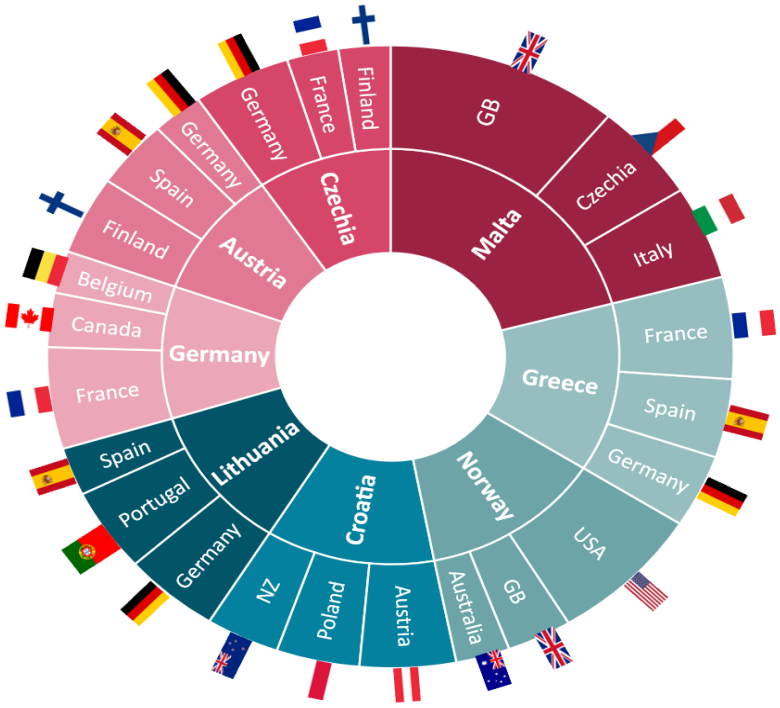
Figure 9.1 Study experiences abroad (%)



Source: EUROGRADUATE pilot survey 2018

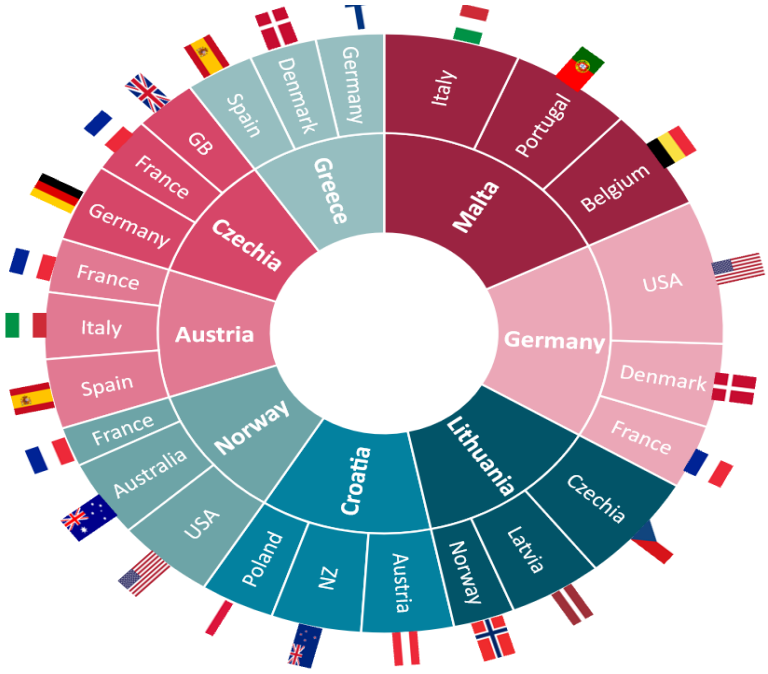
[79] The findings of EUROGRADUATE are in this sense strongly in line with the findings of EUROSTUDENT. According to EUROSTUDENT, the share of students with temporary abroad experience that went through a EU-programme is in Malta and Croatia around 75%, in Czechia around 84% and in Lithuania around 90%. In Austria (68%), Germany (51%) and in particularly Norway (22%) the share that uses a EU programme for a temporary period abroad is clearly lower.

Figure 9.2a Study experiences – Top 3 countries of destination: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, BA-level graduates, cohort 2016/17

Figure 9.2b Study experiences – Top 3 countries of destination: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, MA-level graduates, cohort 2016/17

In general, participation in study abroad experiences are lowest in Greece and particularly Croatia. In Lithuania, a clear difference between BA-level and MA-level can be observed. Here, students are much more likely to study a semester abroad during their MA-programme compared to their BA-programme. Similarly, but less pronounced is the picture for Czechia. Whereas German students seem to be more likely to go abroad to study during the BA-phase rather than during the MA-phase.

Drawing attention to the countries of destination, some interesting patterns can be observed. Figure 9.2 illustrates the top 3 countries of destination for a study programme abroad based on the eight pilot countries. The two figures are shown for the cohort of 2016/17, while the upper figure focuses on BA-level graduates, the lower figures shows the top 3 countries of destination for studying abroad for MA-level graduates. In Figure 9.2, no difference is made between EU mobility programmes and other programmes.

The overall top countries of destination for studying abroad are across the eight EUROGRADUATE pilot countries France and Spain. Spain is in the top-3 of destination countries for BA-level students coming from Greece, Lithuania and Austria and for MA-level students from Greece and Austria. Moreover, Spain is in the top-5 destinations of six out of the eight pilot countries. France as a study-abroad destination is chosen by students from Greece, Germany and Czechia on the BA-level and by students from Germany, Austria, Czechia and Norway on the MA-level. Beyond the two main contenders of study abroad destinations, preferences for English-speaking and neighbouring countries are apparent. The Norwegian top-3 consists for both MA-level and BA-level graduates predominantly of English-speaking countries such as the UK, the US and Australia. The UK is also among the top-3 in Malta (BA-level) and Czechia (MA-Level). Germany is among the preferred destinations in Austria and Czechia, both neighbouring countries, while German students prefer to go to France, Belgium and Denmark, and Lithuanian students on the MA-level go to Latvia – all neighbouring countries.

9.2.2 Determinates of studying abroad

Concerning international mobility during the study, a crucial research question concerning students, policy makers as well as educational decision-makers is, which factors influence whether a student goes abroad for study purposes? In a multivariate analysis, the main factors influencing the likelihood to participate in a study-abroad experience are analysed. The full results of this analysis can be found in Appendix 9.1. The basis of the analysis is a multinomial logistic regression model. The displayed coefficients are relative risk ratios. The models compare the chance to study abroad within the EU mobility programme versus not studying abroad (first and third column) and the chance to study abroad in other programmes versus not studying abroad (second and fourth column).

The multivariate analysis indicates strong country differences, in all of the eight pilot countries; graduates are more likely to have experienced a study abroad phase than in Croatia. Since Austria represents the comparison group for all countries, the Croatian coefficient can be interpreted as follows: Croatian graduates' chances to have participated in a study phase abroad were less than half the chances of Austrian graduates. In addition, German and Norwegian graduates had lower chances to participate in a study abroad experience (within the EU mobility programme) compared to Austrians, whereas there are no differences in the chances to study abroad between Austrian, Greek, Lithuanian, Czechian and Maltese graduates. They have an equal chance to engage in a study

programme abroad within the EU mobility programme. The result for Norway is obviously driven by the fact that they typically participate in programmes other than the EU mobility programme. For the non-EU programmes, the chances of Norwegian graduates to participate are almost 4-times higher compared to Austrians.

Beyond country differences, significant disparities due to social and personal characteristics are to be found. The social origin of students seems to be important since having higher educated parents increases the chance for their children to study abroad. Without at least one parent with an academic degree (at least BA-level) the chance to study abroad is about half the chance of students with (at least one) academic parent(s). This is not only related to the financial resources of parents, since the multivariate analysis additionally captures how the entire study phase (not only abroad) was financed. If parents represent a central source of study financing, the chances are 1.5-times higher to study abroad within the EU mobility programme compared to not studying abroad and 1.8-times higher when comparing non-EU mobility programmes to not studying abroad. The chance to study abroad is also higher if the study phase was financed through a grant, whereas graduates that funded their study with own resources had a significantly lower chance to study abroad.

Female graduates are found to be more likely to study abroad, this also holds true for younger compared to older students. The migration background of students does not make a difference in the chance to participate in abroad experiences. The study abroad phase is more likely to take place during the MA-programme compared to the BA-programme. In addition, graduates from research universities had a greater chance to have participated in an abroad programme during their study period.

Regarding teaching and learning modes, it seems important to provide study programmes in another than the home-country language to increase the chance to go abroad. The teaching language is overall one of the strongest influencing factors in predicted the chance to study abroad, if courses in the home country were taught in another than the home-country language (mostly English) the chance to study abroad is almost 3-times higher for EU mobility programmes and more than 3-times higher for other programmes.

To sum up, studying abroad is influenced by a wide set of variables. The country of origin significantly determines the chances to go abroad but also across all eight pilot countries, there are factors that are of relevance. Foremost, the social background plays an important role, financial resources provided by parents but also the educational level of parents have a relevant influence on study-abroad experiences. This finding indicates a clear need for action to overcome that studying abroad is a socially selective experience during the phase of higher education. Policy programmes to encourage and enable students from non-academic background with less financial resources would help to foster their chances in making abroad experiences during their studies. By means of teaching and learning, the language of instruction represents a relevant measure. Providing students during their time of study with a language other than the country language strongly promotes study-abroad experiences.

9.2.3 Study abroad - Mobility between BA and MA

In this section, the causes for leaving the country after graduating from the BA-level and continuing to study in another country are analysed. Table A9.2 in Appendix 9.2 displays a multivariate analysis on the likelihood to study in another country after graduating from

BA. In the first model, only country differences are displayed, whereas in the second model (full model) explanatory variables on the study conditions and the individual background are added. The first model shows that the chances to move to another country after graduating with a BA-level degree are considerable higher in Greece and Croatia compared to Austria and slightly higher in Czechia compared to Greece. Chances to study in another country for a MA-level programme after graduating from a BA-level programme are lower compared to Austria if the BA was obtained in Malta and Norway. Between Austria and Germany and Austria and Lithuania, there are no statistically significant differences.

Focusing on the second model, country differences are to some extent even increased when considering additional variables in the model. This is most noticeable for Greek BA-level graduates; their likelihood of continuing study in another country than Greece is 3-times higher without further control variables and more than 9-times higher compared to graduates, who obtained a BA-degree in Austria, when considering the full range of variables. However, it is also found that the difference between Norway and Malta compared to Austria are not significant any longer, once controlling for study conditions and social background variables.

Among these additional variables in the full model, the most important one is the type of university. The likelihood to continuing studying in another country after obtaining a BA-level degree, is more than 4-times higher if the BA degree was obtained at a research university. Beyond that, it seems to matter whether a graduate did a semester abroad during his or her BA studies. If this is the case, the chance to follow a MA-programme abroad is more than twice as likely. Also, personal background information and attitudes play a role. Students with a migration background are less likely to enrol in a continuous study programme in another country than where they obtained their BA. Moreover, a positive attitude towards the EU increases the chance to do a MA-programme abroad.

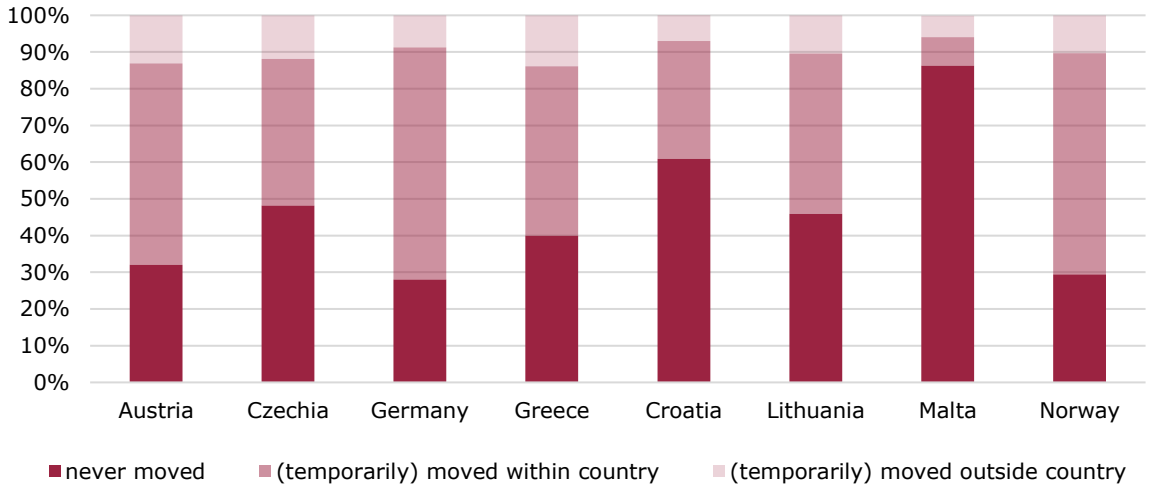
9.2.4 (Inter-)national mobility behaviour

To gain insights on the mobility behaviour of higher education graduates across the eight survey countries, the focus of this section is on the overall moving behaviour since the age of sixteen. It is differentiated whether they did not move at all, whether they moved abroad or moved within their country. In Figure 9.3, a descriptive overview of the moving behaviour is displayed. It is important to note that, the focus is on moves not on the final or permanent destination. Thus, it is possible that respondents, who indicated to have moved inside the country, have moved back to the region where they lived at age 16. Also, respondents that reported to have left the country might have come back to the country they lived in at age 16. Study and internship abroad experiences are not considered as moving outside the country.

The overall share of people that moved is highest in Germany, Norway, and Austria with 28%, respectively 29%. The highest share of non-movers is in both cohorts found in Malta but a large difference between BA-level and MA-level can be overserved. The finding basically indicates, that Malta is a small country and it is – with more than 80% of Maltese BA-level students living at the same place where they lived at age 16 – highly likely to live at the same place. This changes slightly for MA-level graduates, where a smaller share of Maltese graduates (64%) reports to still live at place of residence they lived in at age 16. Croatian MA-level graduates can be – with a share of 57% of non-movers – considered to not be very mobile. Croatia is followed by Czechia, where 48% never moved and Lithuania with a share of 46% non-movers. The share of graduates that moved within their country

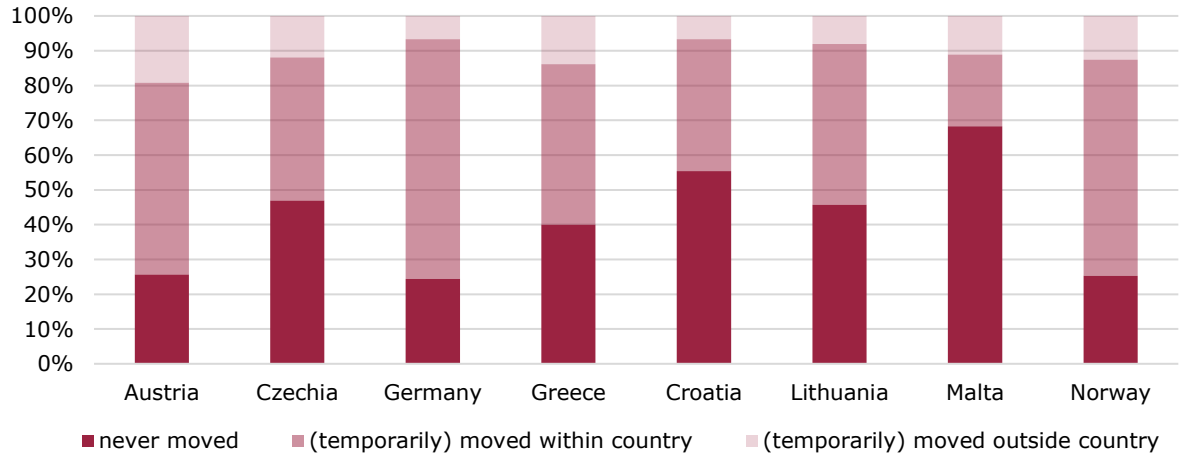
is highest in Germany, Norway and Austria. The highest share of graduates that left the country can be found in Greece and Austria (MA-level). 14% of Greek MA-level graduates report to have (temporarily) lived or still live outside their country. This finding indicates a connection to the economic conditions in the country. Greece was severely affected by the economic crisis, which led to a large share of highly educated people leaving the country. 13% of Austrians have (temporarily) left the country. In the subsequent chapter, the destination countries for those that go abroad are presented. Here we see (Figure 9.4) that most Austrians move to their immediate neighbour Germany, where the language is the same and cultural differences are comparatively small.

Figure 9.3a Moving behaviour between the age of sixteen and after graduation, BA-level graduates: Cohort 2016/17



Source: EUROGRADUATE pilot survey 2018, cohort 2016/17

Figure 9.3b Moving behaviour between the age of sixteen and after graduation, MA-level graduates: Cohort 2016/17



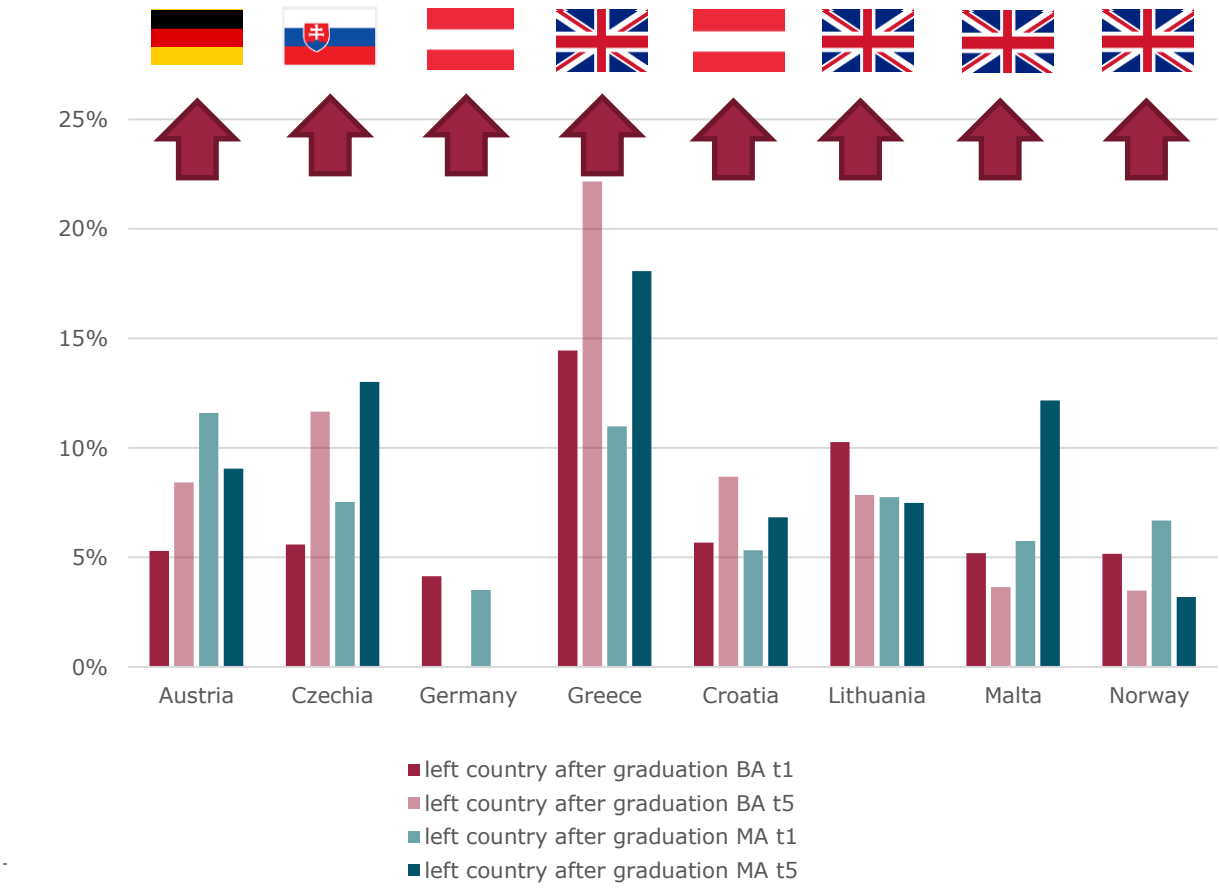
Source: EUROGRADUATE pilot survey 2018, cohort 2016/17

9.2.5 Moving abroad after graduation

A highly relevant question to discuss is, why and under which conditions graduates leave their country of graduation in order to work or live abroad. Figure 9.4 summaries the share of graduates that left the country after graduating from a higher education programme in one of the eight EUROGRADUATE pilot countries. Additionally, the main country of destination by sending country is displayed. There is a clear tendency of leaving from the not so well-off economic countries – with Greece being the country from which the most people moved abroad. In Greece, it can be observed that graduates from the cohort of 2012/13 were more likely to leave the country, which coincides with the peak of the economic crisis. In turn, the countries with the overall lowest shares of graduates that moved abroad are Germany (where data is available) and Norway, both of which are economically well off. We find MA-level graduates and older cohorts across countries are more likely to go abroad compared to the two BA-level cohorts, with the exception of Lithuania. Here, the share of graduates that live abroad is highest among the recent BA-level cohort from 2016/17.

Concerning the countries of destination, we find movements across Europe do be dominant. The main countries of destination across countries are all in the EU area. Moreover, a clear tendency towards either English-speaking (UK) or neighbouring countries is observed. The UK represents the prior country of destination for graduates from Norway, Malta, Lithuania and Greece. Whereas graduates from Austria are most likely to move to Germany and vice versa. Austria is also the main country of destination for Croatian graduates. Czechian graduates are most likely to go to Slovakia.

Figure 9.4 Moving behaviour between graduation and time of survey



9.2.6 Determinants of moving abroad after graduation

Beyond the question on the extent to which the graduates from the eight pilot countries leave their country and the question on where they go to, it is important to analyse the reasons for leaving. In a multivariate analysis, the main factors influencing whether a graduate has left the country after graduation are analysed. In Table A9.3 in Appendix 9.3, the results are presented. The analysis is based on a logistic regression model comparing the likelihood to move abroad after graduation versus staying in the country of graduation. The displayed coefficients are odds ratios. Separate models for the cohort 2016/17 and the cohort of 2012/2013 are calculated.

Regarding country differences, the results show that Greek graduates are in both cohorts most likely to live abroad, their likelihood being almost 5-times higher in the cohort of 2016/17 and 8-times higher in the cohort of 2012/13 compared to the Austrian reference group. The chances to live abroad are also above average for graduates from Croatia and Lithuania (only in the younger cohort) as well as for Czechia (both cohorts). Norwegians that graduated in 2012/13 from higher education have significantly lower – less than half – chance to live abroad compared to Austrians.

Drawing on factors beyond country differences, the individual migration background, (study) abroad experiences, as well as negative labour market experiences are the main drivers in explaining why graduates live abroad, Results indicate that natives have 3-times higher likelihood to live abroad compared to immigrants. One the one hand, this is in line with research, which shows that immigrants are less mobile than natives are. On the other hand, and more importantly, this is due to the fact that the survey does not only contain typical groups of second-generation immigrants but also graduates that specifically moved abroad to study. The definition of host country is in the case of EUROGRADUATE not based on country of birth (of parents) but on the country of graduation. Thus, if individuals moved abroad to study, chances are higher that they remain in their country of graduation compared to natives that go abroad after they have graduated from university. In addition, study abroad experiences and internships abroad stimulate graduates to move abroad after they graduated. This is reasonable since experiences outside the own country – especially if they were positive – can extend the sphere in which graduates seek for employment beyond national borders.

Not surprisingly, graduates that have made negative labour market experiences are more likely to leave. If respondents report to have experienced (a phase of) unemployment since graduation, their likelihood to move abroad is 1.6-times higher for the cohort of 2016/17 and even 3-times higher for the cohort of 2012/13. Since country-level variables are included in the model, it is important to note that this effect refers to individual unemployment experiences beyond the overall economic situation in the respective country. This can either imply that not only Greek graduates, coming from a country with comparatively poor labour market prospects are more likely to leave the Greece but also German or Norwegian graduates have a higher chance to leave Germany or Norway if they have experienced unemployment since graduation. Alternatively, this implies that graduates that move abroad after graduation are more likely to be unemployed in their new country of residence. Panel data are necessary to clearly identify the driver of this unemployment effect.

Concerning attitudes and opinions towards political matters, the model indicates that if respondents assess the courts in the country of graduation as treating everybody equal

and if they have a positive view on the EU the likelihood of living abroad after graduating from higher education are higher.

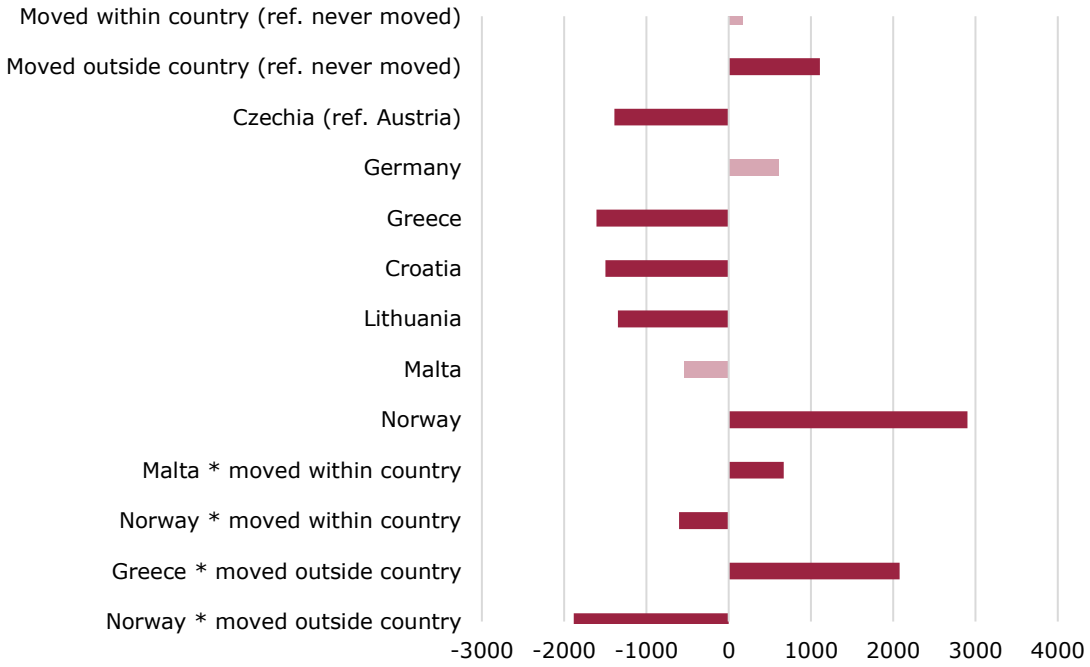
9.3 Effects of mobility on labour-market relevant outcomes

In the second part of this chapter the *impact of mobility behaviour* on labour market relevant outcomes is addressed. The analyses below show the effects of different forms of spatial mobilty behaviour on earnings, the risk of skill mismatch and the risk of experiencing unemployment.

9.3.1 Mobility effects on earnings

In a first step, the focus is on how different forms of spatial mobility behaviour affect the earnings of graduates in a cross-country comparative perspective. In figures 9.5a and 9.5b, analyses on the specific effects of different types of mobility on graduates' earnings are displayed. The findings in figure 9.5a demonstrate that moving inside the country does not affect earnings significantly (first bar), while a spatial relocation outside the country increases the earnings of graduates by a little more than 1000 euros on average (second bar). The dark red colour indicates that this is a statistically significant effect.

Figure 9.5a Effects of ever moving inside or outside the country of graduation and country-level variables on current earnings

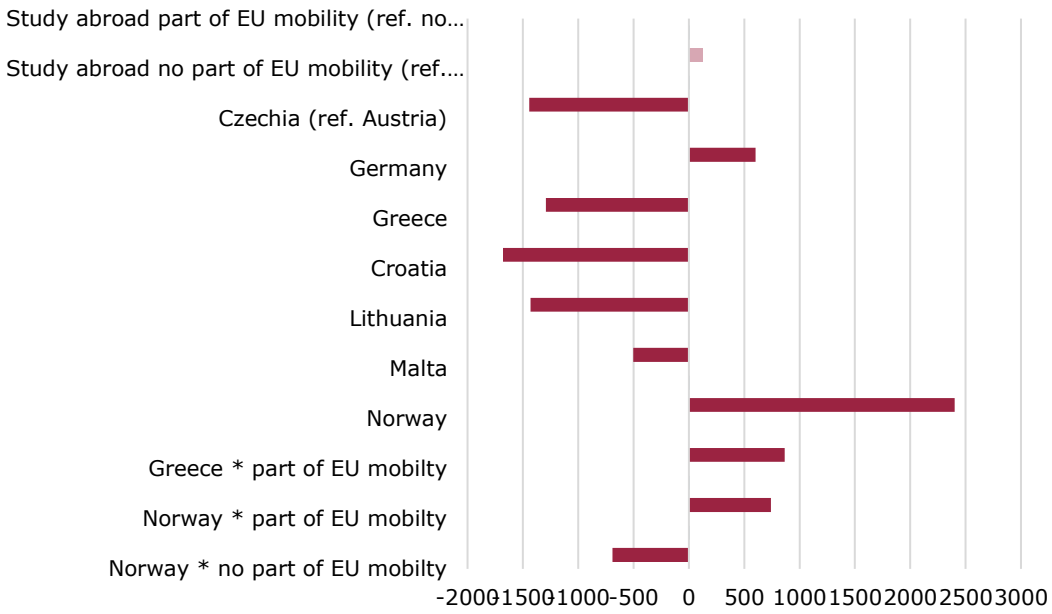


Source: EUROGRADUATE pilot survey 2018, * p<0.05, ** p<0.01, ***, p < 0.001, additionally controlled for: parental education, migration background, sex, age at graduation, cohort, ISCED Level, field of study (broad ISCED field), significant effects are in dark red; light red are not significant

Drawing on country level differences, it can be observed that earnings are lower in Greece, Lithuania, Croatia compared to Austria, whereas the earnings are higher in Germany (not significant in this model) and Norway. Most interestingly are the last groups of effects, in which it is focused on whether being spatially mobile pays of differently in different countries. The EUROGRADUATE data shows that moving within the country, compared to not moving at all increases the average earnings of graduates only in Malta by approximately 500 Euros per month. In other countries, earning differences for moving within the country were not observed. However, the highest benefit from being mobile by leaving the country of study is observed for Greek graduates. Greek graduates have on average approximately 2000 euros more per month if they do not live in Greece. The opposite effect is observed for Norwegian graduates, they lose almost 2000 euros of earnings per months by not living in Norway.

Figure 9.5b illustrates the effects of studying abroad in a country-comparative perspective. It can be found that study abroad within or outside the EU mobility programme has no effect on graduates' earnings across countries. However, we find that both Greek and Norwegian graduates benefit financially from participating in the EU mobility programme.

Figure 9.5b Effects of studying abroad with EU mobility programme or another programme and country-level variables on current earnings



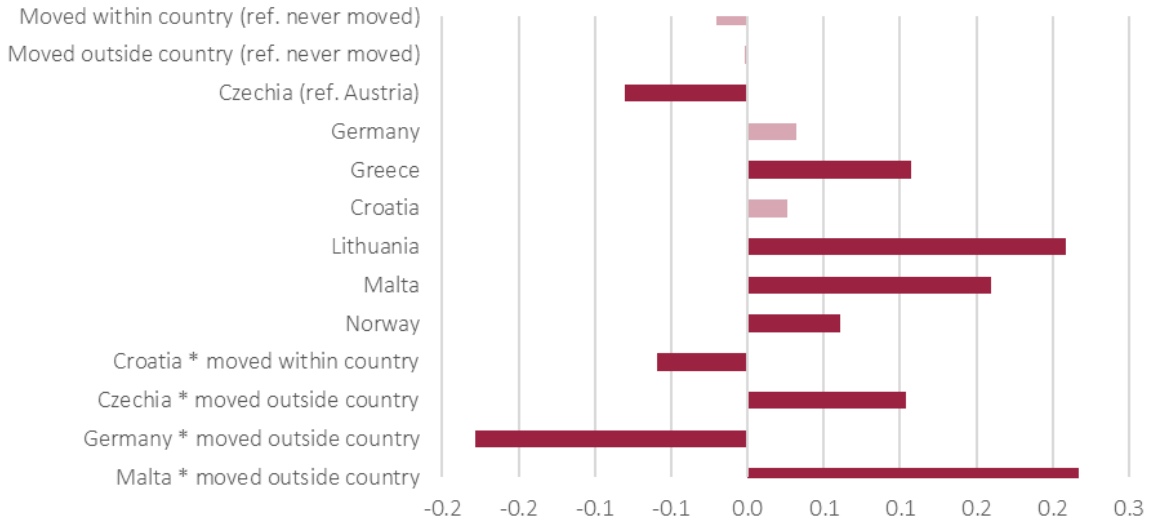
Source: EUROGRADUATE pilot survey 2018, * p<0.05, ** p<0.01, ***, p < 0.001, additionally controlled for: parental education, migration background, sex, age at graduation, cohort, ISCED Level, field of study (broad ISCED field), significant effects are in dark red; light red are not significant

9.3.2 Mobility effects on skill mismatch

In a second step, while focusing on effects of mobility behaviour on labour-market relevant outcomes, attention is drawn to skill mismatch – more particularly, the vertical mismatch (see also Chapter 6 and 10).

In Figure 9.6a the effect of moving either within or outside the country on vertical mismatch are displayed. The results indicate that there are no average effects of mobility behaviour on graduates' risk of being vertically mismatched in their current employment. Concerning country-level differences, it can be observed that vertical skill mismatch is more likely compared to Austria in all EUROGRADUATE pilot countries except for Germany and Croatia, where no statistically significant differences is found. The results show a large reduction in the risk of vertical mismatch for Croatian graduates, who move within the country, and for German graduates, who leave the country. The risk of vertical mismatch is reduced by almost 20 percentage points for German graduates that leave Germany. The opposite is observed for Maltese graduates, their risk of vertical mismatch increases notably when they leave Malta to live and work abroad.

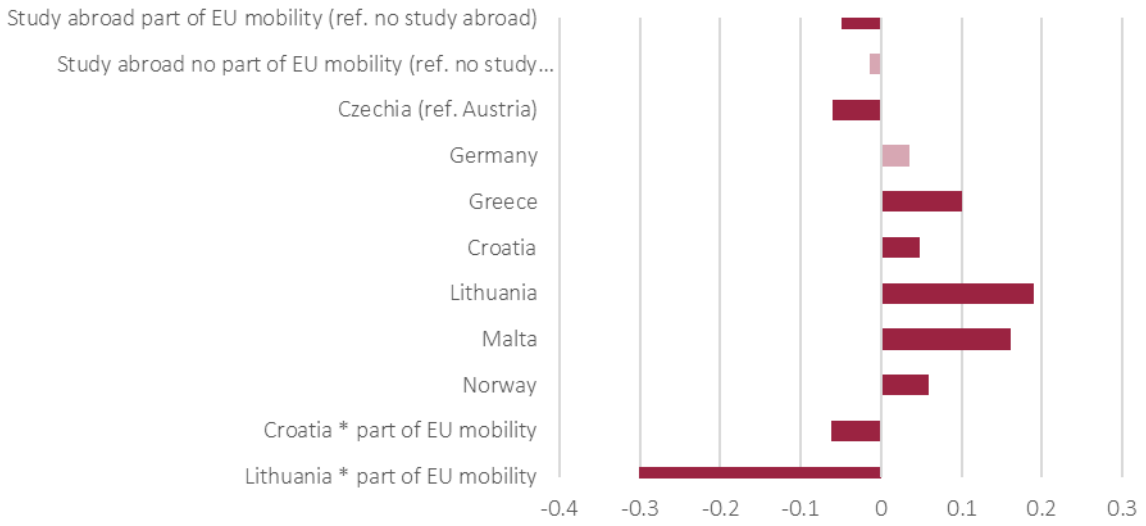
Figure 9.6a Effects of ever moving inside or outside the country of graduation and country-level variables on vertical mismatch



Source: EUROGRADUATE pilot survey 2018, * p<0.05, ** p<0.01, ***, p < 0.001, additionally controlled for: parental education, migration background, sex, age at graduation, cohort, ISCED Level, field of study (broad ISCED field), significant effects are in dark red; light red are not significant

In a second step, the focus is drawn to the influence of studying abroad on the vertical mismatch. The first bar indicates that studying abroad shows a positive association with vertical matching. Thus, the risk of vertical mismatch is lower when a graduate studied abroad as part of the EU mobility programme. There is no significant effect for studying abroad outside the EU mobility programme.

Figure 9.6b Effects of studying abroad with EU mobility programme or another programme and country-level variables on vertical skill mismatch



Source: EUROGRADUATE pilot survey 2018, * p<0.05, ** p<0.01, ***, p < 0.001, additionally controlled for: parental education, migration background, sex, age at graduation, cohort, ISCED Level, field of study (broad ISCED field), significant effects are in dark red; light red are not significant

Again, notable country-level differences are to be observed. What is most interesting is that higher education graduates in Croatia and in Lithuania explicitly benefit from studying abroad. Their risk of being employed in a vertically non-matching position reduces by 5 percentage points in for graduates in Croatia and by almost 30 percentage point for Lithuanian graduates, when they participated in a study abroad phase within the EU mobility framework.

9.4 Conclusions

Overall, we find that temporary as well as permanent spatial movements do have a relevant impact on labour-market relevant outcomes. However, the most important take-away message from the comparative EUROGRADUATE data is that these influences of moving or being mobile are not equal across countries. Where it is highly beneficial in terms of earnings to move abroad, when an individual graduates in Greece, it does pay less off to leave Norway. A considerable share in these differences can of course be traced back to country-level differences in earnings, but since the models control for differences between countries, we find this to be a substantive outcome, showing that mobility across Europe does not mean the same under the condition of the country of origin and destination.

In addition, we carried out similar analyses on more subjective labour-market outcomes such as job satisfaction but there are no significant influences of mobility behaviour on job satisfaction, which might have to do with effects that cancel each other out. While being in a well-paid, well-matched job increases job satisfaction, living abroad is often considered with lower overall and maybe also job satisfaction. In order to gain a deeper

understanding of these relationships further analyses on the basis of panel data are required.

9.5 Appendix

Appendix 9.1: Table A9.1 Multivariate analysis on the chance to study abroad (either in EU mobility or another programme) versus not studying abroad

	Study abroad (EU mobility programme)		**Study abroad (another programme)**		**Study abroad (EU mobility programme)**		**Study abroad (another programme)**	
	Cohort 2016/17				Cohort 2012/13			
	RRR	S.E	RRR	S.E	RRR	S.E	RRR	S.E
Country (ref. Austria)								
Czechia	0.89	0.14	0.77	0.19	0.78	0.13	0.36***	0.10
Germany	0.64***	0.11	1.40	0.32				
Greece	1.08	0.18	0.27	0.11	0.96	0.19	0.13***	0.08
Croatia	0.41***	0.05	0.30***	0.06	0.16***	0.04	0.23***	0.06
Lithuania	0.88	0.16	0.43	0.15	0.90	0.21	0.08	0.06
Malta	0.79	0.21	0.90	0.42	0.47	0.16	0.44*	0.19
Norway	0.71*	0.13	3.96***	0.76	0.75	0.14	2.68***	0.48
Research university (ref. no research university)	1.43***	0.08	1.24	0.13	1.04*	0.17	0.72**	0.11
MA-level degree (ref. BA-level degree)	1.51***	0.14	1.47***	0.18	2.44***	0.31	1.81***	0.26
Male (ref. female)	0.66**	0.06	0.88	0.10	0.72***	0.08	0.90	0.12
Age at time of graduation	0.90***	0.05	0.97***	0.01	0.89***	0.02	0.96**	0.01
First generation HE (ref. at least one parent has HE degree)	0.55***	0.18	0.42***	0.05	0.59***	0.07	0.75*	0.10
No migration background (ref. mig. backr.)	1.10	0.10	1.04	0.14	1.01	0.14	1.15	0.18
Study programme in other than country language (ref. only country lang.)	2.68***	0.24	3.42***	0.45	3.30***	0.40	3.03***	0.44
Parents finance study costs (ref. no financing by	1.64***	0.21	1.06	0.15	1.81***	0.29	1.21	0.19
Own resources finance study costs (ref. no own	0.26*	0.37	1.56	0.48	0.43*	0.34	0.87	0.60
Grants finance study costs (ref. no grant)	1.93***	0.30	0.98	0.21	1.65**	0.36	1.57*	0.39
Lecture-based programme (ref. no lecture-based)	1.07*	0.04	1.04	0.06	1.06	0.06	1.04	0.06
Problem-based learning programme (ref. no PBL)	0.97	0.04	0.94	0.05	1.03	0.06	1.09	0.07
Constant	0.90	0.05	0.06***	0.02	0.84	0.47	0.13***	0.05

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, * p<0.05, ** p<0.01, ***, p < 0.001, RRR = Relative Risk Ratio.

Appendix 9.2

Table A9.2 Multivariate analysis on the chance to study abroad after graduating from BA programme

	Study in other country after graduation from BA		**Study in other country after graduation from BA**	
	Only countries		Full model	
	Odds Ratio	Standard Error	Odds Ratio	Standard Error
Country (ref. Austria)				
Czechia	1.08*	0.13	2.33*	1.13
Germany	0.86	0.13	1.72	0.92
Greece	2.90***	0.31	9.67***	4.08
Croatia	2.76**	0.08	4.18***	1.91
Lithuania	1.17	0.15	1.54	0.99
Malta	0.61*	0.11	0.86	0.62
Norway	0.53***	0.07	1.07	0.68
Research university (ref. no research			3.25***	1.39
Cohort 2016/17 (Ref. 2012/13)			0.56**	0.15
Male (ref. female)			1.40	0.36
Age at time of graduation			0.95	0.03
First generation HE (ref. at least one parent has HE degree)			0.77	0.20
No migration background (ref. mig. backr.)			2.33***	0.62
Study programme in other than country language (ref. only country lang.)			1.16	0.31
Internship abroad during BA (ref. no)			1.78*	0.61
Study abroad during BA (ref. no)			2.23***	0.67
Image of EU				
Neither/nor			0.54	0.16
(very) negative			0.69*	0.27
Lecture-based programme (ref. no lecture-			1.17	0.14
Problem-based learning programme (ref. no			1.03	0.13
Constant	0.08***	0.01	0.02	0.02

Source: EUROGRADUATE pilot survey 2018, * p<0.05, ** p<0.01, ***, p < 0.001;

Appendix 9.3

Table A9.3 Multivariate analysis on the chance to live abroad after graduation

	Left country after graduation		**Left country after graduation**	
	Cohort 2016/17		Cohort 2012/13	
	Odds Ratio	Standard Error	Odds Ratio	Standard Error
Country (ref. Austria)				
Czechia	1.61*	0.40	2.45***	0.66
Germany	0.74	0.22		
Greece	4.96***	1.26	8.02***	2.45
Croatia	2.59***	0.55	1.53	0.49
Lithuania	1.77*	0.45	1.36	0.46
Malta	0.29	0.22	1.89	0.77
Norway	0.69	0.19	0.36**	0.12
Research university (ref. no research university)	1.18	0.18	0.87	0.20
MA-level degree (ref. BA-level degree)	0.85	0.11	0.97	0.19
Male (ref. female)	1.29*	0.15	1.35*	0.23
Age at time of graduation	0.99	0.01	0.95**	0.02
First generation HE (ref. at least one parent has HE	0.86	0.10	1.03	0.18
No migration background (ref. mig. backr.)	3.10***	0.37	2.96***	0.52
Ever been unemployed (ref. not been unemployed)	1.60***	0.19	2.99***	0.64
Study programme in other than country language (ref. only country lang.)	1.13	0.14	0.97	0.17
Studied abroad (ref. no study abroad)	3.99***	0.56	2.05***	0.41
Internship abroad (ref. no internship abroad)	1.88*	0.28	1.29	0.22
Elections in country of graduation are fair and free	0.91**	0.03	1.01	0.06
Opposition in country of graduation are free	0.97	0.03	0.92	0.05
Media information in country of graduation are reliable	1.04	0.03	1.13*	0.05
Courts treat everybody equally in country of graduation	1.27***	0.04	1.08*	0.05
Image of EU neither positive nor negative (ref. (very) positive)	0.50***	0.070	0.45***	0.09
Image of EU (very) negative (ref. (very) positive)	0.82**	0.14	0.40***	0.11
Constant	0.01***	0.01	0.09**	0.06

Source: EUROGRADUATE pilot survey 2018, cohort 2016/17, * p<0.05, ** p<0.01, ***, p < 0.001

10. Competencies, skills and skill mismatch

10.1 Introduction

This thematic chapter focuses on an extended discussion of the acquisition of skills and competencies and skill mismatch in the eight European countries that comprise the EUROGRADUATE pilot study. The acquisition of skills and competencies is among the most important functions of education, especially of higher education. The data from the EUROGRADUATE pilot survey provides in-depths information on the types of skills and competencies that are acquired during higher education and on the mismatch between these acquired and required types and levels of skills and competencies that graduates are equipped with. This allows for new insights on skills and on the question to what extent graduates are able to make use of the skills they are equipped with. This is particularly innovative and relevant since the EUROGRADUATE pilot survey collected data in countries that have never carried out a graduate survey before. Hence, comparing well-studied countries such as Germany, Austria and Norway with countries in which no or almost no survey information was so far available such as Greece and Croatia promises highly relevant results for research, policy makers as well as for students and young labour-market entrants.

In recent years, research often addressed skill polarisation and the future of employment (e.g. Fregin, 2019, Brynjolfsson and McAfee, 2014, Frey and Osborne, 2013, Acemoglu and Autor, 2011, Goos and Manning, 2007). One of the major concerns is the match between skills supply and changing labour market demands. Policy makers are increasingly aware of the importance of anticipating human capital demands on the labour market to foster innovation and economic growth (e.g. EC, 2013, 2014). This is among other things reflected in the Horizon 2020 strategy, and EC's initiatives such as the 'New Skills Agenda for Europe' (EC, 2016). The applied measurements within the EUROGRADUATE survey follow the New Skills Agenda. The initiatives particularly aim at supporting the EU member states in identifying and forecasting (future) skill demands on (local or regional) labour markets as well as the formation of those skills. It also aims at smoothing the transition young adults from education to employment.

Following the global financial crisis, the mismatch between the supply of skills and the demand for labour attracted particular attention. The crisis resulted in a substantial increase in the number of unemployed workers in developed economies. At the same time, thousands of open vacancies remained unfilled. This phenomenon is often ascribed to an imbalance between education (or skill) supply and education (or skill) demand (EC, 2013, Quintini, 2011). Some of the countries in the EUROGRADUATE pilot survey have been and are still severely negatively affected by the crisis, such as Greece, Croatia or Lithuania, while the labour markets of other EUROGRADUATE pilot countries such as Germany or Norway were able to contain the impacts of the global financial crisis (Thomson et al., 2014). Hence, to learn more about the drivers and consequences of skill acquisition and skill mismatch for higher education graduates on current European labour markets, it is relevant to observe the national educational landscape and the economic situation comparing these countries. The newly available EUROGRADUTE data provides the possibility to do so.

10.1.1 Skills and competencies

Both skills and competencies identify an individual's ability, which has been acquired through education, training and experience. However, the concepts of skills and competencies are not identical in terms of their definitions or the function they perform.

Skills can be understood as activities and knowledge that is specifically learned and trained such as the field-specific skills that, for instance, a car engineer (e.g. mathematical skills, knowledge about the construction of cars) or an English teacher (e.g. English grammar, English literature) need to perform their profession most adequately. For different professions, the required activities and knowledge can comprise a different set of skills. Moreover, they range widely in terms of complexity. In contrast, competencies refer more strongly to the question of 'how' a task is performed also they define the requirements for labour market success more broadly than skills do.

In this chapter and in line with the 'New Skills Agenda for Europe' (EC, 2016) it is referred to both the skills as well as the competencies that graduates are equipped with and that they apply on the labour market. Beyond the question of 'what' graduates need to be able to know to perform a certain task, this chapter emphasises 'how' they performs certain tasks. Hence, generic competencies such as communication abilities will be assessed as well as field-specific knowledge. Generic competencies are often not an explicit part of the higher education curriculum, however, by means of new learning and teaching strategies such as problem-based learning (PBL) (Wood, 2003) and on-the-job experiences such as internships that are part of the curriculum, generic competencies represent a crucial component of the learning process. Moreover, they are a key determinant in order to understand graduates' success on the labour market.

10.1.2 Skill mismatch

The term 'skill mismatch' is frequently used when referring to different types of imbalances between the supply of and the demand for qualified labour. Skill mismatch refers to a surplus or a deficiency of knowledge and skills that enable individuals to perform tasks in either a defined or a variety of (work) contexts (Cedefop, 2015, Roe, 2002). Skill mismatch is generally restricted to situations concerning employed individuals or firms that currently employ or seek to employ workers. Unemployment is not considered a form of mismatch, although unemployment and skill mismatch are not unrelated, since being unemployed versus being in a non-matching employment situation can be considered a trade-off (Marimon & Zilibotti, 1999).

The most common differentiation is made between *vertical* or *horizontal* mismatch:

- *Vertical mismatch* it most often referred to over-qualification (under-qualification), workers have acquired more (less) schooling or skills than is required for the job (Hartog, 2000, McGuinness, 2006).
- *Horizontal mismatch* describes a mismatch between the current job and the field of study of field in which training is accomplished (Robst, 2007).
- In addition, *geographical mismatch* can play a role. In this case, workers with types and levels of skills or qualification required are located in a country, region or local area different from where such skills are needed.

10.1.3 Outline of the chapter

This thematic chapter will focus on MA-level graduates. This is because the indicators that are of interest in this chapter concentrate on the employment situation of graduates. Which skills and competencies graduates acquired during their study period and whether or not they are able to apply these skills and competencies suggests concentrating on those graduates that are employed. Since the data shows (see chapter 8.2 of the comparative report) that many BA-level graduates across countries are likely to continue in further education instead of entering the workforce it is less informative to focus on them. The chapter is structured as follows. In the next section, the focus will be on the competencies that graduates acquired during the study as well as on competencies that they require at work. Four crucial domains of competencies will be predominantly analysed. By means of multivariate regression models, the determinants of acquiring and the determinants of requiring these competencies will be analysed. In the subsequent chapter, the issue of skill mismatch will be addressed. A particular focus will be drawn on the causes of horizontal and vertical skill mismatch since this is most important in analysing the labour market placement of graduates. In the section thereafter, the findings from EUROGRADUATE will be summarised and discussed. Based on the findings policy recommendations will be outlined.

10.2 Findings from EUROGRADUATE

10.2.1 Domains of competencies

Within the EUROGRADUATE, pilot study respondents were queried concerning nine different types of skill and competency domains:

- Field-specific
- Communication
- Team-working
- Foreign language
- Learning
- Planning
- Customer handling
- Problem solving
- Advanced ICT

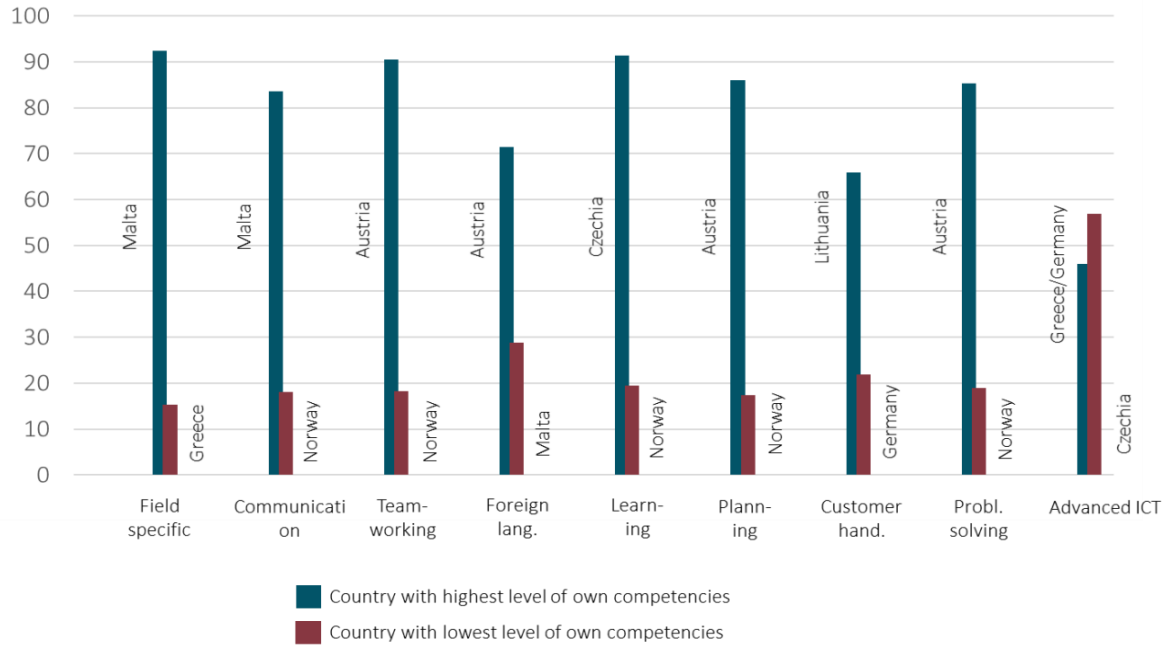
In the subsequent section, all nine domains will briefly be discussed in comparative perspective across countries.

10.2.2 Required and acquired competencies

The subsequent figures illustrate the country in which the largest share of respondents indicates that they are equipped with a (very) high level of the respective competencies (blue-turquois bar) as well as the country in which the largest share of respondents indicate that they have a (very) low level of the respective competencies (dark red bar). Compared to what is presented in chapter 6.6 of the comparative report the figures give a less comprehensive description of the set of skills and competencies that are acquired and required by graduates, however, they provide additional information in a comparative perspective and provide insights on answering behaviour regarding self-assessed competencies across countries. Figure 10.1a concentrates on MA-level graduates of the

more recent cohort from 2016/17, whereas Figure 10.1b provides results for MA-level graduates from the 2012/13-cohort.

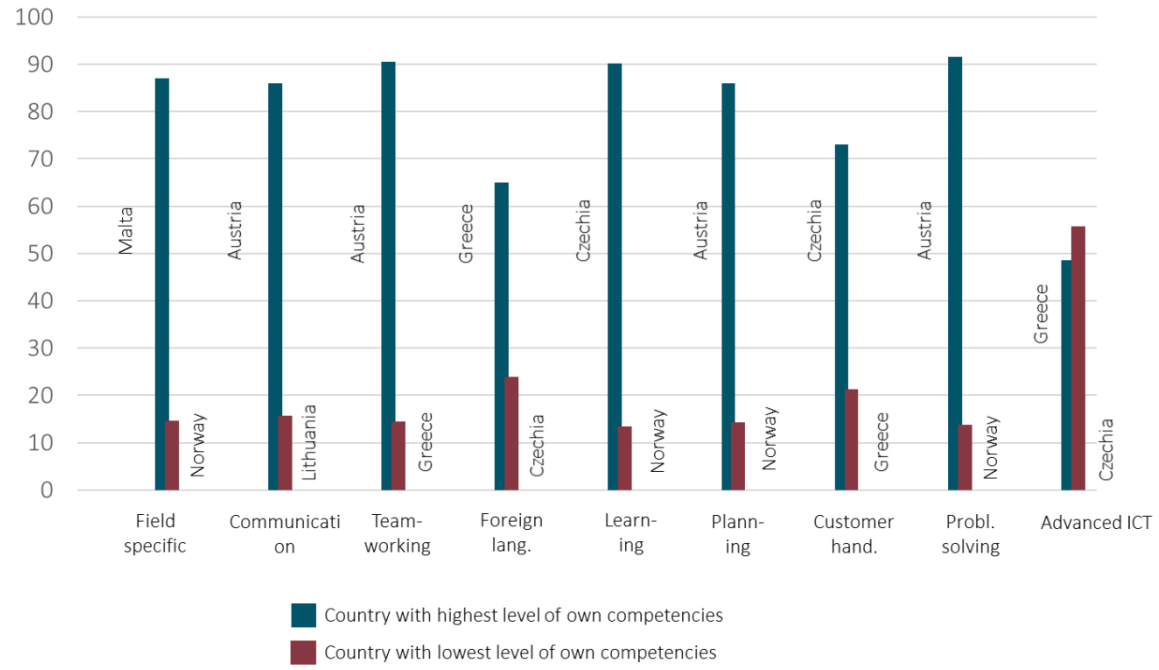
Figure 10.1a Countries with highest and lowest levels of own competencies in the nine competency domains



Source: EUROGRADUATE 2018, MA-level graduates, cohort 2016/17

Overall, great similarities between the two cohorts can be observed. In both graduation cohorts, graduates from Austria tend to assess their competencies across domains most positive, whereas graduates from Norway assess their own level of competencies rather lowly. However, comparing these results to international assessments of skills and competencies such as PISA or PIAAC results, this is surprising. Here, Norway usually performs significantly above average (Bjorkeng, 2013). Hence, it can be inferred that the self-assessment of competencies is to some extent subject to general cultural differences. Austrian graduates from the 2016/17 cohort report the highest own level of team-working, foreign language, planning and problem-solving competencies. They also report the highest level of communication, team-working, planning and problem-solving competencies in the 2012/13 cohort. In contrast, Norwegian graduates report their communication, team-working, learning, planning and problem-solving abilities in the 2012/13 cohort the lowest compared to all other countries. In the 2016/27 cohort, Norwegians score lowest in field-specific, learning, planning and problem-solving competencies. In particular, planning and problem-solving abilities seem to be negatively assessed by Norwegians and positively by Austrians.

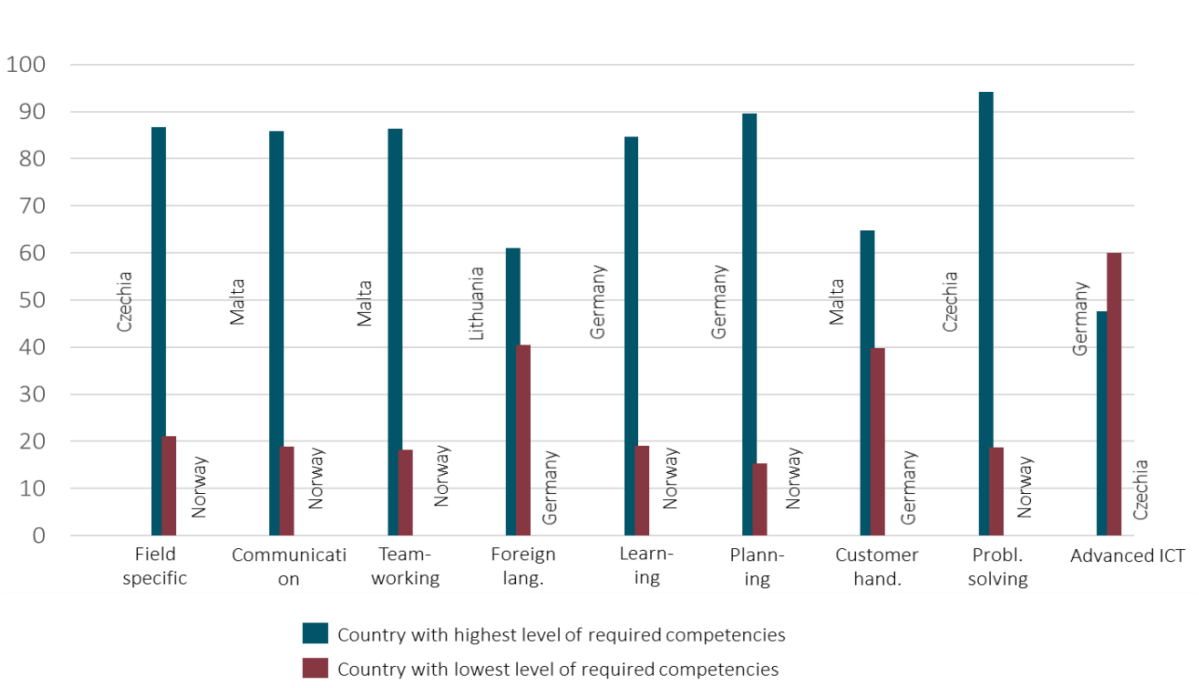
Figure 10.1b Countries with highest and lowest levels of own competencies in the nine competency domains



Source: EUROGRADUATE 2018, MA-level graduates, cohort 2012/13, without Germany

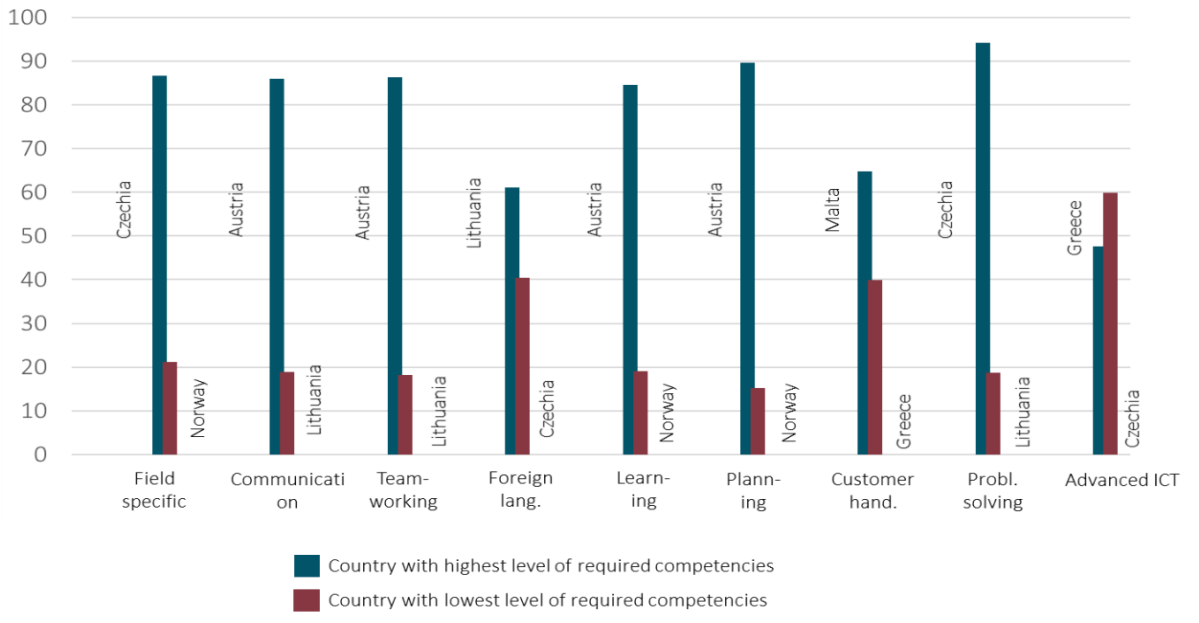
ICT skills represent the only competence category in which a negative assessment of own abilities is more likely than a positive assessment. In both cohorts, graduates from Czechia rate their own level of ICT skills – with 55% in the older cohort and 58% in the younger cohort stating that their own ICT skills are (very) low – the lowest. In contrast, graduates in Greece and Germany assess their ICT skills the highest, while at the same time, these graduates rate their customer handling skills comparatively lowest in the two cohorts. It seems that ICT skills and customer handling skills represent rather opposing competency domains.

Figure 10.2a Countries with highest and lowest levels of required competencies in the current job in the nine competency domains



Source: EUROGRADUATE 2018, MA-level graduates, cohort 2016/17

Figure 10.2b Countries with highest and lowest levels of required competencies in the current job in the nine competency domains



Source: EUROGRADUATE 2018, MA-level graduates, cohort 2012/13, without Germany

Graduates from Malta in both cohorts have the highest self-assessment of field-specific competencies. At the same time, they assess their foreign language skills as rather low (cohort of 2016/17), which is not surprising since English, which is the most common foreign language in all European countries, is considered an official language in Malta and might therefore be not assessed as a foreign language by the graduates. In the older cohort, Czech graduates consider their foreign language skills the lowest.

In order to – at least partly – overcome the problem of cultural context that is attached to self-assessed competency inquiries, EUROGRADUATE does not only capture the own level but also the level of competencies required at work. Comparing acquired and required competence levels allows for conclusion on the matching and the relevance of certain skills. The following figures draw attention to the highest and lowest level of competencies required at the workplace per country. The illustration in Figure 10.2 provide insights on the respondents' answers.

The assessment of required competency levels is – especially focusing on the countries that assess their own and the required skills as low – highly similar. Again, graduates in Norway in both cohorts are most likely to report the lowest levels of skills required in their current employment. In the younger cohort, Norwegians score lowest in six out of nine competency domains. Only in foreign language and customer handling skills, where graduates in Germany report the lowest requirements and in advanced ICT skills, where graduates in Czechia assess the required skill level the lowest Norwegians do not score lowest. In the cohort of 2012/13, graduates in Norway report the lowest skills in the field-specific domain as well as in planning and learning. Since they reported the lowest values about their own level of skills as, the reported own and required skills are highly in line for Norwegian graduates.

10.2.3 Four crucial domains of competencies

In the following, the discussion will concentrate on field-specific, communication, advanced ICT and problem-solving competencies since these four domains represent important pillars of knowledge and ability in modern societies:

- Field-specific competencies the outcome most directly linked to the immediate function of higher education. First and foremost, a well-functioning and well-designed study programme should equip higher education graduates with high field-specific knowledge and abilities;
- Communication skills represent a crucial component of transferable skills that are highly visible in the work environment;
- Advanced ICT skills inform about the extent to which higher education graduates are well equipped to meet the challenges of modern knowledge societies;
- Problem-solving skills inform about the capacity of individuals to respond to challenging tasks and situations. They cut across domain-specific skills and are generally highly relevant, for instance, in new situations.

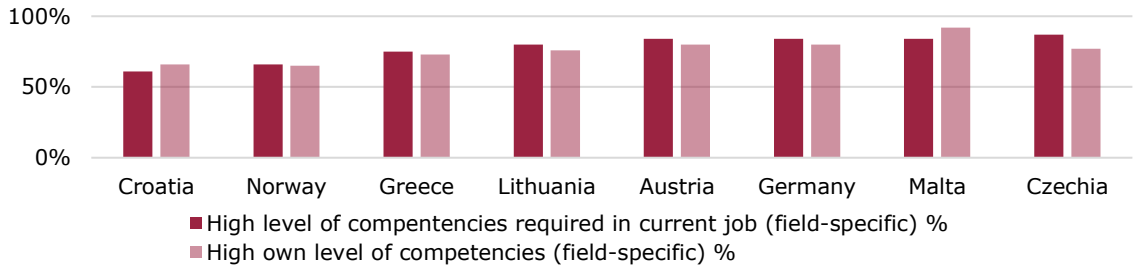
Figure 10.3 illustrates for each of the four domains the share of respondents reporting a high own level of competencies as well as a high level of required competencies in the current job per country. The figures provides an indication of the relation between acquired and required competencies. The first four figures concentrate on MA-level graduates one

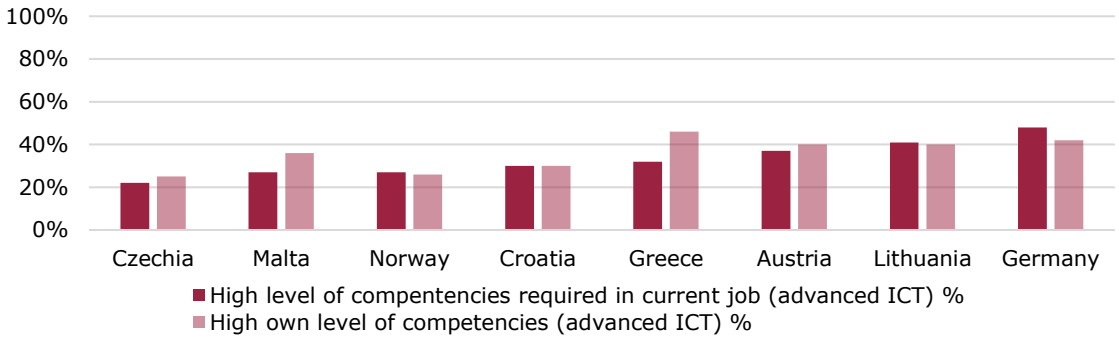
year after graduation, while the following four figures provides an overview of the four domains of competencies five years after MA-level students graduated.

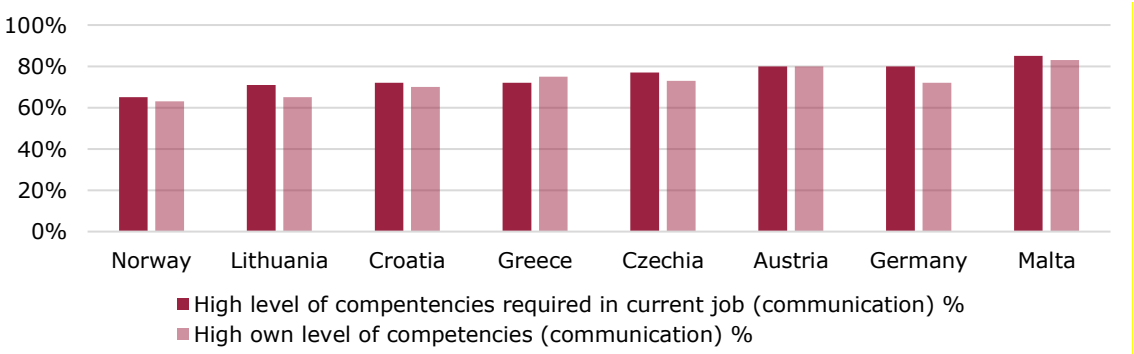
Overall, differences between the reported own level and required level of skills are not far apart from each other. This is good news, since it implies that graduates evaluate their level of abilities in different domains very closely to what is required of them at work. The largest differences between acquired and required field-specific skills is found in Czechia, where the reported own skills are 10 percentage points lower than what is required on the job. This is referred to as under-qualification. Also, in Lithuania, Austria, Germany and Greece the own level of field-specific competencies is reported to be lower than what is required of the graduates in their current job. Whereas in Malta and Croatia the picture is the other way around. Here, respondents feel rather overqualified. Greek and Norwegian the graduates report, almost no difference between what is required and what they are equipped with.

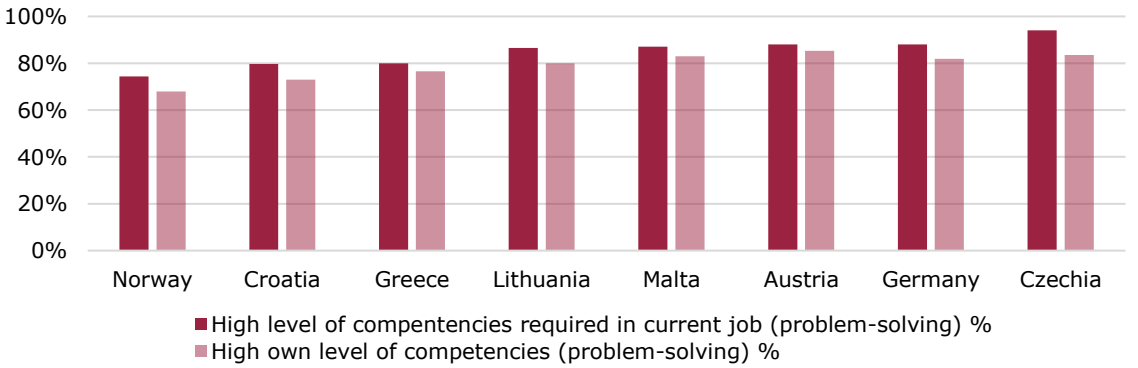
The degree of under-qualification is higher in the younger cohort compared to graduates that are already on the labour market for five years. In the cohort of 2012/13, only graduates from Lithuania and Czechia report a lower level of own compared to the level of required field-specific skills. Five years after graduation, there are more graduates that report a match between acquired and required skills. In Croatia, Norway and Austria is the reported mismatch is smaller than 3 percentage points. As one would expect, this finding indicates that the labour market placement improves over time. While recent graduates are new – and therefore outsiders (Lindbeck & Snower, 1984) – to the labour market, their lack of experience increases their chance of a non-matching job compared to five years later during which relevant experiences could have been gathered in order to find an employment position which suits the own abilities. An exception to this can be observed in Greece. Here the degree of over-qualification is much higher five years after graduation (9 percentage points) compared to one year after graduation (2 percentage points of reported under-qualification), which can be interpreted as direct consequences of the economic crisis.

Figure 10.3 Share of graduate with a high level of (a) field-specific, (b) advanced ICT, (c) communication, (d) problem-solving competencies required in current job and a high own level









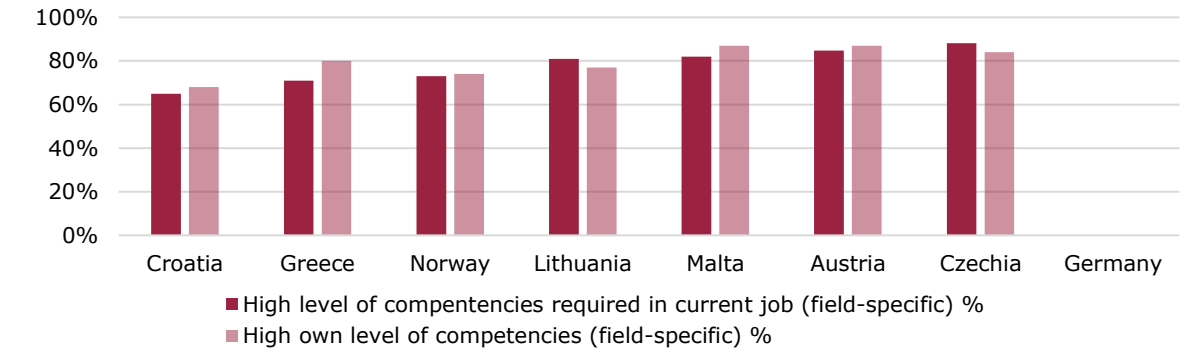
Source: EUROGRADUATE pilot survey 2018, MA-level graduates, cohort 2016/17.

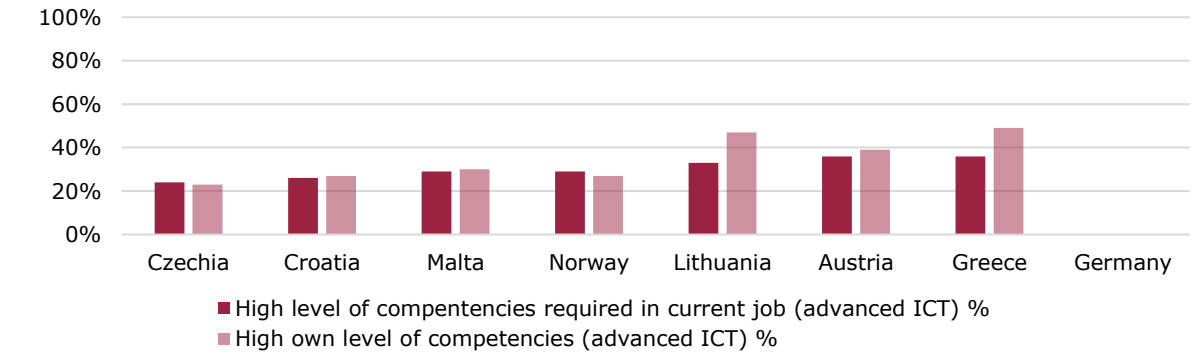
Drawing attention to ICT competencies, only in Germany – where both the required and the acquired level of ICT skills are the very high – an under-qualification is reported. While in all other countries the reported level of ICT competencies either meets the level of required ICT competencies such as in Czechia, Norway, Croatia and Lithuania or the own level of high ICT competencies is reported to be higher than the required. This is the case in Greece, where a 14-percentage point difference can be found, as well as in Malta, Czechia and Austria. Comparing the two cohorts it is especially obvious that the graduates of the younger cohort of 2016/17 report overall higher shares of own and required ICT competencies.

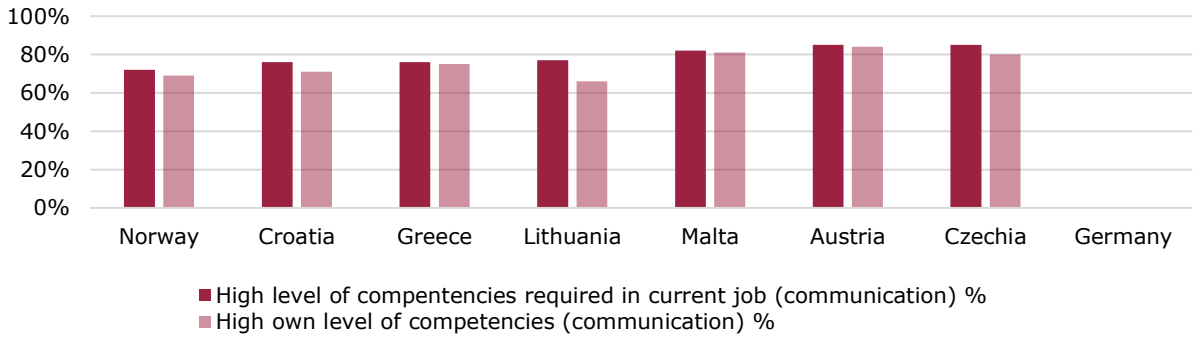
There are smaller deviations in communication competencies across countries compared to field-specific and ICT competencies. In German, Lithuanian, and Czechia in the younger cohort graduates report their required degree of communication competencies to be higher compared to what they are equipped with. In the other countries, the deviation is very small/not existent. In the older cohort, we find once more, a strong degree of over-qualification in Greece and in Lithuania. Beyond that, the relation between reported own level of communication competencies and required communication competencies is rather similar comparing the two EUROGRADUATE cohorts.

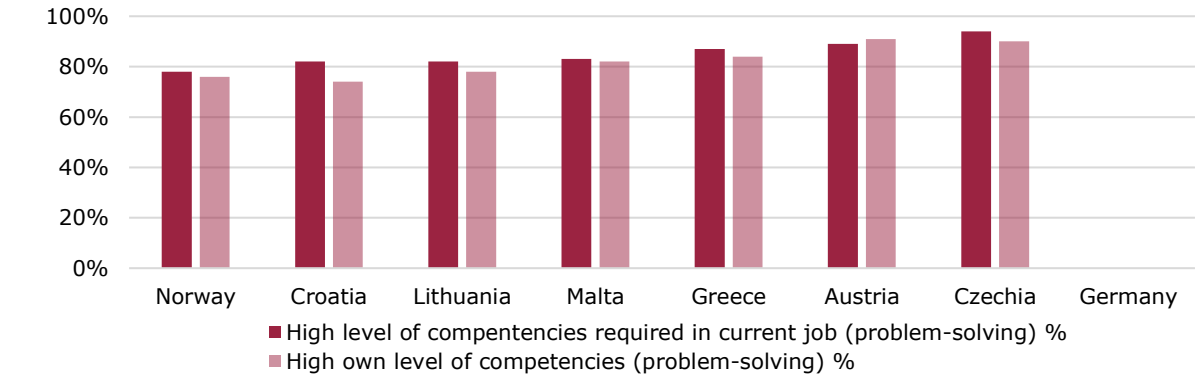
Although the difference between own and required problem-solving competencies is fairly small in all countries, with the exception of the older cohort in Austria all countries report the required level of problem-solving skills to be slightly higher that their own level. Moreover, it can be found that Norwegian graduates report a considerably lower share of own as well as required level of these skills. This finding is prevalent in both cohorts. On the other end of the scale, Czechian graduates report the highest share of required problem-solving skills, whereas Austrian graduates report the highest own level of problem-solving skills. This again, holds true for the younger as well as the older cohort.

Figure 10.4 Share of graduate with a high level of (a) field-specific, (b) advanced ICT (c) communication competencies required in current job a high own level









Source: EUROGRADUATE pilot survey 2018, MA-level graduates, cohort 2012/13.

10.2.4 Effects on competency level

In a first analytical step, the focus is on the level of the three key domains of competencies with the aim to identify factors explaining differences in the individual level of competencies. In particular for educational policy-makers in the eight EUROGRADUATE pilot countries it is important to know to what extent differences in competencies are driven by structural differences by factors that can be attributed – and therefore influenced – to the organisation higher education.

Table A10.1 in Appendix 10.1presents factors that explain differences in the own high level of field-specific, advanced ICT and communication competencies. The dependent variable in this model is the share of respondents that report a high own level of the respective domain of competencies. The model is a simple regression model. Thus, the displayed coefficients can be interpreted as increase (positive values) or reduction (negative values) in the share of respondents reporting a high competency level. In the model, it is controlled for country differences. For instance, the constant of 70.23 indicates that on average – all other variables being zero – a share of 70.23% of respondents report to be equipped with a high level of field-specific competencies.

It can be observed that graduates in the fields of Education and Agriculture report higher levels of field specific competencies compared to Engineering graduates (reference category). However, only for Agriculture graduates the effect is strong and significant. Graduates from Agriculture report a 3.48% higher share of own field specific competencies compared to graduates from Engineering. This might have to do with the very specific knowledge that is taught in agricultural studies. Overall, we find graduates from different fields of studies to rate their own abilities rather similarly, which is good news because that means the overall level of field-specific skills is equally high across different higher education programmes.

Beyond effects of the field of study, the younger cohort is found to report much lower field-specific competencies compared to the older, which is related to experience. Attending a research university increases the level of own field-specific competencies. In addition, a significant effect of study programmes that are designed in a more problem-based learning (PBL) and teaching style can be observed. This effect seems smaller than it is, since the variable is based on factor scores (see Box 10.1) ranging from -4 to 4. This means that a programme that is completely based on PBL compared to one that is not increases the share of graduates reporting a high level of field specific skills by almost 2%. Moreover, internships and study abroad experiences increase field-specific competencies, whereas voluntary work has a negative influence.

Box 10.1 Factor analysis – teaching and learning modes:

By means of a principal component analysis two factors of teaching modes are calculated. The first –
Lecture-based programme – represents the rather traditional teaching that is carried out in lectures and characterised by classic writing assignments and written exams. The second is called problem-based learning programme and is determined by practices such as practical research projects, project and problem-based learning in small groups as well as group work. The traditional, lecture-based factor ranges between -3.07 and 3.04 and the PBL factor ranges between -4.0 and 4.04. The factors are based on the answers that graduates provided when asked about nine items on teaching and learning modes.

Beyond study-programme specific factors, individual background characteristics such as age, sex and parental education are captured in the model. Male graduates report higher levels of competencies across all competency domains. This not surprising and very much in line with prior research stating that men rate their own abilities higher than women do. We find native graduates to rate their field-specific competencies lower and graduates from non-academic background to rate their competencies higher. Age at graduation has a slightly negative influence.

Advanced ICT skills

In the second model of Table A10.1, advanced ICT skills are analysed. In this model, much more differences with respect to the field of study are to be found. Not surprisingly, Natural Science (including mathematics) graduates rate their ICT skills slightly higher compared to Engineers, graduates from the fields of Social Sciences, Health and Welfare and Service report significantly lower ICT skills compared to graduates from Engineering. Comparable to the field-specific skills, attending a research university has a positive impact on ICT skills. No cohort differences on advanced ICT skills are to be observed. However, in contrast to the field specific skills, a positive influence of more traditional, lecture-based teaching mode is observed. This might have to do with the fact that study programmes in STEM fields are more often designed traditionally compared to study programmes in which ICT skills are less relevant. Voluntary work but also a study abroad experience influence the ICT skills negatively. Social background influences on advanced ICT competencies are less pronounced compared to field-specific influences.

Communication skills

Communication skills are not at all influenced by differences between study fields. The younger cohort reports much lower communication skills. The study duration has a positive influence. The longer the study duration the higher is the share of graduates with a high level of communication skills. A study programme that is taught in a language other than then the country languages also increases communication abilities. Voluntary activities influence communication skills negatively. The social background influences are stronger compared to the other domains. Graduates from non-academic and immigrant background rate their communication skills higher compared to academic and native graduates.

Problem-solving skills

The last domain of competencies that is analysed focuses on problem-solving skills. The regression model indicates study-field differences: Students from the field of Education, Natural Sciences and ICT report an own level of problem-solving skills above average. Beyond differences related to fields of study, the results show that a study language other than the country language and experiences abroad increase the level of reported own problem-solving skills. As for the other competency domains, men are found to report a higher level of skills and natives compared to immigrants do so too.

10.2.5 Effects on differences between required and acquired competencies

The second analysis on the four crucial competency domains focuses on potential discrepancies between the own level of competencies and what is required in the current employment. Table A10.2 in Appendix 10.2 is split up into two tables, with Table A10.2a concentrating on overestimation and A10.2b focusing on underestimation. Overestimation in this context indicates that graduates report a higher level of own competencies compared to what is expected in their current job, while underestimation means that the reported own level of competencies is lower than what is required. It is important to note, that overestimation and underestimation can be based on two causes. Since the variables base on a self-assessment of competencies it is possible that graduates reporting higher own skills than required are overestimating their own ability level, but it is also possible that they are actually over-skilled – their level of qualification is higher than what they need.

The dependent variable compares both, underestimation and overestimation with the likelihood that graduates rate their own level just the same as the required level. The model is a multinomial regression model. Thus, the coefficients displayed are relative risk ratios that are comparable to odds ratios (see box 4.2). Values above one indicate a positive probability change and below one a negative change.

Graduates from Arts and Humanities, Social Sciences and Agriculture are found to have a significantly higher probability of having a higher level of own field-specific skills than what is required at work compared to Engineering graduates. Individuals that graduated from Information and Communication Technology studies have a lower likelihood compared to engineers to be overqualified given their field-specific competencies. Graduates from research universities are also more likely to report over-qualification.

Graduates from a non-academic background have a greater chance of being employed below their level of field-specific, ICT, communication as well as problem-solving competencies. Thus, social status influences matter significantly when finding most suitable employment, which points towards social inequality in the ability to equip one's own skill set most adequately at work. Men have a lower chance of being over-skilled in terms of their field-specific skills compared to women. Differences between native and immigrant graduates are not found for any of the competency domains.

Concerning the overestimation/over-skilling of advanced ICT skills, the data shows that differences between study fields matter most. Graduates from Education, Arts and Humanities, Social Sciences, Natural Sciences, Agriculture and Service are more likely to be equipped with more advanced ICT skills compared to the extent to which they apply ICT skills at work.

The results on communication competencies indicate an overall lower degree of overestimation/over-skilling. The factor that is most important is the social background of graduates. This is not surprising since communication abilities as part of the generic skill set are more than other abilities not specifically learned and taught at university but more likely to be based on social differences outside the learning environment.

The findings on over-skilling in problem-solving skills reveal strong differences between fields of study; graduates from Social Sciences, Natural Sciences and Agriculture report an approximately 1.5 higher chance to have problem-solving skills above the required level compared to the reference category Engineering.

Across most competency domains, except for field-specific skills, men report a higher level of over-skilling compared to women. This is very much in line with previous research, stating that women are more likely to underestimate themselves while the opposite holds true for men.

In Table A10.2b results for the probability of under-skilling are displayed. Overall, underestimation is less a problem compared to overestimation. 25% of MA-level graduates underestimate their field-specific skills compared to 35% that overestimate their skills. The findings demonstrate that Engineering graduates have a higher probability of under-skilling/underestimation compared to graduates from Arts and Humanities, Natural Scientist and Services, only Health and Welfare graduates show a higher probability to underestimate their field-specific skills (compared to Engineering graduates). Social background characteristics seem to play a minor role in under-skilling compared to over-skilling except for sex, women are significantly more likely to rate their own abilities lower than what is required in the field-specific and the communication domain than men.

Regarding factors related to the organisation of study, PBL teaching modes increase the probability of underestimating graduates' communication skills. The study duration reduces the underestimation risk in the domain of advanced ICT skills.

To sum up, in line with what would be expected, it can be inferred that communication abilities are least likely to be influenced by study related factors such as the field of study and the study organisation. This is reasonable since communication skills are often not an explicit part of the curriculum. In contrast, they are more likely to be influenced by personal background influences such as parental education. However, we find parental education to also be highly relevant in explaining over-skilling and under-skilling in the field-specific domain. This finding points towards social inequality in the matching of acquired and required skills. Moreover, there is a clear tendency that men rate their own abilities higher compared to women. No clear relevance of the migration background of individuals can be identified.

ICT and field-specific skills are much more likely than the communication skills to be subject to study-related factors. The respective field of study plays and important role in explaining the level of own competencies but also the likelihood to over or underestimate competencies. Beyond differences according to field of study, there is a tendency for a positive influence of PBL modes to be observed. Foreign language programmes and study abroad experiences seem to positively matter in order to obtain a high skill set.

10.3 Skill mismatch

Beyond specific skills, this chapter concentrates on the degree of skill mismatch. As indicated in the introduction, skill mismatch is defined as imbalances between the supply of and the demand for qualified labour. It can indicate either a surplus or a deficiency of knowledge and skills that enable individuals to perform tasks.

The most common differentiation is made between *vertical* or *horizontal* mismatch:

- *Vertical mismatch* it most often referred to over-qualification (under-qualification), workers have acquired more (less) schooling or skills than is required for the job (Hartog, 2000, McGuinness, 2006).
- *Horizontal mismatch* describes a mismatch between the current job and the field of study of field in which training is accomplished (Robst, 2007).

In the following, both forms of mismatch will be addressed. Horizontal skill mismatch must hereby not necessarily represent a problem for the labour market integration of young graduates, whereas vertical skill mismatch is a clear sign for a lack of fit between demand and supply on the labour market.

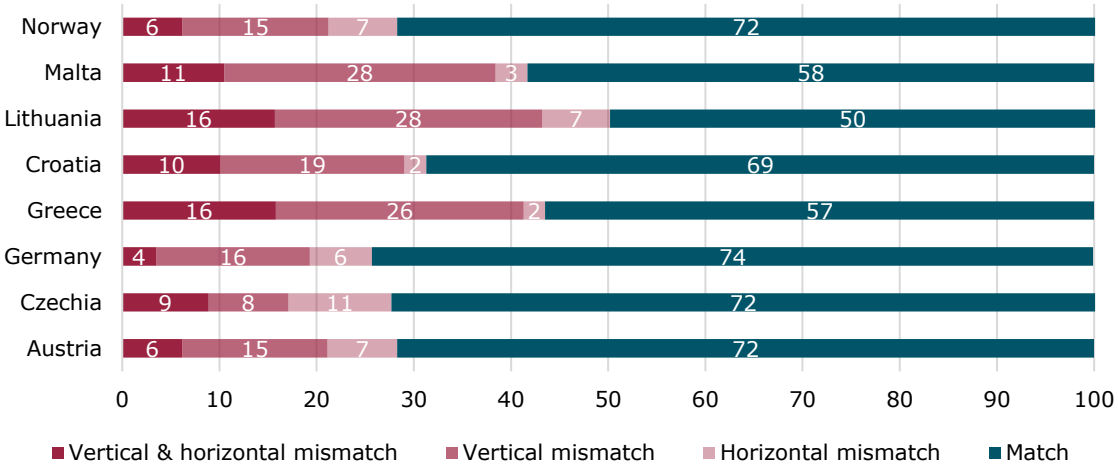
Similar as in chapter 6 of this report the variable that represents the (mis)match between education and employment is differentiated into four categories:

- *Match between education and employment*: This is given when respondents report that they are employed at least the degree level they graduated at the same time the respondents report that they work exclusively in their own or a related field of study.
- *Horizontal mismatch*: This applies when the respondent are employed at the degree level but not in the field or a related field they graduated from.
- *Vertical mismatch*: This is the case when the respondent are employed in a job that requires a degree level lower than the degree the graduates obtained. However, the respondent reports that they are employed in their own or a related field of study.
- *Horizontal and vertical mismatch*: This applies when a respondent is employed neither on an appropriate degree level (but lower) nor in the field of study or a related field.

10.3.1 Horizontal and vertical skill mismatch

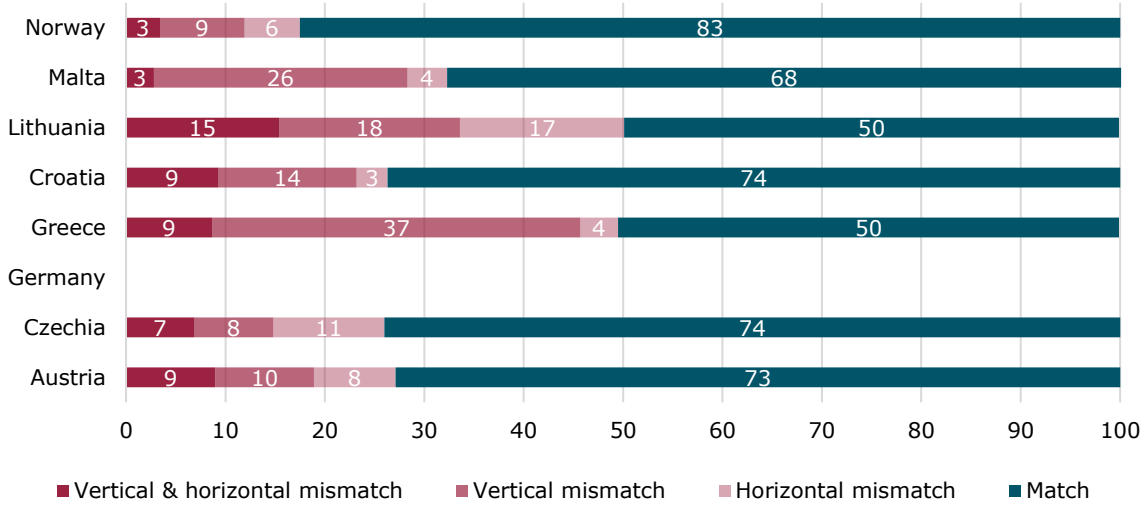
In Figure 10.5a, the mis(match) between education and employment according to the above definition is displayed for MA-level graduates from the 2016/17 cohort. In Figure 10.5b, the focus is on graduates from the 2012/13 cohort.

Figure 10.5a (Mis)match between study and employment



Source: EUROGRADUATE, 2018, all employed MA-level graduates, cohort 2016/17

Figure 10.5b (Mis)match between study and employment



Source: EUROGRADUATE, 2018, all employed MA-level graduates, cohort 2012/13

First, it is good news to point out that in all countries the majority of graduates is employed in a job in which their degree of qualification and their field of qualification match the job. However, the figures also indicate large differences between countries. By comparing the two cohorts, it can be observed that the share of graduates with a matching employment in degree and field is higher for the older compared to the younger cohort. This is related to labour market experiences. The only exception here is Greece, where 50% of graduates from the 2012/13 cohort indicate to have a matching job, while this applies to 57% in the younger cohort. The poor performance of the older cohort in Greece can be traced back to the severe impact that the economic crisis had on the country. In both cohorts, Greece

and Lithuania are the two countries with the lowest share of graduates in employment conditions that match their qualification. In addition, the two countries show the highest share of graduates in vertically mismatching occupations, which is considered much more detrimental compared to horizontal mismatch.

10.3.2 Effects on horizontal mismatch

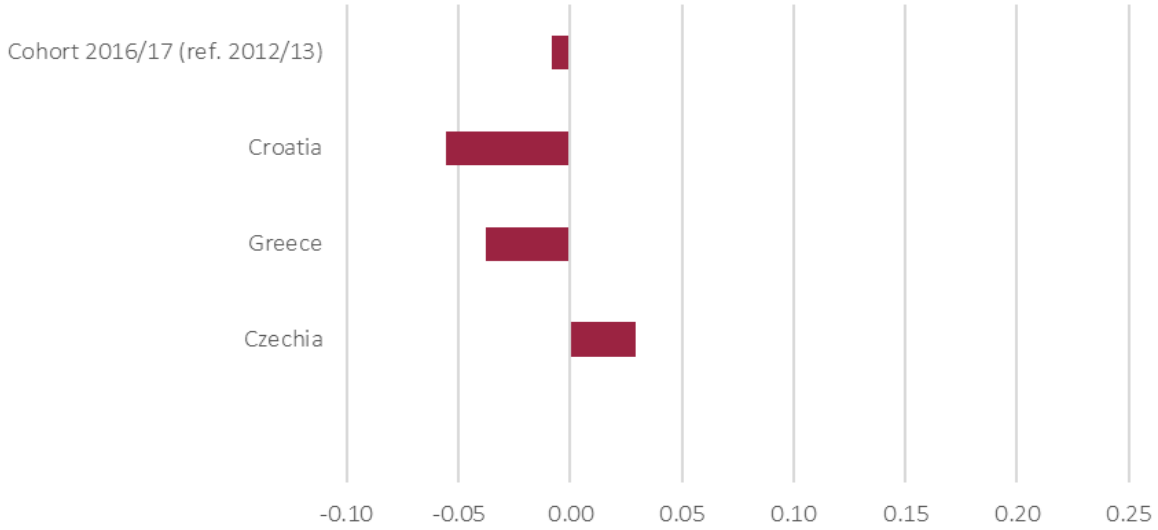
In a first analytical step on education-employment (mis)match attention is drawn to the relevance of explanatory power on the country level. In Figure 10.6 Average Marginal Effects on the probability to be in a horizontally non-matching employment position compared to be in a matching position are displayed. It is important to note that in the dependent variable all other forms of mismatch and match contrast only horizontal mismatch. If respondents reports both horizontal and vertical mismatch they are not part of the horizontally non-matching group since here, the key focus lies on horizontal mismatch only.

The figure only contains significant effects of country differences, meaning that if there are no statistically significant effects between the countries the respective country is not included in the figure. The reference category is Austria.

Box 10.2 Average Marginal Effects

Average Marginal Effects (AME): The average marginal effect represent effect on probabilities, i.e. a number between 0 and 1. It is the average change in probability when x increases by one unit. The average marginal effect is computed for each individual and then the average is built. To get the effect on the percentage the effect needs to be multiplied by 100. For example, in Figure 10.6 it can be stated that the probability of being in a horizontally non-matching employment position is 6 percentage points lower in Croatia compared to Austria.

Figure 10.6 Country-level effects on horizontal mismatch



Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are AMEs

Interestingly, although Lithuania showed a large share of horizontal mismatch, we do not find a statistically significant difference in the horizontal mismatch between Lithuania and Austria. However, the data shows that graduates in Czechia compared to Austria have a higher probability of being in horizontally non-matching employment situations, whereas the likelihood is lower in Greece and Croatia. There are no significant difference in horizontal mismatch for the other countries.

In a next step, the aim is to draw beyond country-level explanatory factors. In Table A10.3 of Appendix 10.3 a wide set of explanatory variables is introduced to explain the degree of horizontal education-employment (mis)match. The explanatory factors included in the model can be differentiated between study-related factors such as the field of study, the duration of study, the type of higher education institution and the dominant teaching mode. In addition, study abroad experiences and study-related work and internship experiences are captured. Beyond that, personal background characteristics are included in the model to allow for conclusion on the social, gender and ethnic selectivity in horizontal education-employment mismatch. The country variables that are explicitly displayed in Figure 10.7 are also included.

The effects seem very small compared to prior models. This has to do with the fact that AMEs have to be interpreted as percentage change (see Box 10.2).

The data demonstrates that both graduates from Arts and Humanities as well as graduates from Social sciences are more likely to be employed in a horizontally non-matching position. While Social scientists' risk of being in a non-matching job is 4 percentage points higher compared to Engineering graduates, the risk is even 5 percentage points higher for graduates from Arts and Humanities. Graduating from Health and welfare or information and communication technology, in turn, leads to a lower risk of horizontal mismatch. For

the Health and welfare graduates, this might be related to their very clear job profiles with most of them being in a medical profession.

Beyond the impact of the fields of study, the only study-related relevant influence are internships and work experiences with reduce the likelihood of horizontal mismatch by 2 percentage points. This seems reasonable since prior work experience can increase the chance of staying with this employer. Also, it increases graduates' knowledge of specific labour market prospects in their branches and hence, reduces horizontal mismatch.

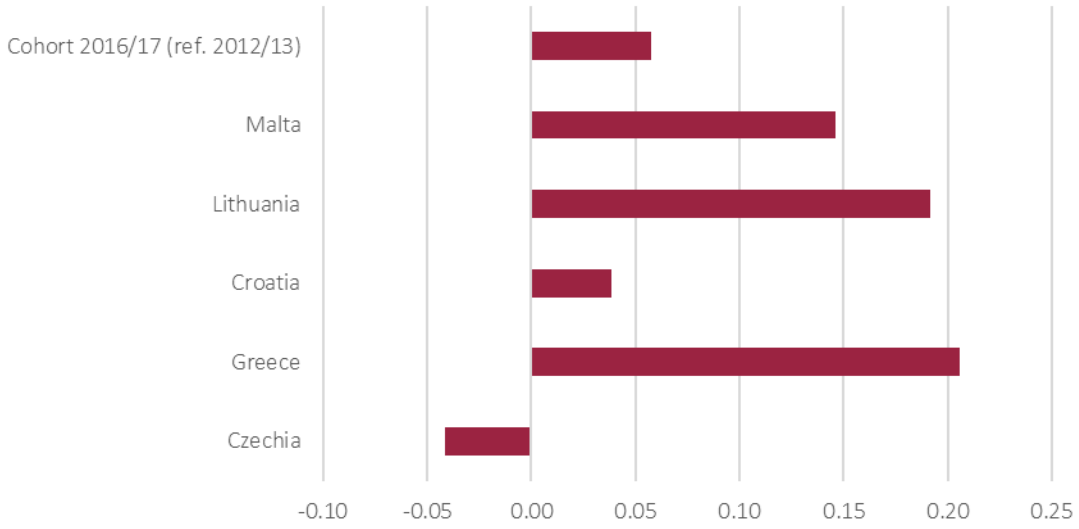
Drawing on personal background characteristics it can be concluded that social inequality seems to play a role. Graduates with academic background are less likely to experience horizontal mismatch.

10.3.3 Effects on vertical mismatch

Much more important than horizontal mismatch is the degree of vertical mismatch since vertical mismatch allows for conclusion on the overall conditions on the labour market and the actual employment prospects of graduates. A high degree of vertical mismatch is a clear indication for a misalignment on the labour market in the sense that demand and supply of qualified labour are not corresponding.

In the subsequent Figure 10.7, the focus is on the country-level effects on vertical mismatch. Vertical mismatch includes hereby graduates that either report to only be in a vertically non-matching employment position or both in a vertically and horizontally non-matching position. This group of graduates is contrasted with graduates that are either in an employment position that matches their educational qualification or in a horizontally non-matching position. The displayed effects are AMEs.

Figure 10.7 Country-level effects on vertical mismatch



Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are AMEs

Figure 10.7 indicates that compared to Austria, only Czechia has a lower probability of vertical mismatch, whereas graduates in Croatia and Malta and particularly Greece and Lithuania have much higher probability of being employed in a position in which they are underqualified. Since we are concentrating on MA-level graduates this means that graduates are employed below the MA-level. In Lithuania, the risk of being employed below the own level of qualification is almost 20 percentage points higher and in Greece even more than 20 percentage points higher than in Austria. Since Germany and Norway are not displayed in Figure 10.8 this implies that there are no significant differences in the risk of vertical mismatch between these two countries and Austria.

In Table A10.4 in Appendix 10.4, factors that influence vertical mismatch beyond the country-level influences are displayed. The younger cohort has a higher risk of vertical mismatch compared to the cohort that graduates in 2012/13. This is related to a lack in experience that attenuates over time. The field of study plays a crucial role in explaining differences in vertical mismatch. While graduates from the field of Arts and Humanities have an increased probability of 4 percentage points to be in a vertically non-matching employment situation, this probability is 3 percentage points increased for Social Science graduates. Graduates in the field of Service even have a 10-percentage point higher risk of vertical mismatch compared to graduates with a degree in Engineering. In turn, Natural Science, Information and communication technology and Health and welfare graduates have a lower risk of being employed in a vertically mismatching job.

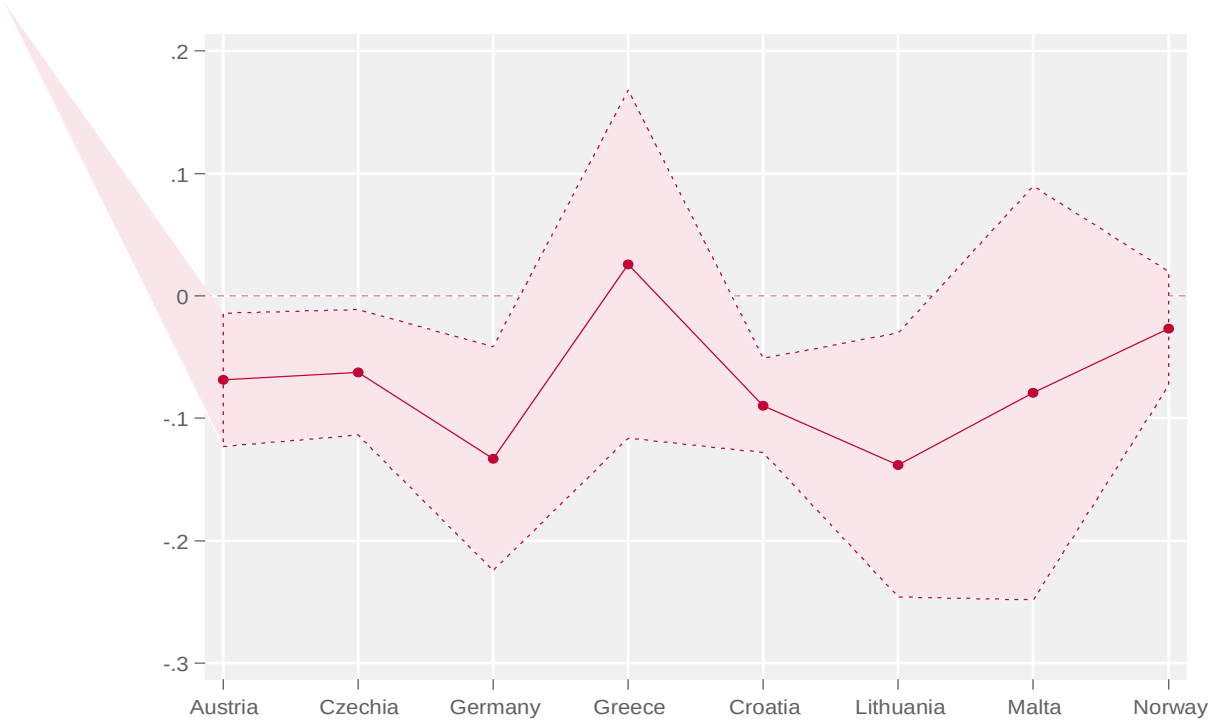
Beyond the field of study, a study-related driver in preventing vertical mismatch are work and internship experiences. The risk of being overqualified is 8 percentage points higher for graduates that did not gain study-related internship or work experience. Thus, it is highly advisable and beneficial to participate in practical trainings such as internships during the time of study. Moreover, voluntary work reduces the risk of working below one's own level of qualification. There are no other study-related factors that influence the risk of vertical mismatch between education and employment.

It can be observed that the social background of graduates does play a role. Graduates from a non-academic parental environment have a 5-percentage point higher risk of experiencing a mismatch between education and employment compared with graduates with at least one parent with an academic degree. This is particularly interesting since similar tendencies were found when focusing on horizontal mismatch. Thus, it points once more toward persistent social inequalities in the chance for finding employment that matches a graduates' educational degree. Beyond the social background, personal background characteristics do not play a significant role in explaining vertical skill mismatch.

To gain a deeper insight for each of the eight EUROGRADUATE survey countries on this relevance of social inequality on the risk of experiencing vertical mismatch and additional analytical step is to calculate an interaction between social background of graduates and the country level variables. The findings are illustrated in Figure 10.8. This figure shows the effect of coming from a non-academic family, meaning that no parent had a university degree on the risk of being employed in a position that is below the level of qualification of a MA-level graduate. The displayed coefficients are again AMEs. If the reddish area crosses the zero line this means that the effect is not significant. This is observed for Greece, Malta and Norway and indicates that there is no significant difference in the degree of vertical skill mismatch given the parental education. In the other five countries, a

negative effect is observed. This negative effect is in line with the finding in Table A10.3, there is a social disadvantage in vertical skill mismatch. However, this effect is not equal comparing the five countries.

Figure 10.8 Average marginal effects on the influence of parental educational level by country



Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are AMEs, * p<0.05, ** p<0.01, ***, p < 0.001

While graduates from non-academic families are only to a minor, yet significant, extent more likely to experience vertical skill mismatch in Austria and Czechia, the effect is stronger in Croatia and strongest in Lithuania and Germany. This finding implies that social inequality in skill mismatch is not equal across countries. It is much more likely for graduates in Germany, Lithuania and Croatia and to a minor extent in Austria and Czechia to depend – apart from their own abilities, their field of study, their study-related work experiences etc. – on their parents' educational degree in order to find employment that meets their qualification level. This finding reveals a relevant and country-specific degree of social inequality in skill (mis)matching.

10.4 Conclusion and discussion

This chapter addressed the issue of skill and competency development and skill mismatch. The focus was on MA-level graduates because the indicators that were of interest in this chapter concentrated on the employment situation of graduates and since most BA-level graduates continued in further education it was more relevant to concentrate on MA-level graduates.

In a first step, the thematic chapter focussed on the domains of competencies that were surveyed within the EUROGRADUATE pilot study. It was demonstrated that the degree of high and low self-assessment of competency varies systematically between countries. In a next step, this chapter provided in-depth information on four key domains of competencies, namely: field-specific, advanced ICT, communication and problem-solving. The four domains of competencies were analysed in order to answer two questions: first, what drives the level of graduates' own competencies, second, which factors explain the discrepancy in the own level and the level of required competencies at work.

The findings can be summarized as follows: The fields of study play a large role in explaining the degree and differences in advanced ICT skills. As expected, graduates from STEM fields report much higher advanced ICT skills compared to graduates from other fields. However, graduates from Social Sciences and Humanities have a higher risk of not using the full potential of their ICT skills in their current employment. Field-specific and communication skills do not vary much across fields of study. Among the study-related factors that play a role in explaining different outcomes in competencies, an instruction language other or in addition to the country language, internship and work experiences but also problem-based teaching modes had a positive influence.

In a further step, the issue of skill mismatch was addressed. Forms of skill mismatch were presented and a focus was drawn on the causes of horizontal and vertical skill mismatch. Moreover, the relevance of graduates' social background for skill mismatch in the eight EUROGRADUATE pilot countries was analysed. To sum up, the data shows large country differences in the degree of vertical and horizontal skill mismatch. Beyond country-level influence, it was shown that voluntary work and internship experiences during study reduce the risk of skill mismatch – especially vertical mismatch.

In both analyses on the competency domains as well as on skill mismatch it could be observed that the social background of students plays an important role in so far as graduates from an academic family background have lower risk of skill mismatch and a higher chance of applying their competencies most adequately at work. These social disadvantages vary between countries. In Germany, Lithuania and Croatia they were more strongly pronounced.

Against the background of these findings, a recommendation for policy makers and educational practitioners across countries is to strengthen not only the field-specific but also generic skills and to design higher education programmes based on problem-based learning approaches. Moreover, fostering study abroad experiences as well as internships as part of the curriculum increases graduates' skill set and reduces their risk of working in a non-matching employment situation. Finally, policy makers should draw attention to the situation of students from non-academic family background, since they are less likely to

study abroad and to participate in internships. Programmes should be designed to specifically aim at creating equal chances in study conditions and study-related conditions in order to avoid social inequality in the acquisition of skills and skill mismatch.

10.5 Appendix

Appendix 10.1

Table A10.1 Factors influencing the share of high level of own competencies

	Field specific		**Advanced ICT**		**Communication**	
	Coefficient	S.E	Coefficient	S.E	Coefficient	S.E
ISCED field (ref. Engineering)						
Education	1.07**	0.38	-0.41	0.34	2.12	0.37
Arts and humanities	0.17	0.40	-0.36	0.35	1.03	0.39
Social sciences etc.	0.39	0.38	-0.62*	0.34	0.89	0.37
Business, etc.	0.10	0.32	-0.30	0.28	1.15	0.31
Natural sciences etc.	0.25	0.40	0.10*	0.35	1.54	0.39
Inform. and communic. techn.	-1.03	0.50	-0.71	0.44	0.57	0.49
Agriculture, forestry etc.	3.48***	0.57	1.48	0.50	2.74	0.56
Health and welfare	0.55	0.38	-0.70*	0.34	1.07	0.37
Services	-1.43	0.65	-2.13*	0.57	0.63	0.63
Research university (ref. no	1.04***	0.26	0.51*	0.22	-0.03	0.24
Cohort 2016/17 (ref. 2012/13)	-6.56***	0.18	0.13	0.16	-4.02***	0.19
Lecture-based programme (ref. no lecture-based)	-0.09	0.09	0.14*	0.08	-0.06	0.09
Problem-based learning programme (ref. no PBL)	0.19*	0.09	-0.13	0.08	0.12	0.09
Study duration	0.01	0.04	0.04	0.04	0.35***	0.04
Study programme in other than country language (ref. only	4.41***	0.33	-0.17	0.29	2.62***	0.32
Study abroad (ref. no study	0.75*	0.28	-0.93**	0.25	-0.11	0.27
Internship, work experience (abroad and in country) (ref. no	0.66**	0.20	-0.19	0.17	0.49	0.19
Voluntary work (ref. no voluntary	-2.17***	0.23	-0.70***	0.20	-1.45***	0.22
Male (ref. female)	0.80***	0.21	0.63***	0.18	0.62***	0.20
First generation HE (ref. at least one parent has HE degree)	0.88***	0.19	0.33	0.39	2.57***	0.43
No migration background (ref. mig. backr.)	-1.18***	0.26	-0.53***	0.01	-1.58***	0.19
Age at graduation	-0.03*	0.02	-0.05***	0.00	-0.08***	0.01
Constant	70.23***	0.54	33.07	0.00	70.05***	0.56

Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are regression coefficients, including country fixed effects * p<0.05, ** p<0.01, ***, p < 0.001

Appendix 10.2

Table A10.2a Factors influencing difference between acquired and required competencies (overestimation)

	Field specific		Advanced ICT		Communication		Problem solving	
	Relative Risk Ratio	S.E.	Relative Risk Ratio	S.E.	Relative Risk Ratio	S.E.	Relative Risk Ratio	S.E.
ISCED field (ref. Engineering)								
Education	0.88	0.1	1.41	0.1	0.61	0.08	1.15	0.16
Arts and humanities	1.63*	0.2	1.59	0.1	1.22	0.15	1.94*	0.25
Social sciences etc.	1.40*	0.1	1.47	0.1	1.04	0.12	1.42*	0.18
Business, etc.	1.06	0.1	1.11	0.1	0.86	0.09	1.04	0.11
Natural sciences etc.	0.98	0.1	1.47	0.1	1.24	0.16	1.43*	0.20
Inform. and communic. techn.	0.61*	0.1	0.48	0.0	0.80	0.13	0.55	0.11
Agriculture, forestry etc.	1.64*	0.3	1.51	0.3	1.13	0.23	1.73*	0.38
Health and welfare	0.88	0.1	1.23	0.1	0.76	0.10	1.11	0.15
Services	0.96	0.2	1.56	0.3	1.06	0.21	1.40	0.29
Research university (ref. no research	1.13*	0.1	1.07	0.1	1.44	0.10	1.08	0.11
Cohort 2016/17 (ref. 2012/13)	1.60*	0.0	1.39	0.0	1.12	0.11	1.63*	0.12
Lecture-based programme (ref. no lecture-based)	1.01	0.03	1.04	0.03	1.09**	0.03	1.08**	0.03
Problem-based learning programme (ref. no PBL)	1.08**	0.03	1.06*	0.03	1.05	0.03	1.03	0.03
Study duration	0.99	0.0	0.99	0.0	1.00	0.01	1.02	0.01
Study programme in other than country language (ref. only country	1.02	0.13	1.24	0.15	1.29*	0.16	1.22	0.16
Study abroad (ref. no study abroad)	1.18	0.1	1.00	0.0	1.07	0.09	0.98	0.09
Internship, work experience (abroad and in country) (ref. no exp.)	0.75***	0.05	0.93	0.06	0.86	0.05	0.84***	0.06
Voluntary work (ref. no voluntary	1.08	0.0	1.07	0.0	1.06	0.08	1.02	0.08
Male (ref. female)	0.75*	0.0	1.23	0.0	0.98	0.07	1.08	0.08
First generation HE (ref. at least one parent has HE degree)	1.27**	0.11	1.28**	0.17	1.53**	0.21	1.12*	0.06
No migration background (ref. mig. backr.)	1.03	0.23	0.99	0.06	0.95	0.06	0.85***	0.09
Age at graduation	0.99*	0.0	0.99	0.0	0.99	0.01	1.00	0.01
Constant	0.69	0.3	0.65	0.1	0.65	0.15	0.34*	0.08

Table A10.2b Factors influencing difference between acquired and required competencies (underestimation)

	Field specific		Advanced ICT		Communication		Problem solving	
	Relative Risk Ratio	S.E.	Relative Risk Ratio	S.E.	Relative Risk Ratio	S.E.	Relative Risk Ratio	S.E.
ISCED field (ref.								
Education	0.82	0.11	0.99	0.1	0.87	0.11	0.98	0.12
Arts and humanities	0.67	0.09	1.05	0.1	0.77	0.11	0.83	0.11
Social sciences etc.	0.81	0.10	0.95	0.1	0.97*	0.12	0.73*	0.09
Business, etc.	0.96	0.10	1.02	0.1	0.91	0.10	0.87	0.09
Natural sciences etc.	0.75	0.10	1.54*	0.2	1.16	0.17	1.00	0.14
Inform. and communic.	0.71	0.12	0.84	0.1	1.21	0.21	0.73*	0.12
Agriculture, forestry etc.	0.92	0.21	0.86	0.2	0.73	0.17	0.87	0.19
Health and welfare	1.33	0.17	0.83	0.1	0.98	0.13	1.20	0.15
Services	0.57	0.14	0.46*	0.1	0.75	0.19	0.76	0.18
Research university (ref. no	1.19	0.13	1.16	0.1	0.99	0.10	1.14	0.12
Cohort 2016/17 (ref.	1.27	0.09	1.11	0.0	1.04*	0.07	1.38*	0.10
Lecture-based programme	0.99	0.03	1.03	0.0	1.05	0.03	0.95	0.03
Problem-based learning programme (ref. no PBL)	1.06	0.03	1.01	0.0 4	1.10**	0.04	1.05	0.03
Study duration	1.02	0.02	0.95*	0.0	1.02	0.02	1.01	0.02
Study programme in other than country language (ref.	0.84	0.11	1.06	0.1 5	0.93	0.13	1.03	0.13
Study abroad (ref. no study	1.00	0.09	1.02	0.1	1.03	0.10	0.89	0.08
Internship, work experience (abroad and in country) (ref.	1.06	0.07	0.95	0.0 7	1.04	0.07	1.08	0.07
Voluntary work (ref. No)	1.19	0.10	1.04	0.0	0.95	0.08	0.97	0.08
Male (ref. female)	0.75	0.09	0.91	0.1	0.71*	0.09	0.74*	0.10
First generation HE (ref. at least one parent has HE	1.05	0.07	1.20**	0.0 9	0.96	0.07	1.04	0.07
No migration background (ref. mig. backr.)	1.07	0.10	1.12	0.1 2	0.99**	0.01	0.79**	0.07
Age at graduation	0.97	0.01	1.00	0.0	0.68	0.17	0.98*	0.01
Constant	1.24	0.31	0.46*	0.1	0.96*	0.07	0.68	0.16

Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are regression coefficients, including country fixed effects * p<0.05, ** p<0.01, ***, p < 0.001

Appendix 10.3

Table A10.3 Factors influencing the horizontal mismatch

	Horizontal mismatch	
	AME	Standard Error
ISCED field (ref. Engineering)		
Education	-0.01	0.01
Arts and humanities	0.05**	0.02
Social sciences etc.	0.04**	0.01
Business, etc.	0.00	0.04
Natural sciences etc.	0.02	0.01
Inform. and communic. techn.	-0.04**	0.02
Agriculture, forestry etc.	0.03	0.01
Health and welfare	-0.03**	0.00
Services	0.02	0.02
Research university (ref. no research uni)	0.01	0.01
Cohort 2016/17 (ref. 2012/13)	-0.01**	0.01
Lecture-based programme (ref. no lecture-based)	0.01	0.01
Problem-based learning programme (ref. no PBL)	0.02	0.02
Study duration	0.04	0.01
Study programme in other than country language (ref. only	0.00	0.00
Study abroad (ref. no study abroad)	0.00	0.02
Internship, work experience (abroad and in country) (ref. no	-0.02**	0.00
Voluntary work (ref. no voluntary work)	0.00	0.00
Male (ref. female)	0.01	0.02
First generation HE (ref. at least one parent has HE degree)	0.02*	0.01
No migration background (ref. mig. backr.)	0.01	0.01
Age at graduation	0.00	0.00

Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are AMEs, including country fixed effects * p<0.05, ** p<0.01, ***, p < 0.001

Appendix 10.4

Table A10.4 Factors influencing the vertical mismatch

	Horizontal mismatch	
	AME	Standard Error
ISCED field (ref. Engineering)		
Education	-0.03	0.02
Arts and humanities	0.04*	0.01
Social sciences etc.	0.03*	0.01
Business, etc.	-0.01	0.02
Natural sciences etc.	-0.07**	0.02
Inform. and communic. techn.	-0.06**	0.03
Agriculture, forestry etc.	-0.02	0.01
Health and welfare	-0.07**	0.02
Services	0.10*	0.03
Research university (ref. no research uni)	0.01	0.01
Cohort 2016/17 (ref. 2012/13)	0.07***	0.01
Lecture-based programme (ref. no lecture-based)	0.00	0.02
Problem-based learning programme (ref. no PBL)	0.01	0.01
Study duration	-0.01***	0.00
Study programme in other than country language (ref. only country lang.)	-0.01	0.02
Study abroad (ref. no study abroad)	-0.05	0.03
Internship, work experience (abroad and in country) (ref. no	-0.08***	0.02
Voluntary work (ref. no voluntary work)	-0.05***	0.01
Male (ref. female)	-0.02	0.02
First generation HE (ref. at least one parent has HE degree)	0.05***	0.00
No migration background (ref. mig. backr.)	-0.01	0.01
Age at graduation	0.00	0.00

Source: EUROGRADUATE pilot survey 2018, all employed MA-level graduates, both cohorts, displayed are AMEs, including country fixed effects * p<0.05, ** p<0.01, ***, p < 0.001

11. How could higher education contribute to social trust, democratic values and political participation?

11.1 Introduction: Relevance of social outcomes and state of research

Nowadays it is widely acknowledged that (higher) education influences relevant outcomes beyond the economy and the labour market. Individuals and the society at large can benefit from such social outcomes of education, e.g. better health, well-being, social trust, civic engagement, democratic values, or active citizenship (e.g. Carstensen & Jungbauer-Gans 2016, CERI 2007, Field 2009, Hout 2012, Persson 2013).

This understanding of a wider scope of outcomes of higher education is also shared by many decision-makers and reflected in the functions of higher education (Council of Europe 2007) as well as in higher education agendas and policies (e.g. Vossensteyn et al. 2018). The Bologna Communiqués of Yerevan (2015) and Paris (2018) attribute a decisive role to higher education in providing solutions to societal challenges such as "political polarisation, radicalisation and violent extremism" (Bologna Process 2018: 1). Higher education is expected to stimulate graduates to become "active citizens in democratic societies" (ibid.).

Against this background, it will be analysed how higher education and such social outcomes as democratic values and political participation are interrelated. Among the social outcomes covered by the EUROGRADUATE pilot survey the chapter focusses on *social trust, democratic values, and political participation*, since they currently receive particularly high attention among policy makers. Moreover, these focus topics tie into each other: social trust, democratic values, and political participation are likely to be mutually enforcing each other. Thus, their interrelations will be investigated as well in the present chapter.

While there is quite some empirical research on the social outcomes of education, the topic has received much less attention than economic and labour market outcomes. Still, the mechanisms of *how* higher education contributes to social outcomes are not very well understood. We aim at adding to this understanding by analysing how different characteristics of higher education are interrelated with trust, political values, and political participation. Note that these interrelations are not to be an understood as causal links in a strict sense.

11.2 Explaining trust, democratic values, and political participation as outcomes of higher education

11.2.1 How are trust, democratic values, and political participation connected to higher education?

Models for explaining political participation as an outcome of education or social outcomes more generally often look at the resources of individuals (Brady et al. 1995, Carstensen/Grüttner 2018, Rüber et al. 2018, Schuller 2004). (Higher) education influences (typically increases) individual resources and these resources facilitate political

participation and/or foster values and attitudes leading to political participation. For our analyses, we differentiate five kinds of resources:

1. *Human capital:* Human capital consists of the knowledge, skills and qualifications of individuals. It is straightforward that education affects the skills and competencies. Higher education programmes teach subject-specific knowledge and often higher levels of general skills like advanced numeracy or advanced literacy. Moreover, transferable skills such as communication skills, team-working skills, organisation skills, problem-solving skills are obtained and trained in higher education. The so-called *civic skills*, i.e. communicative and organisational competences that are necessary or at least helpful for citizens' political participation in society, are such transferable skills. Civic skills are seen as crucial for encouraging and facilitating political participation (Brady et al. 1995). Examples are rhetorical abilities, researching and presenting complex information as well as the organisation of or participation in meetings. Not all higher education programmes develop civic skills to the same degree. It is argued that higher education programmes of more general nature are better suited to boost active citizenship than higher education programmes with a more occupational orientation (van de Werfhorst 2016). Subject-specific differences may occur, e.g. due to different predominant teaching modes. International mobility or extra-curricular activities like voluntary work may push civic skills as well.
2. *Social capital:* Social capital refers to the number and quality of social relations with others. Social capital is positively associated with human capital, i.e. persons with higher levels of education and jobs of higher social status usually have larger and more diverse networks (Ajrouch et al. 2005). Students build social networks in higher education that may prolong beyond higher education. The social networks they build during studies and in occupation encompass more people with high human capital and strong and large networks. Social capital can fuel political participation e.g. by social expectations of network members, or by providing opportunities for activities, information, or political orientation. Moreover, experiencing a good exchange with a larger and more dispersed network of others helps building social trust as a 'cognitive form' (Carstensen/Grüttner 2018) of social capital.
3. *Identity & cultural capital:* Identity capital refers to characteristics defining the self-image of an individual, mostly personality characteristics such as self-esteem (Schuller 2004). Values and self-image are influenced by the kind of education one receives. Political values such as attitudes towards democracy or tolerance may well be influenced by the contents and 'culture' of a specific field of study or programme. Mobility, political or voluntary activities during studies are as well likely to add to a self-image of being an active and committed person and foster democratic values such as tolerance.
4. *Economic capital:* Money may facilitate political participation as it allows bearing any direct costs. Moreover, political participation, like voluntary work, is unpaid. Rüber et al. (2018) argue that voluntary work resembles unpaid work from an economic point of view. In this view, poor people would rather see the need for paid work if they had time to spare, than for unpaid activities. Higher levels of education are typically associated with higher earnings.
5. *Time:* Political participation is time costly (Brady et al. 1995) and may conflict with other activities such as work, leisure, or family commitments. Higher educated individuals may often work more hours, which could impede political participation.

11.2.2 How to model the connection between higher education, political values, and political participation

In the following, we will describe more specifically the variables that will be analysed and how we expect them to be influenced by explanatory factors (see Table A11.1 in the annex for a detailed description).

We are analysing four kinds of social outcomes:

1. *Trust in others*
   Trust in others is an overall sense of people being trustworthy or not. Higher levels of trust facilitate interacting with others and thus many forms of political participation. More social trust in a society is also associated with more social cohesion.
2. *Evaluations of democracy & importance of democracy*
   The respondents have been asked to what degree four key characteristics of a well-functioning democracy apply to their country:
   (a) National elections are free and fair,
   (b) Opposition parties are free to criticise the government,
   (c) The media provide citizens with reliable information to judge the government, and
   (d) The courts treat everyone the same.
   A well-functioning democracy should meet these characteristics. Individuals with a higher social status are expected to have a more positive image of how the political system works due to being in a relatively favourable position (and partially attributing this to the political system). There may be differences in evaluations between countries, reflecting history and the current situation. The relationship of this evaluation with political participation is interesting: Do individuals engage in politics because they think the system works well and they aim to be an active part of it or do they rather participate because they are dissatisfied and want to improve things?
   Respondents have also been asked how important it is to them to live in a country that is governed democratically. One could expect field-specific differences in this attitude. For instance, individuals having graduated from social sciences could see democracy as more relevant because they dealt with it also as parts of their studies. Higher importance of democracy is expected to be associated with more political interest and participation.
3. *Political interest*
   The degree of political interest is a key variable for explaining political participation. A certain degree of political interest can be seen as a precondition for political participation.
4. *Political participation*
   Political participation is measured by eight forms of political activities and the question in how many of them a respondent has participated during the last 12 months.

Explanatory variables

1. *Social background variables:*
   - *Gender:* Research finds a gender-participation gap with lower levels of participation among women. Amongst others, this is associated with less human and economic capital of women and more family commitments (Quaranta/Dotti Sani 2018). We

would therefore only expect a small gender-participation for the group of higher education graduates.

- *Age:* Higher age is associated with more human and economic capital. We would therefore expect a positive effect of age on political participation.
- *Social background:* A higher social background coincides with more human, economic and social capital and is expected to lead to more political participation.
- *Immigration background:* An immigration background may be associated with lower levels of political participation, e.g. due to feeling less attached to the political institutions of the country or due participation being restricted for non-citizens (e.g. no right to vote).

2. *Country*

   We expect country differences in trust, political attitudes, and political participation due to the history of countries, cultural differences, and the current situation. Former socialist countries may, for instance, still witness less attachment to democracy and its institutions. Economic crises could trigger both, political participation or political resignation.

3. *Characteristics of higher education*
   - *Higher education degree:* higher levels of higher education go together with more human, social, and economic capital. We expect higher levels of trust, better evaluations of democracy, more importance of democracy, more political interest and participation.
   - *Type of higher education institution:* Universities of applied sciences provide programmes of more occupational orientation. This is expected to go together with lower levels of civic skills as compared to graduates of universities. University graduates would also be assumed to have accumulated more human capital and more economic capital due to better-paid jobs.
   - *Field of subject*: It seems likely that specific fields of subjects foster orientations towards society and the political system, e.g. the social sciences. In contrast, contents of STEM programmes are not likely to have such effects. Social sciences as well as arts and humanities are also likely to foster civic skills due to the prevalence of specific modes of teaching (e.g. seminars with presentations by students and open discussions). Subjects like social sciences could foster a self-image as politically interested and active person. However, persons with such a self-image are also more likely to choose such subjects in the first place. I.e. we cannot say to what extent studying a subject really *caused* more (or less) political participation.
   - *Modes of teaching & learning*: It can be argued that modes of teaching and learning differ in their connection to civic skills. For instance, passive modes, such as lectures are less likely to push communication skills than group work.
   - *Study experience abroad or internship abroad:* International mobility is suspected to foster tolerance and open-mindedness and could thus strengthen social trust or political participation. Again, we cannot say to what extent mobility really *caused* more political participation as mobile persons may have been more open-minded already before mobility.

- *Practical experiences:* Practical experiences enlarge the social network, ease labour market transition and might thus foster political participation.
- *Voluntary activities within and outside HEIs:* Voluntary activities enlarge the social network, are likely to foster trust in others, and are associated with a self-image of being an active, committed person. Voluntary activities could also be political activities, which is especially likely for activities within institutions (e.g. student unions and students' codetermination).

4. *Skills*
   - *Assessment of study programme regarding specific skills*: respondents have been asked directly whether their programme was a good basis for certain skills such as political interest and participation, entrepreneurial skills, advanced ICT skills, or personal development.
   - *Civic skills:* Respondents have been asked to indicate their level for a variety of skills. The level of civic skills is measured by a factor comprising communication skills, teamwork skills, planning and organisation skills, as well as problem-solving skills. Higher levels of civic skills should be associated with more political participation.

5. *Time*
   Three factors approximate time restrictions by other duties: (a) we would expect a negative relationship between *working hours* and participation (even though being employed may foster political participation for a variety of reasons). (b) Having *children* reduces spare time for participation. (c) Living with a *partner* could ease participation as other duties such as family commitments and housekeeping can be shared.

Statistical Method

To model trust, political values, and political participation as social outcomes of higher education multivariate regression analyses were conducted, applying the ordinary least squares method. For these models, the EUROGRADUATE pilot data of the cohort 2016/17 were used. The variables in the models are described in detail in Table A11.1 in the annex.

The regression models are shown in Tables A.11.22-A11.5 in the appendix. Groups of variables are added to the model in a stepwise procedure. Thus, the contribution of blocks of variables to explain the dependent variable becomes visible. The variables described above are added in four steps:

Step 1:	Social background and country
Step 2:	Characteristics of higher education
Step 3:	Skills
Step 4:	Time + social outcomes

In addition, social outcomes are consecutively included in the model, jointly with step 4. Following this logic, social trust is added to the models of democratic values. Social trust, and democratic values are added to the model of political interest. Social trust, democratic values, and political interest are added to the model of political participation.

The results show the interrelations of dependent variables and explanatory factors and whether this relationship is statistically significant. Note that no conclusions on causal relationships can be made

11.3 Results

11.3.1 Trust in others

Social trust promotes cooperation among citizens e.g. for voluntary activities and political participation in groups. It is an important measure of social cohesion. On an 11-point scale, respondents could state their level of trust by choosing values between "You can't be too careful" and "Most people can be trusted".

As shown by the descriptive results in chapter 7 the level of social trust is highest in Norway, followed by Austria, Germany, Malta, Lithuania, Greece, the Czech Republic, and Croatia (in descending order, see table A11.2). As compared to Austria, as reference country of the model, all country differences are statistically significant. Results show that, on the 11-point scale mentioned above, graduates in Croatia picked a value 2 points lower as compared to graduates in Austria, indicating a considerably lower level of social trust. All the country differences remain pretty stable across the different regression models while further variables are being included stepwise.

As assumed, graduates with higher social background feel that people can be trusted more. An immigration background on the contrary, is negatively linked with trust.

In the higher education context, trust is higher for graduates of universities. There is no significant difference between BA-level-level (BA) graduates and MA-level-level (MA) graduates. Field specific differences can be observed with graduates of social sciences and journalism having higher levels of trust (compared to arts, humanities and education) and graduates of business, law and administration reporting lower levels of trust (again compared to arts, humanities and education). We do not know to what extent graduates of social sciences and journalism feel more social trust *because* they studied these fields or to what extent they felt more social trust already beforehand. But the graduates of these fields differ significantly in their levels of social trust, which is likely to impact on their levels of political participation.

Activating modes of teaching and learning such as group assignments, problem-based learning or oral presentations seem to foster social trust and so do international experiences, voluntary activities, and – to a lesser extent – practical experiences. This is in line with our expectations. The skills in our model as well as time resources are not significantly related to trust.

Key findings are: the social background of graduates is relevant for different levels of social trust, which may hamper persons from disadvantaged backgrounds to become politically active. Moreover, studying abroad and extracurricular activities like voluntary work are strongly connected to higher levels of trust. Even though the causality of this relationship remains unclear in our model, this may indicate that such activities help building social trust.

11.3.2 Democratic values

The evaluation of democratic institutions and the importance of living in a democracy are investigated as democratic values (tables A112 and A11.3). Again, attitudes are measured on 11-point scales.

For both outcomes, there are gender differences. Male graduates are less critical about the quality of democracy in their country. At the same time, women attach more importance to living in a democratically governed country. While gender differences are opposite to each other for democratic values, the pattern for social background is the same: Persons with higher educated parents see it as more important to live in a democracy *and* assess democratic institutions better. In contrast, persons with an immigration background find it less important to live in a democracy and assess democratic institutions more critically.

For both values, country differences can be observed, especially for the evaluation of democracy. A marked 34% of the variance in the evaluation of democracies can be attributed to country differences and the social background (table A11.2, adjusted R^2). Graduates from Germany and Austria do not differ significantly in the evaluation of their political system. Graduates from Norway assess the democratic institutions of their country significantly better. In all other countries, democracy is assessed less well with specifically critical views in Greece and Croatia. These country differences remain stable across models 1-4. For the importance of democracy, we find similar country differences though with some interesting exceptions. In Norway, Germany, and Austria the importance attached to democracy is highest (no significant differences). Despite a critical assessment of democratic institutions in Greece, the level of importance attached to democracy is not lower than in the former countries. At the background of the critical assessment of democratic institutions and the economic crisis in Greece, this is a remarkably stable support for democracy. In Malta, democracy is seen as somewhat less important. Lowest levels of importance are to be observed in the three former socialist countries, especially in Croatia. On the 11-point scale, Croatian graduates on overage picked a value 1 point lower than Austrian graduates. Thus, it seems that still, 30 years after the fall of the wall, democracy receives somewhat less support in post-socialist societies. The specifically low support of democracy in Croatia might be due to an additionally disadvantageous economic situation.

Regarding the characteristics of higher education we find that for MA-level graduates, it is more important to live in a democracy. For the evaluation of democracy, this is not the case; however, university graduates assess democracy better. For both democratic values, we find higher levels among social scientists and journalists.

A study experience or internship abroad was positively connected with a higher evaluation of democratic structures but not with the importance of democracy. Voluntary activities within HEIs are positively associated with both democratic values. All significant effects of higher education characteristics are in line with our expectations. Study programmes that were a good basis for increasing political interest and participation had a positive impact on both democratic values. Programmes that were a good basis for ICT skills are negatively associated with the importance of democracy.

Living in a partnership is positively associated with the importance of democracy. As expected, higher levels of social trust go together with a more positive evaluation of democracy and the importance of democracy.

Key findings are: There are marked country differences in democratic values, especially regarding the evaluation of democratic institutions. Apparently, in the post-socialist countries (Czechia, Croatia, and Lithuania) less importance is attached to democracy. Extra-curricular activities like international mobility and voluntary activities in HEIs seem to be able to strengthen democratic values. This seems also to be the case for programmes fostering political interest and participation. With the caveat of causality, this indicates that HE indeed could help to build support for democratic institutions.

11.3.3 Political interest

Interest in politics is important for vivid democracies and, in fact, without a certain degree of political interest democracies would not work. Thus, it is not only a precondition of political participation but also highly relevant itself.

Our results show, that male graduates are slightly more strongly interested in politics (model 1, Table A.11.4), which is in line with general population surveys. The gender effect is not due to a gender-specific choice of fields of study or types of institutions, as it remains stable in model 2 of Table A11.4 where we add these variables. As expected, graduates with higher educated parents show more political interest. Surprisingly, having an immigration background has a positive effect as well, though this effect is not stable across models.

Across countries, graduates in Austria (the reference category) are interested most strongly in politics. The difference to German graduates is small but significant. Graduates in all other countries report lower levels of political interest, especially in Malta and Croatia. Like for the other social outcomes, country differences do not change considerably across models with the exception of the difference to Germany becoming insignificant in models 3 and 4 (Table A11.4).

The primary concerns of the analyses are the effects of characteristics of higher education. We find several significant differences, very much in line with our expectations. MA-level graduates and those who studied at a university are more interested in politics. Looking at the study fields, a negative association of political interest and the STEM-fields can be seen as well as with field of health and welfare. In contrast, political interest is higher among graduates of social sciences and journalism or business, administration and law. Experiences abroad are positively linked to interest. The same is the case for voluntary activities and practical experiences.

Looking at skills, it if found that, unsurprisingly, programmes that are felt to foster political interest and participation are also positively associated with the political interest. In contrast, programmes bringing about entrepreneurial skills seem to have a negative effect on political interest. This could indicate that fostering political interest and entrepreneurial skills are conflicting goals. Keep in mind, however, that students choosing programmes with such a profile might be less politically interested from the start. Regarding civic skills, a strong positive connection with political interest can be detected.

Larger numbers of working hours seem to be in conflict with political interest. As expected, democratic values are positively associated with political interest.

Key findings are: that the level of political interest among graduates is to a considerable degree associated with characteristics of higher education, such as the field of study

mobility and extra-curricular activities. Furthermore, our results suggest a strong positive relationship of political interest and civic skills.

11.3.4 Political participation

Political participation is crucial for democracies and policy agendas ask higher education to contribute to students becoming active citizens. To measure active political participation, we analysed how many political activities graduates had undertaken in the last 12 months.

Looking at country differences in model 1 of Table A11.5, graduates in Austria report to be more active than graduates in all other countries except Czechia. Graduates in Croatia and Lithuania report the lowest levels of political activity.

There is no gender difference in political participation, which differs from general population surveys where women typically report to be less active. Apparently, attaining similar levels of education can help to overcome the gender-participation-gap. However, if we control for characteristics of HE (model 2 in Table A11.5) there is a gender effect, indicating higher levels of participation for men. Why is this? Women tend to study in subject areas (social sciences, arts and humanities) that may foster participation. In contrast, men are more prevalent in the STEM fields. Controlling for such differences in model 2, men show relatively higher levels of participation – given their HE characteristics, which are non-favourable for participation.

As expected, graduates with higher educated parents are politically more active. Interestingly, this effect is reduced nearly by half if we control for HE characteristics (model 2 in Table A11.5). In other words, the lower level of political activity of those with a non-academic background is to a considerable degree associated with differences in study behaviour. Graduates with a higher educated background are more likely to visit universities (instead of universities of applied sciences) and to engage in activities during studies fostering participation, most notably studying abroad or voluntary activities. Encouraging students from lower educated backgrounds to engage in such activities could thus also be a means to reduce the social-participation-gap.

In contrast to our expectations, BA-level graduates are more active than MA-level graduates are. Besides this difference, we observe a large number of significant associations in line with our expectations. The subject field of STEM is negatively related to political activities (as compared to arts and humanities). The same is true for business, administration and law (again as compared to arts and humanities). Traditional modes of learning (e.g. lectures) do not foster political participation. Going abroad and activities such as work experiences or volunteering are strongly and positively connected to political participation. Generally, the characteristics of HE explain a notable proportion of the variance in political participation.

Adding the skills block (model 3 in Table A11.5), we see that programmes fostering entrepreneurial skills do not go together with more political activity; the same is true for programmes that furthered personal development. In contrast, higher levels of civic skills are in fact associated with more political participation.

Regarding time resources, we find that larger numbers of working hours conflict with political participation (model 4 in Table A11.5). The other proxies for time resources have

no significant effect. Finally yet importantly, political participation is positively linked to social trust, democratic values, and political interest.

Key findings are: Characteristics of HE are strongly connected to the level of political participation. There is a positive association with related fields of study (social sciences, journalism) and a negative association with fields like STEM. There is strong relationship with extra-curricular activities of various kinds (international mobility, practical training, and voluntary activities). Even though we cannot unequivocally clarify the causal relationship this may indicate that such activities help strengthening political participation. Graduates' with a lower educated background show lower levels of political participation. Our results suggest that this is to some extend due to lower levels of participation in extra-curricular activities.

11.4 Main findings and conclusions

This chapter investigated the connection of higher education with social outcomes of the political array, more specifically: social trust, democratic values, political interest, and political participation. These potential outcomes of higher education are of growing political relevance and high on current political agendas.

The analyses show that characteristics of higher education are in fact significantly connected with social trust, democratic values, political interest, and political participation. The strongest impact is found for political participation. We observe differences by fields of study, e.g. graduates of STEM fields are less participatory, or by teaching mode, with traditional modes such as lectures being associated with less participation. International mobility during studies is connected to more participation and higher levels of trust and democratic values. Likewise, internships and voluntary activities during studies show this positive association. While our analyses cannot clarify the causality of this relationship, this hints to an important role such activities can have in promoting active citizenship, democratic values, and social trust.

More in detail, *trust in others* was found to be associated with the social background of graduates with individuals from disadvantaged backgrounds reporting lower levels of trust. In addition, extracurricular activities like studying abroad and voluntary activities were relevant. These are strongly connected to higher levels of trust and, though our models cannot clarify the causality of this relationship, it may indicate that such activities help building social trust.

The analyses of *democratic values* showed marked country differences, especially regarding the evaluation of democratic institutions. We found that even today, 30 years after the fall of the wall, graduates in post-socialist countries attached less importance to democracy. At the individual level, positive associations were detected for extra-curricular activities like international mobility and voluntary activities in HEIs, as well as programmes fostering political interest and participation. These factors seem to be able to strengthen democratic values. Although our analyses do not allow any statements on the causality, this hints at an important role of higher education in helping to build support for democratic institutions.

For the *political interest* among graduates, our analyses demonstrated significant connections with characteristics of higher education. The levels of political interest differed by field of study and extra-curricular activities. Furthermore, our results suggest a strong positive relationship of political interest and civic skills.

The findings for *political participation* confirmed a strong link between the number of political activities and characteristics of higher education. Differences among fields of study were found, i.e. there is a positive association with related fields of study (social sciences, journalism) and a negative association with fields like STEM. A strong relationship of participation and study-related activities of various kinds (international mobility, practical training, and voluntary activities) was detected. Though we cannot clearly depict a causal relationship in the analyses, the models indicate that such activities could positively influence active citizenship. Moreover, graduates from a lower educated background stated to be less often politically active. Our results suggest that this could in particular be due to lower levels of study-related activities such as mobility and volunteering. The political participation of this disadvantaged group could potentially be improved by an encouragement to engage in such activities. This might mitigate the systematic participation gap of graduates from lower social backgrounds and thus have a positive effect on democracy itself.

To sum up, our analyses showed a strong association of characteristics of higher education with trust, democratic values, political interest, and political participation. For the different social outcomes, we found different connections with the social background or the country context. Across all regression models, we found a crucial role of activities such as mobility, practical trainings, and volunteering. Fostering such activities among students with a non-academic background could potentially even balance existing inequalities in the empowerment of graduates to become active citizens.

11.5 Appendix

Appendix 11.1:

Table A11.1: Measurement of variables used.

Variables	**Measurement**
Dependent variables	All dependent variables are based on items from: ESS Round 6: European Social Survey Round 6 Data (2012). Data file edition 2.4. NSD - Norwegian Centre for Research Data, Norway – Data Archive and distributor of ESS data for ESS ERIC. doi:10.21338/NSD-ESS6-2012
Trust in others	11-point scale ranging from "you can't be too careful" to "most people can be trusted"
Evaluation of democracy in country	Factor built from the items "actual elections are free and fair", "actual opposition is free", "actual reliable media information" and "actual courts treat everybody equally" on an 11-point scale, ranging from "does not apply at all" to "applies completely"
Importance of democracy in country	Importance of democratic government, 11-point scale ranging from "not at all important" to "absolutely important"
Interest in politics	5-point Likert scales, ranging from "not at all interested" to "very interested"
Number of political activities in last 12 months	Index of the binary variables on whether during the last 12 months the respondent participated in any of the following activities: a) Contacted a politician, government or local government official, b) Worked in a political party or action group, c) Worked in another organisation or association, d) Worn or displayed a campaign badge/sticker, e) Signed a petition, f) Taken part in a lawful public demonstration, g) Boycotted certain products, h) Posted or shared anything about politics online, for example on blogs, via email or on social media such as Facebook or Twitter, metric scale
Social background variables:	
Gender	Dummy variable, female=0, male=1, due to very small numbers for "divers" this category had to be excluded
Age	Age as of 31 December 2018, metric scale
Social background	Dummy variable, parents without HE=0, higher educated parents=1
Immigration background	Dummy variable
Country	Dummy variables for eight pilot countries
Characteristics of higher education:	
Higher education degree	Binary variable: ISCED level 6=0, ISCED level 7=1
Type of higher education institution	Binary variable: University of applied sciences=0, University=1
Field of study	(1) Arts, humanities, education, (2) Social sciences, journalism, (3) Business, administration, law, (4) STEM, (5), Health, welfare, (6) Other fields
Modes of teaching and learning	Factor built from single items, Traditional modes: lectures, written assignments, self-study, Activating modes: group assignments, project and/or problem-based learning, oral presentations by students

Study experience abroad or internship abroad	Dummy variable
Practical experiences	Dummy variable
Voluntary activities within and outside HEIs	Dummy variables for voluntary activities in HEI or outside HEI
Skills:	
Study programme was a good basis for…	5-point Likert scales, ranging from "to a very high extent" to "not at all"
Civic Skills	Factor built from self-assessment of current own level of skills on 5-point Likert scales, ranging from "very high" to "very low", factor comprises "communication skills", "team-working skills", "planning and organisation skills", "problem-solving skills"
Time:	
Working hours	Actual weekly working hours in total, metric scale
Children	Dummy variable
Partner	Dummy variable for living with a partner

Appendix 11.2: Table A11.2: Regression models for "Trust in others".

	(1)	(2)	(3)	(4)
Gender (1.Male)	0.00119	0.0448	0.0358	0.0492
	(0.0506)	(0.0539)	(0.0541)	(0.0543)
Age as of 31.12.2018	0.0161***	0.0246***	0.0245***	0.0202***
	(0.00439)	(0.00465)	(0.00467)	(0.00567)
Higher educated parents, Reference category (Ref.): Parents without HE	0.469***	0.376***	0.382***	0.383***
	(0.0531)	(0.0536)	(0.0536)	(0.0537)
Immigration background	-0.221***	-0.227***	-0.232***	-0.229***
	(0.0626)	(0.0621)	(0.0621)	(0.0622)
Country CZ (Ref.: AT)	-1.637***	-1.540***	-1.510***	-1.518***
	(0.111)	(0.111)	(0.112)	(0.112)
Country DE (Ref.: AT)	-0.424***	-0.425***	-0.410***	-0.410***
	(0.114)	(0.113)	(0.113)	(0.113)
Country GR (Ref.: AT)	-1.601***	-1.529***	-1.534***	-1.511***
	(0.117)	(0.118)	(0.118)	(0.119)
Country HR (Ref.: AT)	-2.070***	-1.865***	-1.858***	-1.854***
	(0.0854)	(0.0874)	(0.0886)	(0.0896)
Country LT (Ref.: AT)	-1.261***	-1.189***	-1.189***	-1.193***
	(0.119)	(0.120)	(0.121)	(0.121)
Country MT (Ref.: AT)	-0.962***	-0.848***	-0.833***	-0.799***
	(0.153)	(0.153)	(0.154)	(0.156)
Country NO (Ref.: AT)	0.382***	0.459***	0.465***	0.461***
	(0.107)	(0.109)	(0.109)	(0.110)
Higher education degree (1.MA-level)		0.0129	0.0110	0.0319
		(0.0550)	(0.0552)	(0.0587)
Type of higher education institution (1.University)		0.139*	0.141*	0.136*
		(0.0614)	(0.0615)	(0.0623)
Social sciences, journalism (Ref.: Arts, humanities, education)		0.335***	0.323***	0.330***
		(0.0967)	(0.0970)	(0.0971)
Business, administration, law (Ref.: Arts, humanities, education)		-0.232**	-0.243**	-0.233**
		(0.0792)	(0.0802)	(0.0804)
STEM (Ref.: Arts, humanities, education)		0.00115	0.00571	0.0149
		(0.0799)	(0.0822)	(0.0823)
Health, welfare (Ref.: Arts, humanities, education)		-0.125	-0.111	-0.104
		(0.0950)	(0.0951)	(0.0955)
Factor: Traditional modes of teaching & learning		-0.0200	-0.00999	-0.0114
		(0.0309)	(0.0382)	(0.0382)

Factor: Activating modes of teaching & learning		0.106**	0.0721+	0.0724+
		(0.0346)	(0.0370)	(0.0370)
Study experience or internship abroad		0.341***	0.340***	0.345***
		(0.0665)	(0.0665)	(0.0665)
Practical experiences		0.125*	0.130*	0.134*
		(0.0630)	(0.0630)	(0.0632)
Voluntary activity in HEI		0.164**	0.163**	0.169**
		(0.0624)	(0.0624)	(0.0624)
Voluntary activity outside HEI		0.423***	0.423***	0.431***
		(0.0580)	(0.0581)	(0.0581)
Study programme was a good basis for: Development of entrepreneurial skills			0.0151	0.0124
			(0.0225)	(0.0226)
Study programme was a good basis for: Development of advanced ICT skills			0.0212	0.0218
			(0.0193)	(0.0193)
Study programme was a good basis for: Personal development			0.0440+	0.0435+
			(0.0253)	(0.0253)
Study programme was a good basis for: Increasing political interest and participation			0.0313	0.0313
			(0.0193)	(0.0193)
Factor: Civic Skills from current own level in communication, team-working, planning			-0.0165	-0.0161
			(0.0312)	(0.0314)
Actual weekly working hours - total				-0.00155
				(0.00124)
Children				0.0901
				(0.0970)
Living with a partner				0.0941
				(0.0580)
Constant	5.877***	5.205***	4.864***	4.950***
	(0.148)	(0.184)	(0.214)	(0.227)
Observations	9201	9201	9201	9201
Adjusted R^2	0.14	0.16	0.16	0.16

Standard errors in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, results for field of study "other" omitted.

Table A11.3: Regression models for "Evaluation of democracy in country"

	(1)	(2)	(3)	(4)
Gender (1.Male)	0.0489**	0.0665***	0.0664***	0.0639***
	(0.0168)	(0.0180)	(0.0180)	(0.0177)
Age as of 31.12.2018	0.00190	0.00228	0.00223	0.00187

	(0.00146)	(0.00156)	(0.00156)	(0.00186)
Higher educated parents, Reference category (Ref.): Parents without HE	0.100*** (0.0176)	0.0771*** (0.0179)	0.0804*** (0.0179)	0.0518** (0.0175)
Immigration background	-0.0678** (0.0208)	-0.0736*** (0.0208)	-0.0768*** (0.0208)	-0.0620** (0.0203)
Country CZ (Ref.: AT)	-0.457*** (0.0368)	-0.453*** (0.0372)	-0.440*** (0.0373)	-0.329*** (0.0370)
Country DE (Ref.: AT)	-0.0406 (0.0375)	-0.0392 (0.0376)	-0.0261 (0.0377)	0.00283 (0.0369)
Country GR (Ref.: AT)	-0.895*** (0.0387)	-0.879*** (0.0393)	-0.876*** (0.0393)	-0.773*** (0.0391)
Country HR (Ref.: AT)	-1.201*** (0.0283)	-1.181*** (0.0292)	-1.176*** (0.0295)	-1.045*** (0.0299)
Country LT (Ref.: AT)	-0.442*** (0.0398)	-0.446*** (0.0404)	-0.436*** (0.0405)	-0.347*** (0.0401)
Country MT (Ref.: AT)	-0.517*** (0.0504)	-0.533*** (0.0509)	-0.522*** (0.0511)	-0.459*** (0.0505)
Country NO (Ref.: AT)	0.184*** (0.0354)	0.205*** (0.0362)	0.213*** (0.0364)	0.188*** (0.0357)
Higher education degree (1.MA-level)		0.0271 (0.0184)	0.0229 (0.0184)	0.0233 (0.0192)
Type of higher education institution (1.University)		0.0652** (0.0206)	0.0679** (0.0206)	0.0578** (0.0204)
Social sciences, journalism (Ref.: Arts, humanities, education)		0.105** (0.0322)	0.0999** (0.0323)	0.0763* (0.0316)
Business, administration, law (Ref.: Arts, humanities, education)		0.0865** (0.0266)	0.0813** (0.0269)	0.0983*** (0.0264)
STEM (Ref.: Arts, humanities, education)		0.0293 (0.0268)	0.0483+ (0.0275)	0.0459+ (0.0269)
Health, welfare (Ref.: Arts, humanities, education)		0.0487 (0.0321)	0.0540+ (0.0321)	0.0625* (0.0315)
Factor: Traditional modes of teaching & learning		0.00600 (0.0103)	0.00241 (0.0127)	0.00218 (0.0125)
Factor: Activating modes of teaching & learning		0.0160 (0.0116)	0.00716 (0.0124)	0.00332 (0.0121)
Study experience or internship abroad		0.0648**	0.0649**	0.0403+

		(0.0224)	(0.0224)	(0.0219)
Practical experiences		-0.00192 (0.0211)	-0.00117 (0.0211)	-0.0114 (0.0207)
Voluntary activity in HEI		0.0358^{+} (0.0207)	0.0322 (0.0208)	0.0188 (0.0203)
Voluntary activity outside HEI		-0.00797 (0.0193)	-0.00983 (0.0193)	-0.0394* (0.0189)
Study programme was a good basis for: Development of entrepreneurial skills			0.0121 (0.00754)	0.0109 (0.00737)
Study programme was a good basis for: Development of advanced ICT skills			-0.00949 (0.00645)	-0.0107^{+} (0.00631)
Study programme was a good basis for: Personal development			0.0112 (0.00849)	0.00898 (0.00830)
Study programme was a good basis for: Increasing political interest and participation			0.0202** (0.00646)	0.0179** (0.00632)
Factor: Civic Skills from current own level in communication, team-working, planning			0.00808 (0.0104)	0.0100 (0.0103)
Actual weekly working hours - total				-0.000200 (0.000405)
Children				-0.0319 (0.0320)
Living with a partner				-0.0106 (0.0189)
Trust in others				0.0692*** (0.00342)
Constant	0.425*** (0.0491)	0.295*** (0.0617)	0.184* (0.0719)	-0.177* (0.0763)
Observations	8757	8757	8757	8757
Adjusted R^2	0.34	0.34	0.34	0.37

Standard errors in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, results for field of study "other" omitted.

Table A11.4: Regression models for "Importance of democracy in country"

	(1)	(2)	(3)	(4)
Gender (1.Male)	-0.415***	-0.375***	-0.366***	-0.363***
	(0.0401)	(0.0430)	(0.0431)	(0.0431)
Age as of 31.12.2018	0.0164***	0.0158***	0.0155***	0.0134**
	(0.00347)	(0.00372)	(0.00373)	(0.00452)
Higher educated parents, Reference category (Ref.): Parents without HE	0.108*	0.0750+	0.0794+	0.0496
	(0.0421)	(0.0428)	(0.0428)	(0.0428)
Immigration background	-0.103*	-0.100*	-0.103*	-0.0788
	(0.0497)	(0.0497)	(0.0497)	(0.0496)
Country CZ (Ref.: AT)	-0.516***	-0.516***	-0.501***	-0.386***
	(0.0877)	(0.0887)	(0.0890)	(0.0898)
Country DE (Ref.: AT)	-0.130	-0.116	-0.0794	-0.0474
	(0.0893)	(0.0896)	(0.0899)	(0.0895)
Country GR (Ref.: AT)	0.0338	0.0633	0.0846	0.233*
	(0.0922)	(0.0939)	(0.0940)	(0.0950)
Country HR (Ref.: AT)	-1.007***	-0.977***	-0.954***	-0.782***
	(0.0673)	(0.0696)	(0.0705)	(0.0727)
Country LT (Ref.: AT)	-0.524***	-0.510***	-0.470***	-0.379***
	(0.0946)	(0.0963)	(0.0965)	(0.0972)
Country MT (Ref.: AT)	-0.213+	-0.214+	-0.176	-0.0680
	(0.120)	(0.122)	(0.122)	(0.123)
Country NO (Ref.: AT)	-0.0680	-0.0508	-0.0225	-0.0534
	(0.0842)	(0.0864)	(0.0869)	(0.0867)
Higher education degree (1.MA-level)		0.122**	0.107*	0.0962*
		(0.0440)	(0.0441)	(0.0467)
Type of higher education institution (1.University)		0.0785	0.0834+	0.0755
		(0.0492)	(0.0493)	(0.0497)
Social sciences, journalism (Ref.: Arts, humanities, education)		0.143+	0.145+	0.121
		(0.0770)	(0.0772)	(0.0769)
Business, administration, law (Ref.: Arts, humanities, education)		-0.0756	-0.0703	-0.0487
		(0.0637)	(0.0644)	(0.0643)
STEM (Ref.: Arts, humanities, education)		-0.0653	0.00681	0.00923
		(0.0642)	(0.0659)	(0.0656)
Health, welfare (Ref.: Arts, humanities, education)		0.0524	0.0570	0.0681
		(0.0763)	(0.0763)	(0.0763)
Factor: Traditional modes of teaching & learning		0.00978	-0.0314	-0.0285
		(0.0247)	(0.0306)	(0.0305)

Factor: Activating modes of teaching & learning		0.0363	0.0479	0.0423
		(0.0277)	(0.0297)	(0.0295)
Study experience or internship abroad		0.0587	0.0571	0.0340
		(0.0534)	(0.0534)	(0.0532)
Practical experiences		0.0494	0.0453	0.0323
		(0.0506)	(0.0506)	(0.0505)
Voluntary activity in HEI		0.0982*	0.0864+	0.0728
		(0.0498)	(0.0498)	(0.0496)
Voluntary activity outside HEI		0.0234	0.0143	-0.0145
		(0.0462)	(0.0462)	(0.0461)
Study programme was a good basis for: Development of entrepreneurial skills			0.00495	0.00338
			(0.0181)	(0.0180)
Study programme was a good basis for: Development of advanced ICT skills			-0.0538***	-0.0546***
			(0.0155)	(0.0154)
Study programme was a good basis for: Personal development			0.00663	0.00283
			(0.0204)	(0.0203)
Study programme was a good basis for: Increasing political interest and participation			0.0439**	0.0419**
			(0.0154)	(0.0154)
Factor: Civic Skills from current own level in communication, team-working, planning			0.0603*	0.0607*
			(0.0250)	(0.0251)
Actual weekly working hours - total				-0.000361
				(0.000989)
Children				-0.0736
				(0.0781)
Living with a partner				0.130**
				(0.0461)
Trust in others				0.0769***
				(0.00832)
Constant	9.239***	9.066***	9.028***	8.604***
	(0.117)	(0.147)	(0.172)	(0.186)
Observations	8911	8911	8911	8911
Adjusted R^2	0.07	0.07	0.07	0.08

Standard errors in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, results for field of study "other" omitted.

Table A.11.5: Regression models for "Interest in politics"

	(1)	(2)	(3)	(4)
Gender (1.Male)	0.451***	0.557***	0.537***	0.539***
	(0.0262)	(0.0275)	(0.0267)	(0.0268)
Age as of 31.12.2018	0.0106***	0.0113***	0.0123***	0.0122***
	(0.00228)	(0.00238)	(0.00232)	(0.00280)
Higher educated parents, Reference category (Ref.): Parents without HE	0.165***	0.0904***	0.0904***	0.0649*
	(0.0275)	(0.0273)	(0.0266)	(0.0265)
Immigration background	0.0605+	0.0457	0.0322	0.0404
	(0.0325)	(0.0318)	(0.0309)	(0.0307)
Country CZ (Ref.: AT)	-0.436***	-0.414***	-0.345***	-0.255***
	(0.0573)	(0.0567)	(0.0552)	(0.0558)
Country DE (Ref.: AT)	-0.107+	-0.127*	-0.0300	-0.0255
	(0.0584)	(0.0572)	(0.0558)	(0.0553)
Country GR (Ref.: AT)	-0.519***	-0.506***	-0.474***	-0.417***
	(0.0603)	(0.0599)	(0.0583)	(0.0601)
Country HR (Ref.: AT)	-1.061***	-1.017***	-0.962***	-0.850***
	(0.0439)	(0.0444)	(0.0437)	(0.0482)
Country LT (Ref.: AT)	-0.613***	-0.612***	-0.538***	-0.478***
	(0.0618)	(0.0615)	(0.0599)	(0.0604)
Country MT (Ref.: AT)	-0.783***	-0.806***	-0.696***	-0.636***
	(0.0783)	(0.0774)	(0.0756)	(0.0761)
Country NO (Ref.: AT)	-0.505***	-0.510***	-0.510***	-0.515***
	(0.0551)	(0.0552)	(0.0540)	(0.0537)
Higher education degree (1.MA-level)		0.0654*	0.0305	0.0515+
		(0.0281)	(0.0274)	(0.0288)
Type of higher education institution (1.University)		0.129***	0.109***	0.0745*
		(0.0315)	(0.0307)	(0.0308)
Social sciences, journalism (Ref.: Arts, humanities, education)		0.263***	0.224***	0.208***
		(0.0492)	(0.0479)	(0.0475)
Business, administration, law (Ref.: Arts, humanities, education)		0.131**	0.144***	0.156***
		(0.0407)	(0.0401)	(0.0398)
STEM (Ref.: Arts, humanities, education)		-0.250***	-0.122**	-0.123**
		(0.0410)	(0.0409)	(0.0405)
Health, welfare (Ref.: Arts, humanities, education)		-0.141**	-0.0888+	-0.0785+
		(0.0491)	(0.0477)	(0.0475)
Factor: Traditional modes of teaching & learning		-0.0146	0.0316+	0.0256
		(0.0158)	(0.0190)	(0.0188)
Factor: Activating modes of teaching & learning		-0.0159	-0.0234	-0.0243

		(0.0177)	(0.0184)	(0.0183)
Study experience or internship abroad		0.129*** (0.0342)	0.116*** (0.0332)	0.109*** (0.0330)
Practical experiences		0.0595+ (0.0324)	0.0501 (0.0315)	0.0514 (0.0313)
Voluntary activity in HEI		0.224*** (0.0317)	0.201*** (0.0308)	0.192*** (0.0306)
Voluntary activity outside HEI		0.228*** (0.0294)	0.204*** (0.0286)	0.202*** (0.0284)
Study programme was a good basis for: Development of entrepreneurial skills			-0.0615*** (0.0112)	-0.0617*** (0.0111)
Study programme was a good basis for: Development of advanced ICT skills			0.00116 (0.00959)	0.00652 (0.00951)
Study programme was a good basis for: Personal development			-0.0158 (0.0127)	-0.0166 (0.0125)
Study programme was a good basis for: Increasing political interest and participation			0.218*** (0.00960)	0.213*** (0.00952)
Factor: Civic Skills from current own level in communication, team-working, plan			0.0776*** (0.0155)	0.0765*** (0.0155)
Actual weekly working hours - total				-0.00203*** (0.000610)
Children				0.0142 (0.0483)
Living with a partner				-0.000353 (0.0285)
Trust in others				-0.00489 (0.00529)
Factor: Understanding of democracy				0.113*** (0.0144)
Factor: Evaluation of democracy in country				0.0691*** (0.0167)
Importance of democratic government				0.0286*** (0.00727)
Constant	3.054*** (0.0765)	2.744*** (0.0943)	2.359*** (0.107)	2.146*** (0.132)
Observations	8548	8548	8548	8548
Adjusted R^2	0.14	0.18	0.23	0.24

Standard errors in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, results for field of study "other" omitted.

Table A.11.6: Regression models for "Number of political activities in last 12 months"

	(1)	(2)	(3)	(4)
Gender (1.Male)	-0.00986	0.0776*	0.0667+	-0.104**
	(0.0332)	(0.0343)	(0.0342)	(0.0338)
Age as of 31.12.2018	0.0265***	0.0338***	0.0349***	0.0318***
	(0.00289)	(0.00298)	(0.00297)	(0.00344)
Higher educated parents,	0.161***	0.0856*	0.0784*	0.0254
Reference category (Ref.): Parents without HE	(0.0348)	(0.0342)	(0.0339)	(0.0325)
Immigration background	0.00234	-0.000429	-0.00626	-0.0209
	(0.0412)	(0.0398)	(0.0395)	(0.0378)
Country CZ (Ref.: AT)	-0.0405	0.0209	0.0501	0.216**
	(0.0726)	(0.0710)	(0.0706)	(0.0688)
Country DE (Ref.: AT)	-0.270***	-0.325***	-0.266***	-0.246***
	(0.0738)	(0.0715)	(0.0711)	(0.0679)
Country GR (Ref.: AT)	-0.364***	-0.387***	-0.363***	-0.292***
	(0.0763)	(0.0750)	(0.0745)	(0.0742)
Country HR (Ref.: AT)	-0.574***	-0.485***	-0.454***	-0.246***
	(0.0555)	(0.0556)	(0.0558)	(0.0603)
Country LT (Ref.: AT)	-0.647***	-0.625***	-0.572***	-0.390***
	(0.0784)	(0.0771)	(0.0767)	(0.0746)
Country MT (Ref.: AT)	-0.215*	-0.153	-0.0845	0.131
	(0.0996)	(0.0973)	(0.0970)	(0.0943)
Country NO (Ref.: AT)	-0.284*	-0.361***	-0.377***	-0.167*

	** (0.0697)	(0.0691)	(0.0689)	(0.0663)
Higher education degree (1.MA-level)		-0.0850* (0.0352)	-0.108** (0.0350)	-0.0752* (0.0355)
Type of higher education institution (1.University)		0.0737+ (0.0395)	0.0506 (0.0393)	-0.0172 (0.0380)
Social sciences, journalism (Ref.: Arts, humanities, education)		0.0949 (0.0616)	0.0725 (0.0613)	-0.00363 (0.0585)
Business, administration, law (Ref.: Arts, humanities, education)		-0.213*** (0.0510)	-0.194*** (0.0512)	-0.194*** (0.0490)
STEM (Ref.: Arts, humanities, education)		-0.287*** (0.0514)	-0.199*** (0.0523)	-0.143** (0.0499)
Health, welfare (Ref.: Arts, humanities, education)		-0.130* (0.0615)	-0.0988 (0.0610)	-0.0243 (0.0584)
Factor: Traditional modes of teaching & learning		-0.0534** (0.0197)	-0.00765 (0.0243)	-0.0268 (0.0232)
Factor: Activating modes of teaching & learning		-0.0230 (0.0221)	-0.000119 (0.0236)	0.0108 (0.0225)
Study experience or internship abroad		0.0732+ (0.0428)	0.0627 (0.0425)	0.0206 (0.0406)
Practical experiences		0.135*** (0.0406)	0.125** (0.0403)	0.103** (0.0385)
Voluntary activity in HEI		0.341*** (0.0397)	0.326*** (0.0394)	0.249*** (0.0377)
Voluntary activity outside HEI		0.677*** (0.0368)	0.659*** (0.0365)	0.569*** (0.0351)
Study programme was a good basis for: Development of entrepreneurial skills			-0.0680*** (0.0144)	-0.0456*** (0.0137)
Study programme was a good basis for: Development of advanced ICT skills			-0.00448 (0.0123)	-0.00318 (0.0117)
Study programme was a good basis for: Personal development			-0.0574*** (0.0162)	-0.0524*** (0.0154)
Study programme was a good basis for: Increasing political interest and participation			0.148*** (0.0123)	0.0750*** (0.0121)
Factor: Civic Skills from current own level in communication, team-working, plan			0.0607** (0.0199)	0.0400* (0.0191)
Actual weekly working hours - total				-0.00344***

				(0.00075 1)
Children				-0.0315 (0.0594)
Living with a partner				0.0403 (0.0350)
Trust in others				0.0311*** (0.00651)
Factor: Understanding of democracy				0.148*** (0.0178)
Factor: Evaluation of democracy in country				-0.172*** (0.0206)
Importance of democratic government				0.00446 (0.00897)
Interested in politics				0.337*** (0.0133)
Constant	1.051***	0.560***	0.556***	-0.384*
	(0.0970)	(0.118)	(0.137)	(0.165)
Observations	8470	8470	8470	8470
Adjusted R^2	0.04	0.11	0.12	0.20

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