Careers, Competences and Values of European Higher Education Graduates in 2022

EUROGRADUATE 2022 Comparative Synthesis Report

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EUROGRADUATE 2022 Comparative Synthesis Report

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List of abbreviations

Countries

AT……..……Austria
BG……Bulgaria
CY……..……Cyprus
CZ……..……Czech Republic
DE……..Germany
EE……..……Estonia
GR……..……..Greece
HR……..Croatia
HU……..……Hungary
IE……..……Ireland
IT……..……..Italy
LV……Latvia
MT……Malta
NO……Norway
PT……..……Portugal
RO……..……Romania
SI……..……..Slovenia
SK……..……Slovak Republic

Study fields

ART/HUM……..……Arts & Humanities
BUS/LAW……..……Business & Law
EDU/TEA……..……Education & Teacher Training
HEALTH……..……Health
ICT/ENG……ICT & Engineering
NAT/MAT……Natural Sciences & Mathematics
OTHER……..…Other study fields
SOC/JOURN……..……Social Sciences & Journalism

General

AME……..…Average Marginal Effects
AV/ AVE..……..Average
BA…… ..…..…..Bachelor's Degree
cApStAn……cApStAn Linguistic Quality Control
DG EAC …… Directorate-General for Education, Youth, Sport and Culture

DZHW……..……..German Centre for Higher Education Research and Science Studies

EEA……..….European Economic Area

EG/ EGR……..EUROGRADUATE

EGTI……European Graduate Tracking Initiative

EHEA……..….European Higher Education Area

ENGT……..….European Graduate Tracking Network

ETER……..……..…..European Tertial Education Register

EU…….European Union

HE……..….Higher Education

HEI…….……Higher Education Institution

ICT……..……...Information and Communication Technology

IHS……..Institute for Advance Studies

ISCED…….……International Standard Classification of Education

ISCO…….……..…International Standard Classification of Occupations

ISO…….…….……International Organization for Standardization

MA…….…….. Master's Degree

Migration BG…….……..…Migration Background

NACE……..……Classification of Economic Activities (**N**omenclature statistique des **a**ctivités économique dans la **C**ommunauté **e**uropéenne)

NON-UNI…….…Non-University

NRP…….…….……..National Reference Point

NRT ……..……..National Research Teams

NUTS……Nomenclature of Territorial Units for Statistics (**N**omenclature des **u**nites **t**erritoriales **s**tatistiques)

PBL……..……Problem-based-learning

REFLEX……..…….. Research into Employment and Professional Flexibility

ROA……..……..Research Centre for Education and the Labour Market

STEM……..Science, Technology, Engineering, and Mathematics

UNI……University

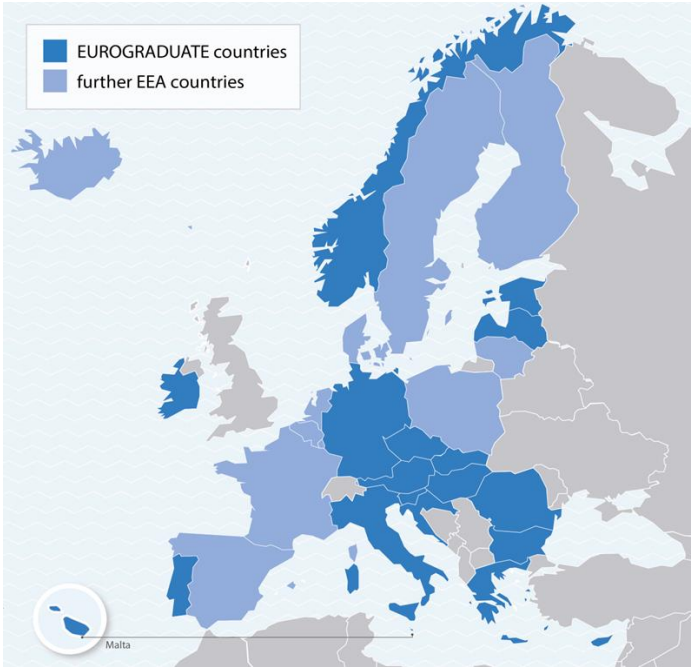
EUROGRADUATE 2022 – Executive Summary

Introduction

The European Union needs skilled people to respond to new challenges and stay competitive. Therefore, in March 2025, the European Commission adopted the 'Union of Skills'[1], a plan to improve high quality education, training, and lifelong learning for closing skills gaps and overcoming skills shortages. It aims to deliver higher levels of basic and advanced skills, provide opportunities for people to regularly update and learn new skills, facilitate skills mobility and recruitment by businesses across the EU as well as to attract, develop and retain top talent for Europe.

The EUROGRADUATE 2022 survey constitutes a significant contribution to the Union of Skills as well as the enhancement of the European Education Area. The survey demonstrates that progress is being made towards fostering a more skilled, and competitive workforce in Europe, which is of crucial importance for economic recovery and sustained growth. It provides information on mobility flows after graduation. Moreover, higher education contributes to preparing young adults to become active participants in their social and political environment, a key prerequisite for functioning and stable democracies. Thus, higher education plays a crucial role in providing the skills for Europe's competitiveness and preparedness, for its economies and for democratic societies. At the same time, results show leeway for further improvement: Graduates feel that they do not sufficiently acquire skills which are relevant for leading teams. International student mobility has dropped substantially during the COVID-19 pandemic and full recovery cannot be taken for granted. Women still study ICT & Engineering to a much lesser extent than men which indicates unrealised potential.

Figure 1: EUROGRADUATE 2022 participating countries
(see chapter 2 for further information)



Building on the first successful pilot survey (EUROGRADUATE 2018), the EUROGRADUATE 2022 survey has now taken the next step towards establishing a regular, comparative, and comprehensive data source for graduate tracking at the European level. The EUROGRADUATE 2026 survey, currently under preparation, will feed into the Skills Intelligence Observatory, planned under the Union of Skills initiative.

The second pilot phase of the European survey of higher education graduates provides comparable information on **18 countries**, more than double from the 8 countries in the 2018 pilot survey. The number of respondents has increased hugely from about 16,500 usable cases for EUROGRADUATE 2018 to more than 170,000 for EUROGRADUATE 2022. Two cohorts of graduates at Bachelor and Master level were interviewed: 2016/17 and 2020/21.

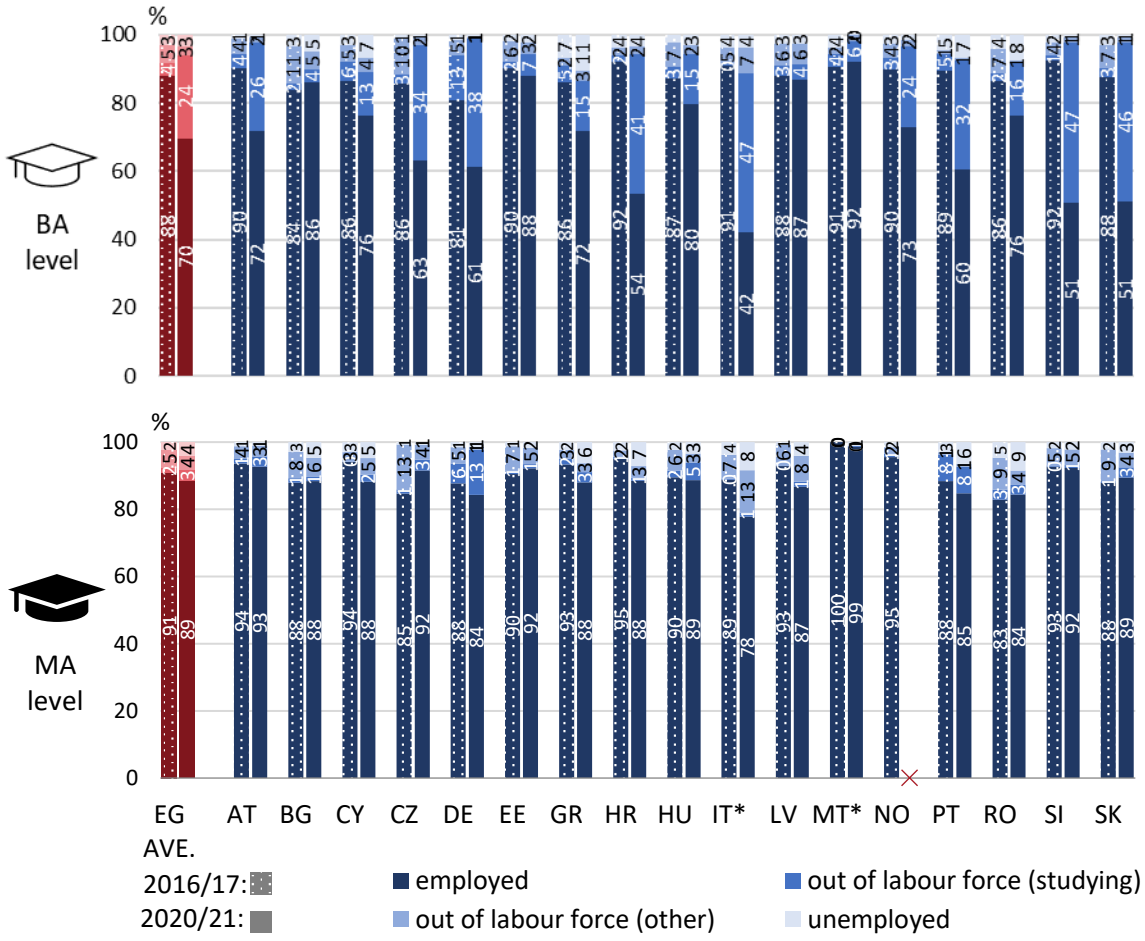
EUROGRADUATE 2022 covers a wide scope of topics, including **learning experiences** and **teaching methods** in higher education systems in Europe, the **socio-economic profile** of graduates, as well as **graduates' satisfaction** and their **labour market outcomes.** Last but not least, international **learning and labour mobility** is covered, as well as **social outcomes**.

[1] COM(2025) 90 final, The Union of Skills - European Commission, 5 March 2025.

I. Labour market participation

A key topic of EUROGRADUATE 2022 is the **connection between higher education and the labour market**. This connection is investigated in multiple ways, e.g. how type of institution, kind of degree, field of study, or learning activities are connected to labour market participation and labour market outcomes such as earnings and job satisfaction. Overall, these indicators provide **positive feedback on the value of a higher education degree**.

Figure 2: Employment status of graduates
(see chapter 4 for further information)



Eurograduate data show high demand for higher education graduates. **Around 90% of the graduates are employed 5 years after graduation.** Master level graduates are employed to a similar degree already 1 year after graduation in all Eurograduate countries. **Unemployment** is, in all survey countries, lower among higher education graduates than among the general population; in some countries, it is close to non-existent (e.g. in Austria, the Czech Republic, Germany, Estonia, or Slovenia). There is a strong decrease of unemployment in two of the countries where it was the highest in the 2018 survey: in Greece and Croatia, unemployment rates decreased to a similar level than in the other participating countries for both BA and MA graduates.

Participation of bachelor level graduates in the labour market also varies considerably between countries: while in Croatia, Italy, Slovakia and Slovenia more than 40% of the graduates are continuing education one year after graduation, only less than 10% are doing so in Bulgaria, Estonia, Latvia and Malta. This indicates that in some countries a bachelor's degree is regarded as a direct qualification for the labour market, whereas in other countries it is rather seen as the first step towards a master's degree for a large share of students.

Self-employment* is most common among Arts & Humanities graduates**, of whom between 23% (bachelor level) and 29% (master level) are either mainly or exclusively self-employed. Male graduates and older age groups engage more in self-employment as well. ***Entrepreneurship, referring to self-employment within a self-founded business, is more likely among the same groups too. Project- and problem-based learning and exposure to entrepreneurial activities in one's study programme are positively associated with founding one's own business.

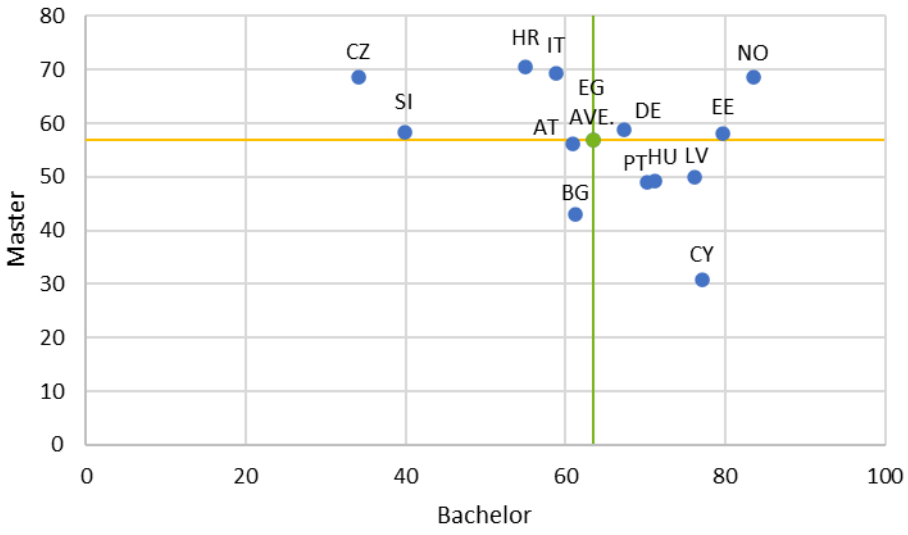
II. Finding a matching job

An important indicator for checking if educational degrees are in line with labour market requirements is the so-called vertical match, i.e. whether the job of the graduate is adequate for the level of the degree.

Most graduates feel they have a job in line with their level of education: this applies to 2/3 of the bachelor level graduates and 52-57% of master level graduates who have a matching job. Similarly, about **two thirds of the graduates have a job in line with their chosen study field** (horizontal match). While the vertical matching is somewhat better for the older cohort, indicating progress over time, **there is a considerable proportion who feel overqualified** for the job they are doing – especially at master level. As much as 40% of master level graduates feel that their job could have been done with a bachelor's degree, indicating **notable reserve of unused skills by employers**. At this backdrop it is a relevant finding that **internships, self-study, and international experience** during studying seem to contribute to a **better match of job and degree level**.

Figure 3 shows how **European labour markets differ in the job-education match for bachelor level and for master level graduates**.

Figure 3: Share of graduates with a vertical match between job and degree level – master level and bachelor level graduates compared
(see chapter 5 for further information)



Compared to the average across the EUROGRADUATE countries, we can broadly distinguish 4 groups of countries. The countries above the orange line offer relatively good chances to attain a matching job for master level graduates. The countries right to the green line offer relatively good chances to attain a matching job for bachelor level graduates.

There are countries where master level graduates have a very good chance for a matching job but apparently adequate job opportunities for bachelor level graduates are scarce. This group of countries is represented by the Czech Republic. In contrast, there are labour markets offering a high number of adequate job opportunities for bachelor level graduates but very few adequate opportunities for master level graduates. Cyprus is the country representing this group. There are countries with a high number of adequate positions for graduates with both kinds of degrees

as exemplified by Norway. Finally, there are as well countries with relatively low chances for adequate positions for graduates with both kinds of degrees as shown by Bulgaria.

A finding that is reflected in several indicators are the **highly positive prospects for graduates of ICT & Engineering** (even compared to graduates of Math & Sciences, the other sub-field of STEM studies). Graduates of these fields have a lower risk for unemployment, a high chance for an unlimited employment contract, a lower risk for overqualification, the highest salaries, and the highest share of graduates satisfied with their job. Still, much less women than men are choosing ICT & Engineering programmes and are benefitting from these positive outcomes. This is particularly worrisome, as, according to the recent Draghi report on "The Future of European Competitiveness"[2], current and future skills gaps in Europe are most pronounced in ICT and STEM in general. Correspondingly, for the 'Union of Skills' the European Comission proposes strategic targets on increased enrolment in STEM fields and reducing the gender-enrolment-gap.

While no other field promises such positive outcomes throughout, graduates of other fields have good prospects as well and probably in some aspects even better ones. For example, graduates from **Health and Education-oriented fields** have a very low risk of becoming unemployed and a very high chance to attain a job well matched with their education choices. This shows a close link between such programmes and specific jobs and as well the high demand for graduates in these fields. The European Commission's communication on the 'Union of Skills' aims at tackling the shortage of teachers, not least with a view towards teachers in STEM subjects, and hints to projected shortages for health occupations. As opposed to ICT & Engineering, men are strongly underrepresented in Health and Teacher Training.

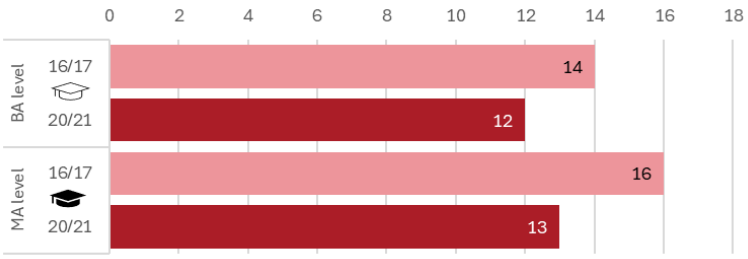
Increasing awareness of the positive labour market outlooks for graduates of STEM fields, Health, or Teacher Training could help in attracting more students for these fields.

III. Satisfaction with employment and earnings

An overwhelming majority, **70%** of higher graduates **are (very) satisfied** with their jobs in general. A similar share is satisfied with many aspects of their jobs, **mostly so for the content** of their jobs. Satisfaction **drops to around 50% for career opportunities and salaries**. **Master level graduates earn a higher salary, and they are more or equally satisfied** with their jobs than bachelor level graduates. **Overqualified graduates**, i.e. in a job below their qualification level, **are less satisfied**, however even among this group the vast majority feels (very) satisfied with their job.

Gross hourly earnings of graduates differ across the EUROGRADUATE 2022 countries, with graduates of the cohort 2016/17 from Austria, Germany and Norway earning the most per hour (ranging from €21 to €25 five years after graduation) and recent graduates from Bulgaria, Cyprus, Portugal or Slovakia earning the least (€9 to €10). In the younger cohort, one year after graduation, master level

Figure 5: Gross hourly earnings by degree level
(see chapter 5 for further information)

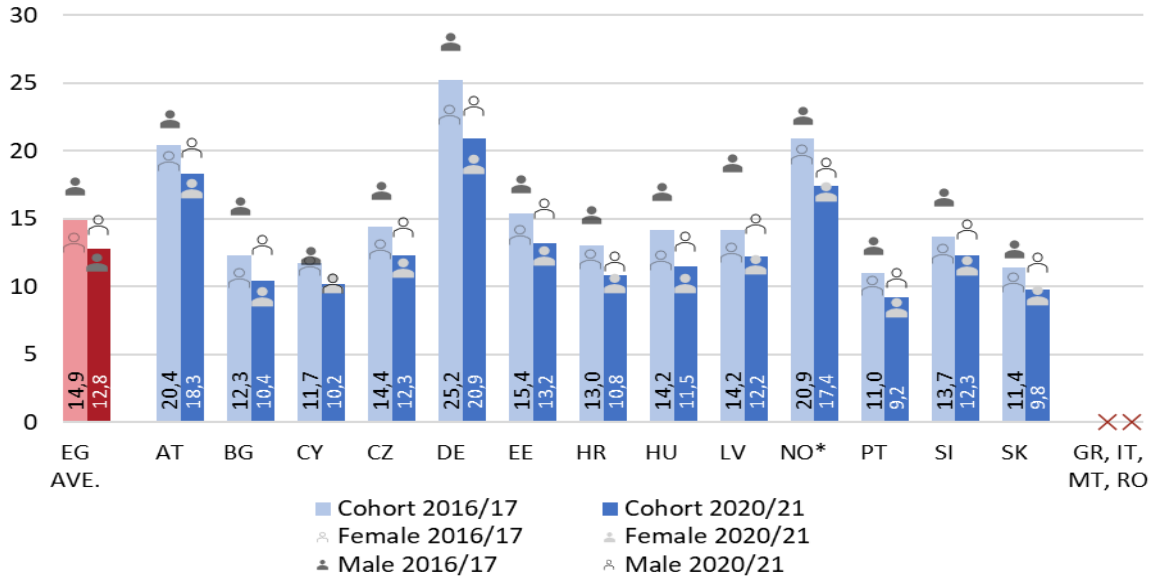


[2] Draghi Mario (European Commission, 2024). The Future of European Competitiveness — A Competitiveness Strategy for Europe. https://commission.europa.eu/document/97e481fd-2dc3-412d-be4c-f152a8232961_en.

graduates earn €1,70 more per hour on average. Five years after graduation, this difference is still modest but has increased to €2,60.

The **gender pay gap** is **particularly pronounced for the highly skilled workforce** and women on average earn clearly less than men. An important reason for this is that women are less likely to study fields returning specifically high salaries, such as ICT & Engineering. The gender pay gap is at about €3 per hour in the younger cohort and at about €4 per hour in the older cohort (i.e. it increases in the life course after family formation).

Figure 4: Gender pay gap - median gross hourly earnings in € (PPP) by gender
(see chapter 5 for further information)



Concerning postgraduate or labour mobility, it is noted that master level graduates are more likely to move abroad, while bachelor level graduates are more likely to move within the country. At the same time, master level graduates are also more inclined to relocate. These decisions are mostly **driven by labour market considerations and (lack of) job opportunities**. It is quite noteworthy that **job satisfaction is mostly negatively affected** by leaving the country of graduation, while **life satisfaction is significantly higher** for those who live abroad.

IV. Skills relevance for the labour market

On the whole, graduates assess their **own skills level high for most kinds of skills,** and they see their skills level matching with the job requirements or even above them. This is true for applied ICT skills where most graduates are confident of their high level; on the contrary, advanced ICT skills are assessed as only moderate on average.

When graduates were asked how they assess their skills level compared to the requirements in their job, the majority perceives a match of the level or even a surplus in all skills considered, including for ICT skills. At the same time, relatively high shares of graduates (30% and more) perceive a **skills deficit** for mastering their **own discipline**, for **making their meaning clear** to others, and for **coordinating activities** of others. These communication skills are especially relevant for management positions. As such positions are usually occupied by higher education graduates, it seems worth considering how such skills could be strengthened in and through higher education.

Figure 6: Current own level of skills
(mean values (1 – very low, …, 7 – very high); see chapter 6 for further information)

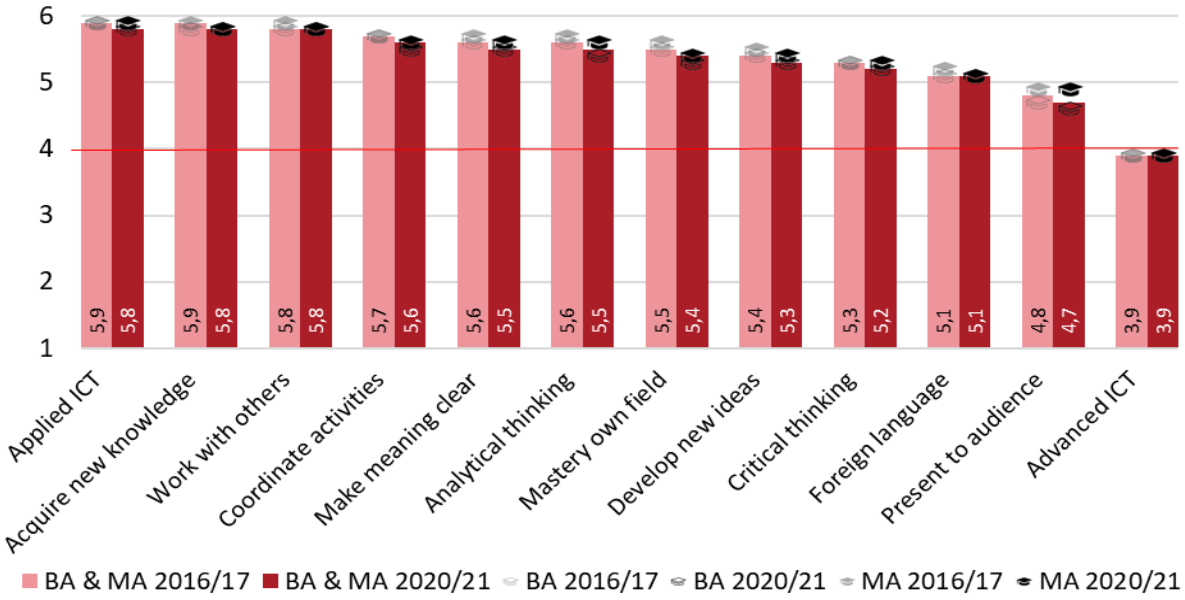
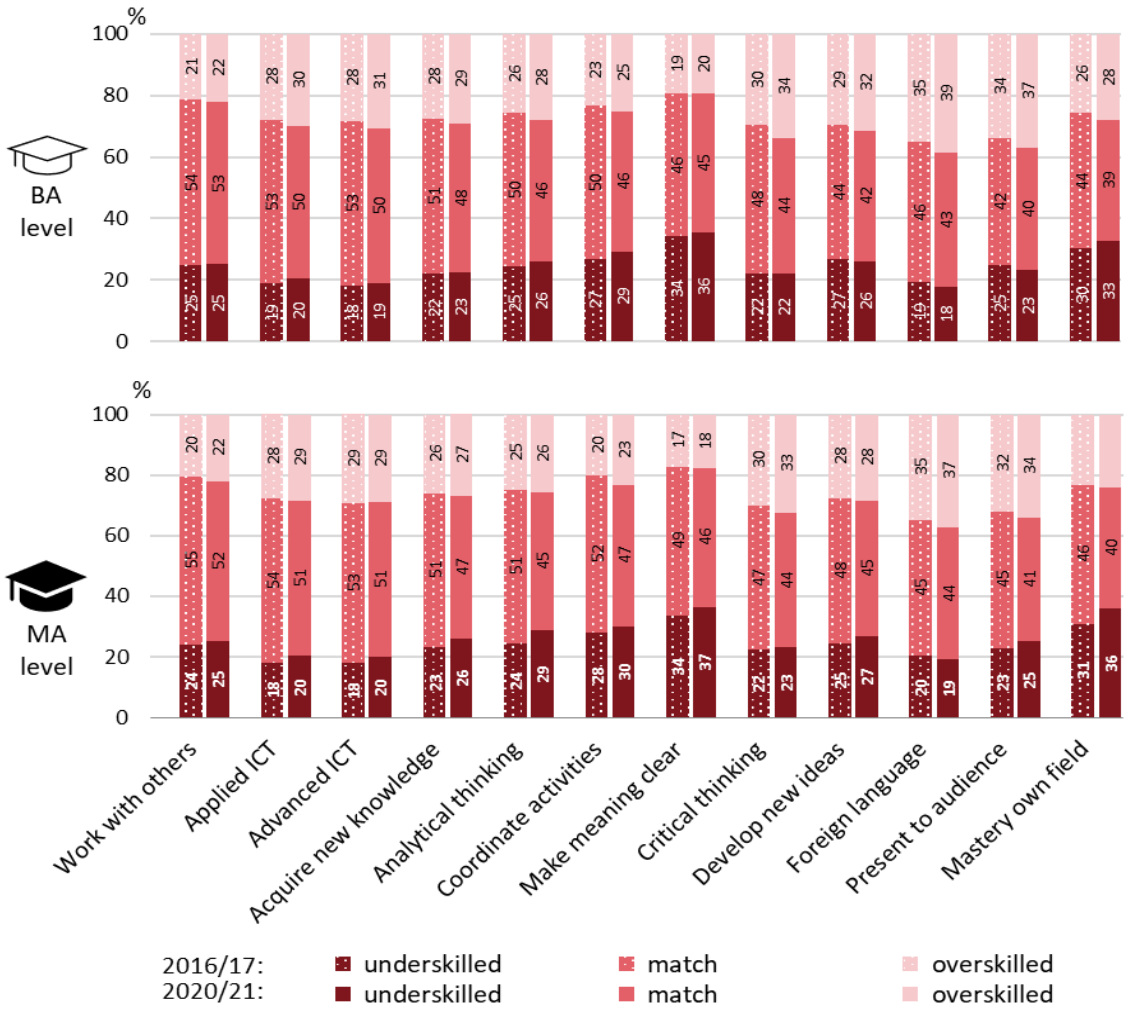


Figure 7: Share of graduates with skills match, underskilled, and overskilled
(see chapter 6 for further information)

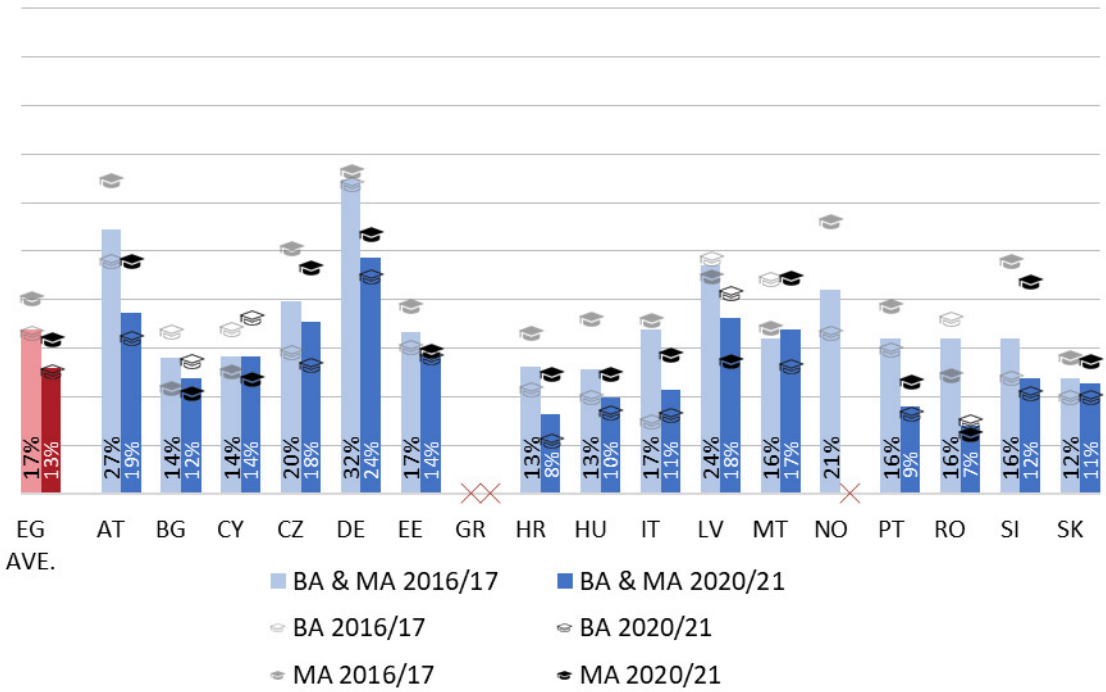


EUROGRADUATE provides the perspective of graduates on skills. In this respect, it does not observe a major gap regarding ICT skills among higher education graduates currently in employment. While this is somewhat reassuring, it cannot be concluded that there is sufficient supply of ICT skills in European labour markets. In contrast, ICT is among the sectors with the most distinct shortage of available employees and the highest share of job vacancies, as shown by the recent Draghi report on “The Future of European Competitiveness”.

V. Learning experience and skills development

Teaching and learning modes are contributing to skills development to differing extents and they are also connected to learning outcomes, labour market outcomes, and social outcomes. Lecture-based teaching is still the predominant method in the EUROGRADUATE 2022 countries. Comparing the learning experience of the cohort 2020/21 with the cohort 2016/17, more **activating learning modes are gaining ground, but progress is modest**.

Figure 8: Graduates with (any) experience abroad during reference programme
(see chapter 3 for further information)

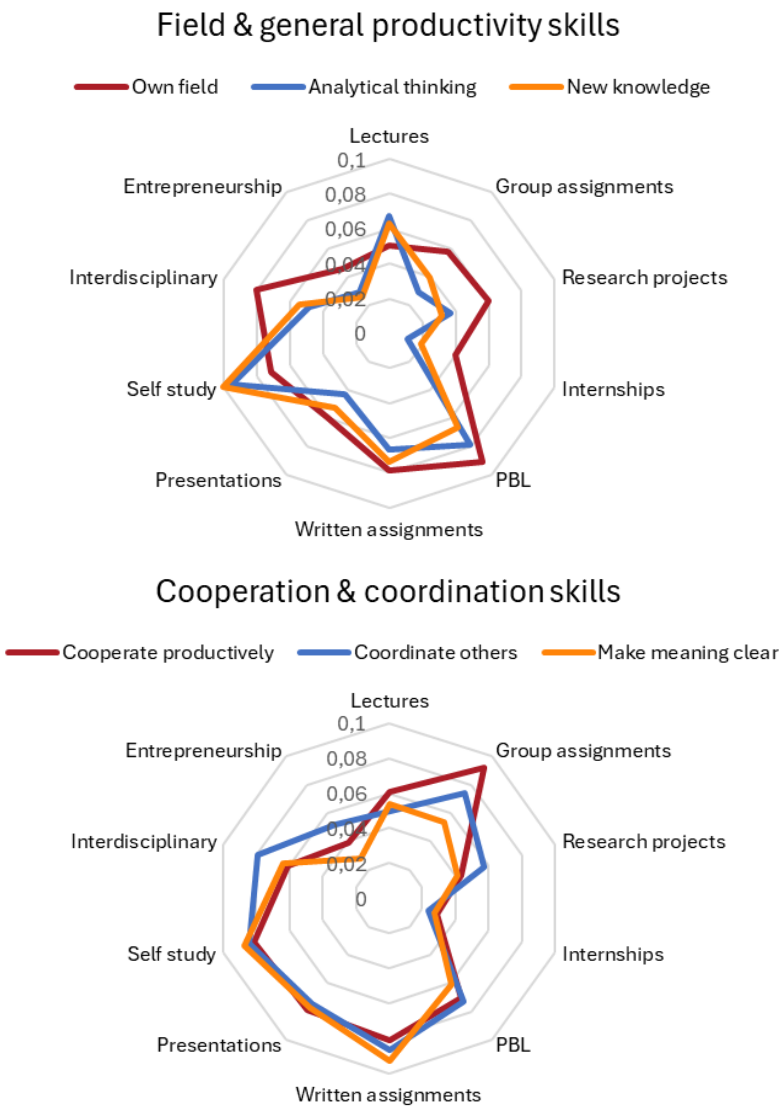


Graduates of the more recent cohort have gained considerably less experience abroad during studying. Most likely this is connected to the COVID-19 pandemic: a high share of graduates report that the pandemic has affected their mobility plans during studying. It is unclear, if student mobility will fully recover from this setback. Generally, mobility levels in southern and eastern European countries are lower. **Some of the less affluent countries were particularly hit by the drop in student mobility**, e.g. Portugal, Romania, or Croatia, increasing inequality across countries even further.

At the individual level, there is a persisting pattern that **students from non-academic background engage less in student mobility**. As student mobility has the potential to reduce inequalities in labour market outcomes between graduates from academic and non-academic background, it could be considered to reach out to the latter specifically by mobility programmes.

More in-depth analyses shed some light on how strongly the various teaching learning modes are related to each respective skill. There are some learning forms which seem to be generally advantageous, e.g. self-study, written assignments, and especially problem-based learning (PBL) have a potential to foster a large bandwidth of skills. Thus, our results suggest that students should be offered a variety of teaching and learning forms, to foster a diverse set of skills including mastery of one's own field, productivity, ability to work in or lead teams, or innovation capacities.

Figure 9: Connection of teaching & learning modes with own skills level
(see chapters 3 & 6 for further information)



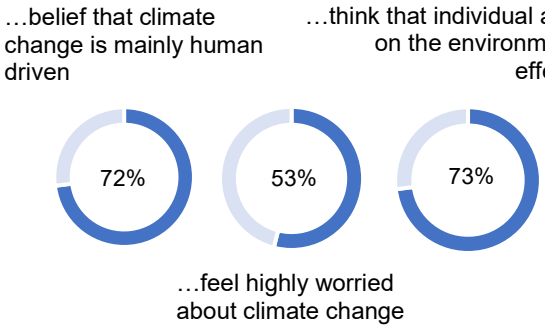
VI. Social outcomes

The EUROGRADUATE 2022 survey provides evidence on the social outcomes of higher education, as it **contributes to democratic values and environmental awareness**.

There is very high support for democracy among higher education graduates (>90%), yet their confidence to participate in politics is very low (only around 10%), showing the need for civic education. Looking at **political participation** across different study fields, graduates from the fields **Arts & Humanities**, as well as **Social Sciences & Journalism**, show the highest levels of political activity. With regards to the survey country, it can be observed that the support for democracy is very high in all countries, but it is higher in Austria and Germany compared to the other countries. The support for democracy is around one full scale point lower among Bulgarian graduates compared to Austrian ones. Graduates in Portugal and the Czech Republic also show slightly less support for democracy than in Austria, but the difference is noticeably smaller.

Topics related to **environmental sustainability** are **increasingly integrated in the curricula** across all study programmes, most prominently in the field of Natural Sciences & Mathematics. The proportions of graduates who reported a (very) high extent of topics on environmental sustainability as part of their curriculum are higher in the cohort 2020/21. Thus, environmental sustainability appears to be increasingly integrated in study programmes across all countries. Still, we see the highest shares of graduates who reported a high or very high extent of environmental sustainability as a topic during their study programme in Austria (from 19% in 2016/17 to 29% in 2020/21), Bulgaria (from 23% to 31%), Cyprus (from 33% to 37%), Croatia (from 18% to 28%) and Slovakia (from 27% to 31%). With 14% in 2016/17 and 19% in 2020/21, the proportion of those who engaged with environmental sustainability through their curriculum is lowest in the Czech Republic.

Figure 10: Climate attitudes
(see chapter 8 for further information)



Worryingly, only a little more than 70% of graduates believe that climate change is mainly or entirely human driven; the effectiveness of individual action is also questioned by more than a quarter of graduates.

EUROGRADUATE 2022 –
Political Context, Methods & Empirical Results

1. The Political Context of EUROGRADUATE 2022

1.1. Why European graduate tracking is relevant

Today, Europe is facing a series of major challenges – the post-pandemic economic recovery, global warming and biodiversity loss, the digital transformation, an aging population, or populistic movements and pressure on democracy. European decision makers give universities, and thus higher education graduates, an essential role in meeting these challenges (European Commission, 2022).

For economic recovery and sustained growth, a highly educated workforce is of crucial importance. Skills in line with the needs of the labour market contribute to high employment rates and robust economies. Higher education graduates are boosting innovation capacities in a rapidly changing world by creativity and entrepreneurship. It is primarily higher education which provides the skills for the green and digital transition of economies and societies. To unleash the full potential of higher education, access to higher education and academic careers needs to be inclusive and open to students with all genders and from all social and ethnic backgrounds. Universities are places of democratic practice, academic freedom, and critical thinking. Thus, higher education is expected to bear "active, critical and responsible citizens" (European Higher Education Area, 2020, p. 4) of democratic societies and universities are regarded as "key […] to protect European democracies" (European Commission, 2022, p. 10). Finally, universities and graduates should support the EU in its global role through international cooperation within and beyond Europe and by attracting and retaining talented students and academics.

Of course, higher education needs suitable framework conditions, political support, and political strategy to fulfil its crucial role for Europe. The European pilot survey of higher education graduates can contribute to this by providing data for policy makers, higher education institutions, and future students. With data and information, it helps to understand where European higher education and European graduates stand regarding political goals and challenges. It helps to improve higher education and promote it to best address current and future challenges. For this, comparative data is indispensable. International comparisons allow results of European countries to be put into perspective. Further, and probably even more importantly, international comparisons allow for mutual learning among countries.

In order to be helpful, the contents of the EUROGRADUATE 2022 survey and this report reflect the societal challenges and the political agenda:

Chapter 3 The Education Experience gives detailed information on the study programme, including teaching and learning modes, innovative learning practice, learning mobility, practical experience, and study satisfaction. This chapter provides key information for all subsequent chapters which analyse the link between higher education and their respective topic.

Chapter 4 Labour Market Participation reports on the employment level of graduates, their transition to the labour market, and the occupations they hold. It analyses which graduates are at risk for unemployment. Further it looks at self-employment and explores what can foster entrepreneurship of graduates.

Chapter 5 Labour Market Outcomes turns to the labour market returns of graduates. The match between the level and field of education and the job is analysed which touches upon the topic of the match between higher education and labour market requirements. Job satisfaction is covered as a subjective labour market outcome. Income of graduates is dealt with and analysed as the crucial monetary return to higher education.

Chapter 6 Skills Levels and Skills Match shows how graduates assess the level of their skills regarding various aspects, the required level of skills in their jobs, and how well requirements

are met. Moreover, it is analysed whether and how skills are related to different teaching and learning modes.

Chapter 7 International Mobility of Graduates after Graduation reports on the outward and inward flows of graduates across borders. Which shares of graduates are leaving the country and which are their main destinations? The chapter analyses the drivers of mobility and whether mobile graduates are better off.

Chapter 8 Social Outcomes, Political Attitudes and Political Participation sheds light on the possible relationship between higher education and social outcomes such as life satisfaction, health, or social trust. The contribution of higher education to social cohesion, stable, and vivid democracies is further analysed by looking at democratic values, political interest, and political participation of graduates. Last not least, this chapter takes up climate change and analyses attitudes of graduates towards this pressing political issue.

In the light of the post-pandemic era, the consequences of *COVID-19* on studying, learning mobility, unemployment, and income are dealt with as a cross-cutting topic in chapters 3, 4, and 5.

Another cross-cutting topic is inequality in education and the labour market which is addressed throughout the report by highlighting gender differences as well as differences by social origin and immigration background. Amongst others, chapter 5 features the gender-pay gap among higher education graduates and its possible reasons.

We hope the report exemplifies how European graduate tracking can be useful which has been summarised by the European Commission (2021: 1) as follows:

- “improve the student experience and identify ways of teaching and learning that are most effective;
- pinpoint problems of inequality in education and find ways of addressing them;
- enhance the employability of recent graduates and improve the match between their skills and those required by employers;
- gain an insight into patterns of cross-border mobility, including brain drain and brain gain;
- identify practices that best prepare graduates for active citizenship and service to society.”

The specific European added value of EUROGRADUATE lays in the comparative perspective, the mutual learning possibilities, by building a data source reflecting large and growing parts of the European Economic Area, by the unique possibility to observe cross-border mobility of graduates, and by pushing forward graduate tracking capacities in many European countries which have not been regularly tracking their graduates before.

The report covers all topics of the EUROGRADUATE survey. However, it is not possible to exploit the rich potential of the EUROGRADUATE data with one report and further research using the data is hereby encouraged.

1.2. EUROGRADUATE 2022 and the European Graduate Tracking Initiative

EUROGRADUATE 2022 is not a stand-alone project but embedded in the larger European Graduate Tracking Initiative (EGTI). The EGTI has been initiated in November 2017 by the recommendations of the Council of the European Union on tracking graduates (Council of the European Union, 2017). The ministers were concerned about the employability of graduates and the match of graduates’ competencies with labour market requirements. To guide policies for improving the situation adequate data was missing. Tracking systems in some countries

were not very well developed and the availability of comparative data was strongly limited. They recommended several measures to enhance data quality and supply in order to better understand the connection of higher education, social background, national contexts, and labour market success. Important measures of this initiative were:

- the *European Commission expert group on graduate tracking* which published recommendations for developing graduate tracking in Europe (European Commission, 2021b),
- *the European Graduate Tracking Network* which guides the further development of European graduate tracking including EUROGRADUATE and brings together National Reference Points for graduate tracking of the EEA countries, European Commission representatives, and European stakeholder organizations,
- *the European pilot survey of higher education graduates* with its first and second round (EUROGRADUATE 2018, EUROGRADUATE 2022).

EUROGRADUATE 2022 continues the path towards a sustainable European-wide data base. As the second round of the EUROGRADUATE pilot survey it takes the next step towards providing **regular, comprehensive, comparable, and longitudinal data on higher education graduates** in Europe.

EUROGRADUATE aims at providing data and analyses on the outcomes of attaining higher education in a way that allows for:

- both, international comparison and research on a national level,
- linking higher education and the education experience with the graduate background, employment, labour market outcomes, international mobility, and social outcomes,
- distinguishing different types, levels, and fields of higher education,
- comparing short- and mid-term outcomes of graduates (i.e. 1 and 5 years past graduation).

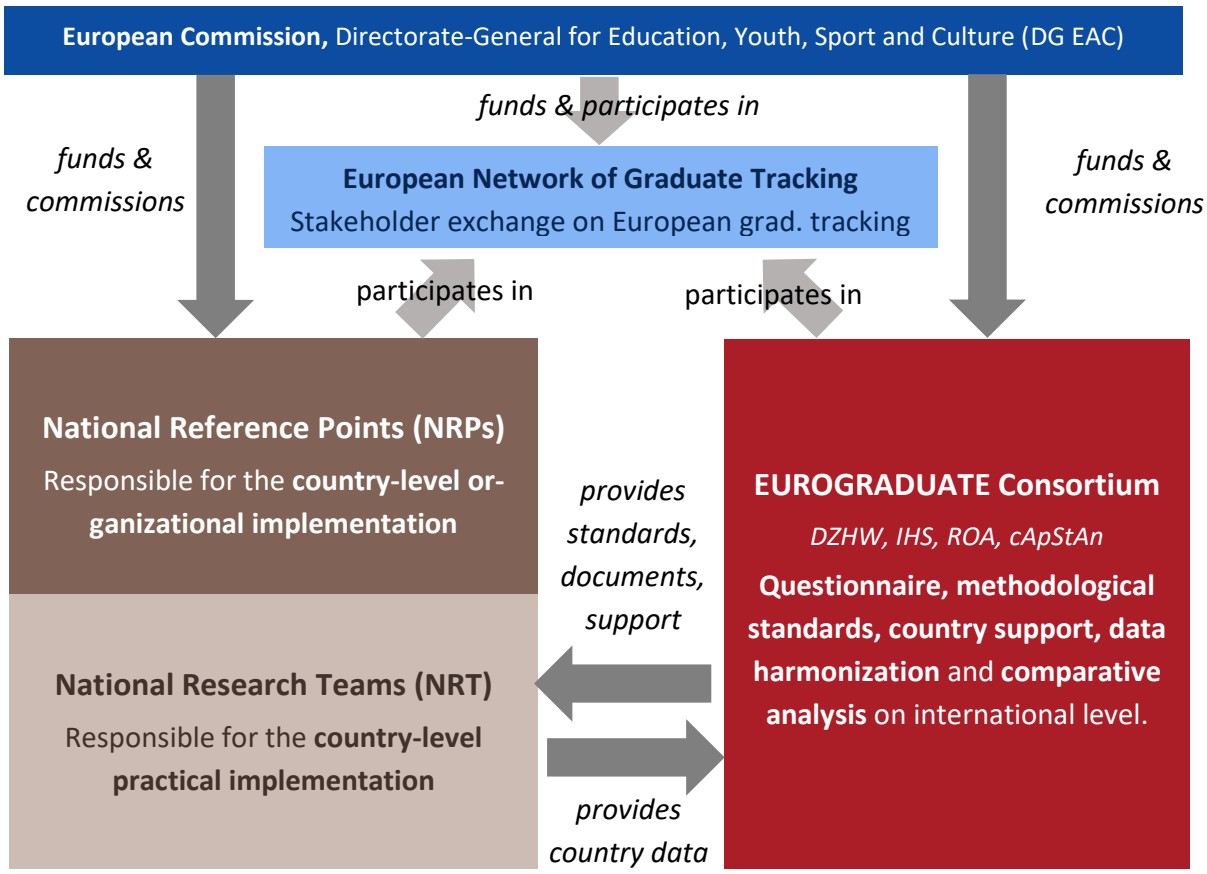
This way the EUROGRADUATE data contributes to a better-informed choice of study programmes, enhancing the design of study programmes, and guiding education policies.

2. The EUROGRADUATE 2022 Survey: Organisation and Methods

2.1. Project organisation

Figure 2.1.1 shows the organisational structure of the project. The Directorate-General for Education, Youth, Sport and Culture (DG EAC) of the European Commission funds and commissions the project and supports all organisations involved in conducting the project. The project is conducted collaboratively by teams in each participating country and the EUROGRADUATE Consortium. Country teams consist of a National Reference Point (NRP) for graduate tracking and a National Research Team (NRT). In most countries, the former is the national ministry responsible for higher education. The NRP organizes the data collection, commissions the NRT, and is a member of the European Graduate Tracking Network (ENGT). The NRT is usually a research organisation or a statistics office. It is responsible for the practical implementation of the data collection and for providing expertise as graduates researchers. Note, that the nature of the organisations and the exact division of responsibilities and tasks differs between countries to some extent.

Figure 2.1.1: Organisational structure of EUROGRADUATE 2022



Source: EUROGRADUATE 2022 Consortium.

Country teams are indispensable for successfully conducting the project. The NRPs have the authority and expertise to organize the data collection. In addition, the national ministries are key addressees of the results of the project. Thus, their feedback on the usefulness of the information provided by the project is highly relevant. The NRTs usually have strong experience in conducting surveys (in higher education) in the country. Further, they have the

country-specific expertise for adapting the questionnaire to the national context, translating it to the national language, or for giving valuable hints on how to interpret results of their country.

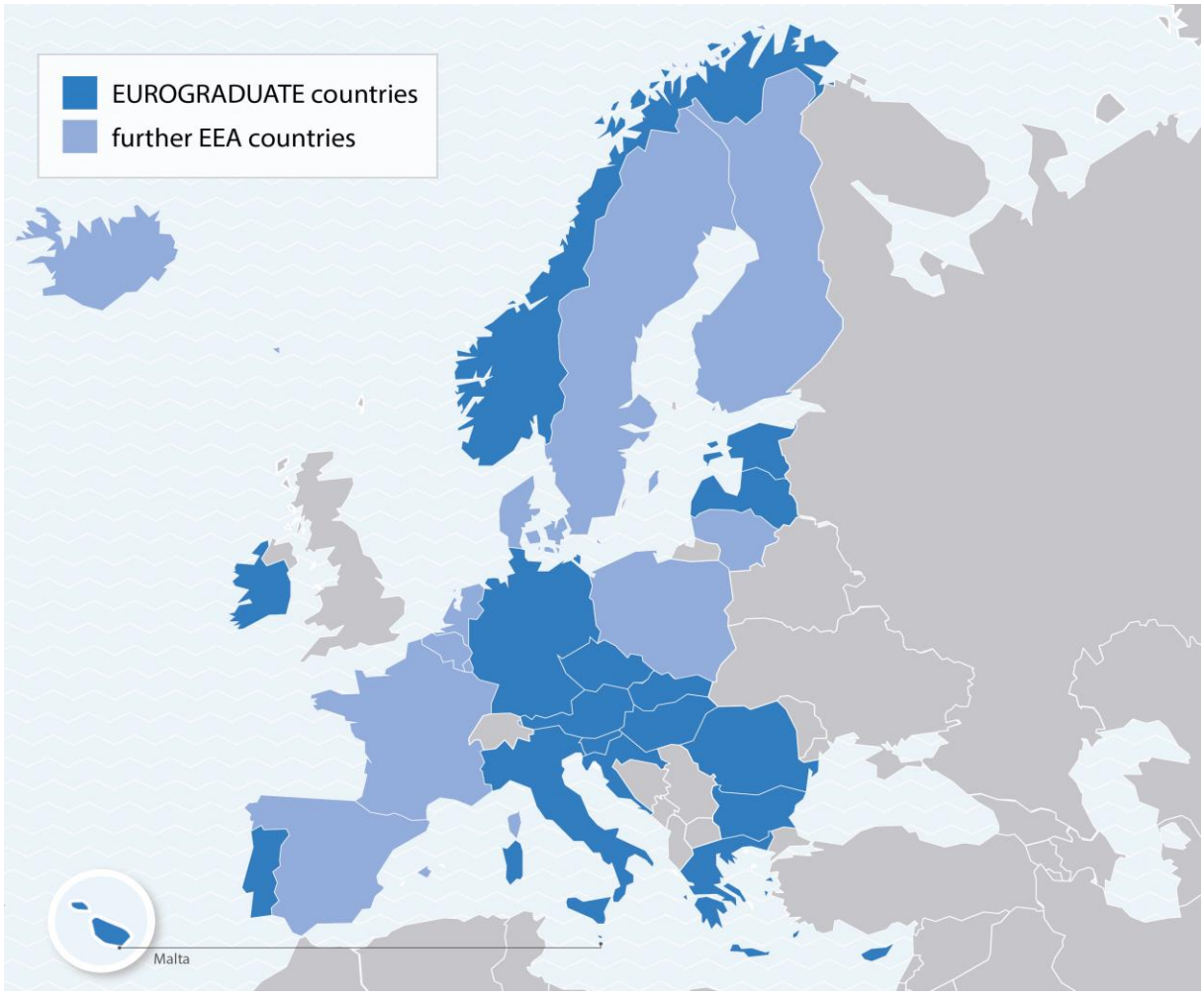
The EUROGRADUATE Consortium is responsible for the international coordination of the project. It prepares the documents and standards needed for the implementation of the survey in the countries, provides support to country teams, and is the central contact point for all questions regarding the project. The consortium cooperates closely with the NRPs, the NRTs, and the European Commission.

The ENGT consults on and guides the further development of the EGTI and of EUROGRADUATE. The EUROGRADUATE Consortium is as well represented in the ENGT. It updates the network on the progress of the project at annual meetings, participates in working groups and provides expertise to the network.

2.2. Participating countries

The survey was rolled out in 17 pilot countries, applying standards and methods to create comparable and reliable data. In addition to the pilot countries, Ireland delivered aggregated indicators based on register data.[3]

Figure 2.2.1: Participating countries EUROGRADUATE 2022



Source: EUROGRADUATE 2022 Consortium.

[3] We are indebted to Central Statistics Office of Ireland for providing the data. If Ireland is included in statistics in this report it is explicitly mentioned in the notes. If Ireland is not explicitly mentioned it is not covered by the statistics displayed.

Thus, all in all 18 countries of the European Economic Area (EEA) provide data to EUROGRADUATE 2022 (see Figure 2.2.1): Austria, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, Norway, Portugal, Romania, Slovakia, and Slovenia. As target size for EUROGRADUATE 2022 the of European Commission expert group for graduate tracking recommended 50% of the 30 EEA countries (European Commission, 2021b). This target was (over-)fulfilled. Seven of the eight pilot countries of EUROGRADUATE 2018 participated as well in EUROGRADUATE 2022.

Countries applied to participate in the project on their own initiative. Countries from all regions of the continent as well as of all sizes are participating in the project. Countries from south-eastern Europe are particularly well covered, while less countries from western Europe are participating. For the next phase of EUROGRADUATE a target size of 80% of the EEA, i.e. about 25 countries, is envisaged by the European Commission (2021b).

2.3. Methods

2.3.1. Whom this report is about: target group definition

The EUROGRADUATE core target group entails all graduates who achieved an **ISCED level 6 (bachelor's degree or equivalent) or level 7 (master's degree or equivalent) degree in the academic years 2016/17 and 2020/21**. The target group explicitly includes international students (graduates born, raised, and/or having attended secondary school outside the survey country) and mobile graduates who left the survey country after graduation. Graduates are considered irrespective of their enrolment status (full-time or part-time). The only persons excluded from the target group are graduates of exclusively employer-run higher education institution, such as military academies or study programmes provided by public administration institutions exclusively to their civil servants.

ISCED 8 (doctoral level) graduates are not included in the target group. Countries were free to survey ISCED 8 graduates for statistics and analyses at country level, but these respondents were not considered for the international EUROGRADUATE data. Graduates from ISCED 5 programmes (short-cycle higher education) are eligible for inclusion into a country's target group if the programme they had graduated from was offered by a higher education institution. To establish a standard for all countries, **ISCED 5 programmes were considered higher education if their degree was offered by an institution that also offered programmes at ISCED level 6 or higher**. This criterion is necessary because some countries offer vocational or secondary ISCED 5 degrees.

A defining criterion for the two cohorts targeted by EUROGRADUATE are the **academic years 2016/17 and 2020/21**. The start and end of the academic year varies to some extent between countries. Depending on the country, the winter term starts in August, September, or October (European Commission et al., 2022). The summer term usually ends the day before the winter term starts. As information on graduates in countries is often structured in terms of the country-specific runtime of the academic year, countries were free to apply their respective definition of the academic year.

The **EUROGRADUATE target group** entails all persons in the survey countries who earned a higher education degree, excluding doctoral level degrees, in any programme and institution in the academic years 2016/17 or/and 2020/21, excluding employer-run institutions.

2.3.2. Topics of the survey: questionnaire and modules

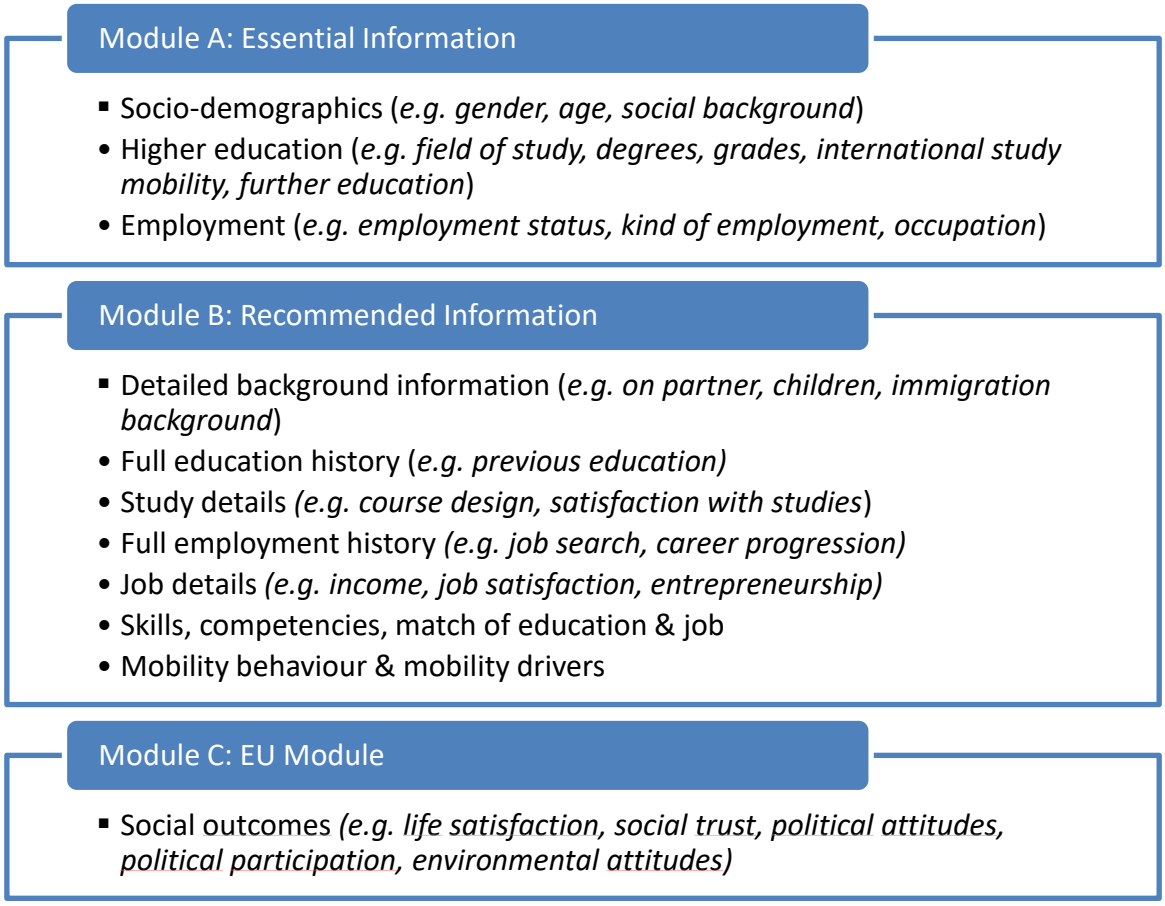
Applying the recommendations of the European Commission expert group on graduate tracking (European Commission, 2021b), the questionnaire consists of three modules countries could choose from (see Figure 2.3.1):

(1) *Module A: Essential Information* was the minimum countries needed to cover. It is relatively small set of variables providing basic information regarding socio-demographics, the study programme, and employment. In principle it should be possible to cover the information of this module with administrative data as well.

(2) *Module B: Recommended Information* is the largest module. In addition to Module A, it offers more details on the background of respondents, a full education and employment history, more details on the study programme including teaching and learning or subjective assessments, more details on the job such es income or satisfaction, self-assessments of competencies, and information on mobility after graduation including drivers for mobility. Many of these pieces of information can only be captured by surveys.

(3) *Module C: EU Module* is a smaller module which addresses outcomes of higher education going beyond the labour market such as life satisfaction, social trust, health, political values and political participation, and attitudes towards environmental sustainability.

Figure 2.3.1: Modules of the EUROGRADUATE 2022 survey

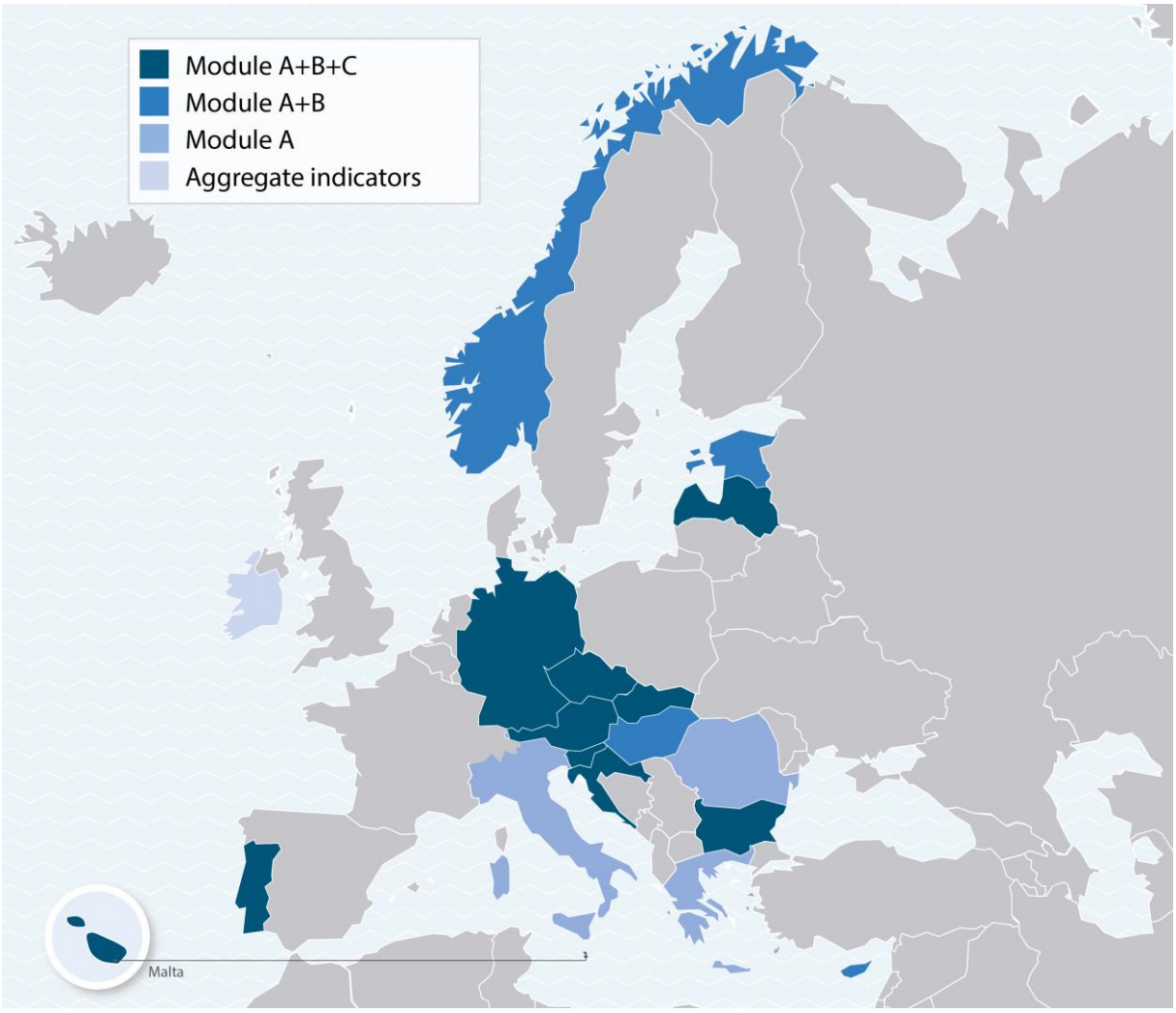


Source: EUROGRADUATE 2022 Consortium.

Countries could choose to cover only Module A, Module A+B, or Module A+B+C. Of the 18 countries contributing to EUROGRADUATE 2022,

- 10 countries surveyed the complete set of questions: Austria, Bulgaria, Croatia, the Czech Republic, Germany, Latvia, Malta, Portugal, Slovenia, and Slovakia;
- 4 countries surveyed the two-module package: Cyprus, Estonia, Hungary, and Norway;
- 3 countries surveyed essential information only: Greece, Italy, and Romania;
- 1 country (Ireland) did not provide microdata, but aggregated indicators on some variables of Module A based on register data (see Figure 2.3.2).

Figure 2.3.2: Survey modules covered by EUROGRADUATE 2022 countries



Source: EUROGRADUATE 2022 Consortium.

In this round of the European pilot graduate survey, countries with a pre-existing national graduate survey had the option to provide the data for EUROGRADUATE from their national survey rather than implementing the master questionnaire. This option was used by Germany and Italy. Both countries were able to cover most variables of the modules they chose with their national surveys. Still certain variables are lacking, as the national surveys could not always be fully adapted to the questionnaire design of EUROGRADUATE to provide comparable data (for more details see section 2.3.3 below).

A master questionnaire[4] was designed building on (a) the questionnaire of the first EUROGRADUATE pilot survey 2018, enhanced and modified based on the methodological insights from the pilot (Mühleck et al., 2020), (b) the recommendations of the European Commission expert group on graduate tracking (European Commission, 2021b), and (c) input of decision makers on policy-relevant topics (such as the impact of the COVID-19 pandemic and sustainability as a topic in study programmes). Draft versions of the questionnaire were discussed with the participating countries and the European Commission. Their feedback was carefully considered and taken into account as far as possible. The tight schedule of EUROGRADUATE 2022 did not allow for several feedback loops with the countries, however. To ensure that the information is internationally compatible, international standard classifications (e.g. ISCO and ISCED), ISO norms, and survey instruments from other large-scale international surveys were applied as far as available.

The master questionnaire was checked by the NRT for necessary adaptations to the country-specific context. The adapted version was translated and implemented into an online survey by each national research team for the respective country. The linguistic experts of the EUROGRADUATE consortium partner cApStAn facilitated a linguistic quality control process for the adaptation, translation, and translation verification of the questionnaire to maximise cross-language comparability of the results. The national surveys were only accessible with access links individually distributed to target group respondents, preventing illegitimate responses by persons out of the target group or automated software.

2.3.3. How the data was collected: samples, field phase, and response rates

Countries could either survey the whole target group (census) or a random sample. The option of a census was particularly recommended for countries with small cohorts. In fact, most countries chose to invite the entire target population to the survey (see Figure 2.3.3).

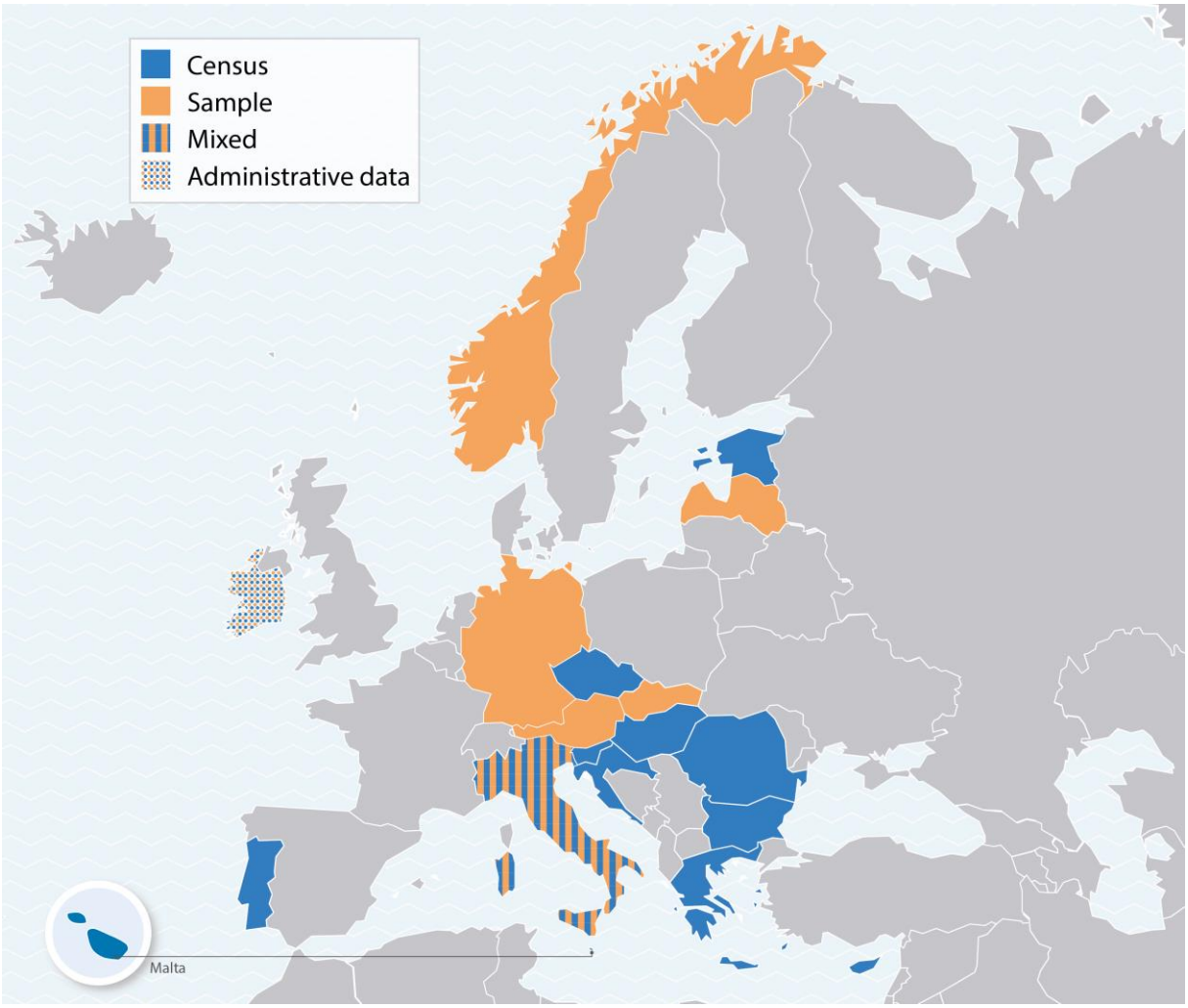
In countries where a sample was drawn, the standard procedure was a disproportionally stratified random sample which was stratified at least by study fields, cohort, and degree level (additional stratification characteristics were applied by some countries). The two countries participating in EUROGRADUATE by their national graduate surveys applied their national survey design. The data for Germany is based on a clustered and stratified random sample. The data for Italy is based on a census from more than 90% of the Italian universities. For the cohort 2020/21 a random sample of the survey participants has been resurveyed for EUROGRADUATE (for more details see below).

Valid cases in the survey underwent a statistical weighting procedure to account for nonresponse and over- and underrepresentation of certain sub-groups of graduates. This weighting adjusted for graduation year, degree level, field of study, age (if available in weighting statistics), and gender. In some countries, additional weighting characteristics, such as type and region of the higher education institution, were used.

Some countries' research teams were able to select and contact graduates based on a central register, while other countries needed to contact graduates via higher education institutions (see Table 2.3.1 below). Countries without a central register generally opted for the census method (except for Germany). Thus, in these countries it was possible to simply ask institutions to invite all graduates of the target group instead of requiring them to draw a random sample. This was suggested by the consortium to reduce the efforts for institutions and to simplify the coordination with the numerous institutions for the NRT.

[4] The full questionnaire files, as well as the questionnaires for the previous pilot survey, are publicly available at the EUROGRADUATE website ↗.

Figure 2.3.3: Full-population survey (census) or sample survey in EUROGRADUATE 2022 countries



Source: EUROGRADUATE 2022 Consortium.

The field phase of the survey lasted from 17/10/22 to 06/08/23. This is relatively long period and was clearly longer than originally planned. Besides the general challenge of a very tight schedule for the project, the main reasons were delays in certain countries due to legal issues, technical problems, problems in finding adequate staff, problems in coordinating with other surveys, or reorganisation of responsibilities within the country. 10 countries conducted their surveys in the period October 2022 to March 2023 which can be regarded as the core field phase (see Table 2.3.1). Three countries extended the survey period to collect more cases or to allow institutions a more flexible timing of the survey (Germany, Portugal, and Romania), however most cases were collected during the core field phase. Four countries faced stronger delays of their surveys due to the mentioned problems (Cyprus, Latvia, Malta, and Slovenia). One of the learnings of EUROGRADUATE 2022 for the next round of the survey therefore is to grant substantially more time to the project in total and especially for preparing the survey within countries. This should allow for a more streamlined timing of countries and a shorter survey period overall.

Data collection via a national graduate survey: the cases of Italy and Germany

Italy and Germany participated in EUROGRADUATE by collecting the data in course of a national graduate survey while checking and ensuring comparability of the data with the standards of EUROGRADUATE. This option was offered for the first time in

EUROGRADUATE 2022 to allow countries to participate which could not facilitate it otherwise. Therefore, it is interesting to have a look at how this option worked and to what extent it was possible to arrive at comparable data in the end for the modules these countries had chosen (Italy: module A; Germany: modules A, B, and C).

Early on, NRT of both countries checked on the data requirements of EUROGRADUATE based on the information already available and successively provided by the EUROGRADUATE Consortium as the project progressed (e.g. information on the target group, sampling design, data collection modes, timing of the survey, and the survey modules as defined by the European Commission expert group on graduate tracking). To the extent possible, country teams harmonised the data collection design and questionnaire design of their surveys with EUROGRADUATE. Note that leeway for such harmonisation is often limited by the need to keep up time-series of data at national level, informational requirements of the NRT or national stakeholders, or the possible length of the questionnaire.

Once the EUROGRADUATE master questionnaire was available, both countries conducted a systematic *comparability assessment* of the survey questions used in the national graduate survey and those of EUROGRADUATE. If possible, NRT sought to further increase comparability by adapting the national graduate survey. Questions were categorized as (1) “same question”, (2) “different question, fully comparable”, (3) “different question, limited comparability”, or (4) “uncovered or incomparable”.

After the data collection, the comparability assessment was the starting point for the *data harmonisation*. For categories (1)-(3), variables as defined by the EUROGRADUATE standards (as set out in the master questionnaire, the data collection handbook, and the data cleaning guidelines of the project) were derived from the data of the respective national graduate survey. For variables with limited comparability (category (3)), country-specific variables were generated. These variables offer information which is valuable but is not entirely comparable.[5] For the most part, it was possible to cover the variables of the respective modules by the data of the national survey. However, there are certain country-specific lacks of information for both countries which are made visible in this report (notes below graphs and tables tell which countries are not covered by the respective indicator).

For comparability of the data, the same target groups need to be surveyed at about the same time. By and large it was possible to arrive at identical target groups and timing of the survey for Italy and Germany, but some specifics should be noted.

The data for Italy was collected by the Interuniversity Consortium AlmaLaurea (for more information see Interuniversity Consortium AlmaLaurea, 2024). The graduate survey of AlmaLaurea defines the target group with respect to the solar year, not the academic year. Graduates are surveyed several times over the year to ensure that the time between graduation and survey is equivalent and at about one year (first survey). The survey is repeated four years later. Thus, the timing of the survey is relatively similar to EUROGRADUATE. However, the target group differs and the EUROGRADUATE survey is rather 1,5 years after graduation than one year after graduation. Considering the cohort 2016/17 these deviations seem relatively minor about five years after graduation. Results should be comparable by and large, however with a grain of salt. Specifically, results for bachelor level graduates of the cohort 2016/17 should be compared with care only, as the Italian survey only contacted first-level graduates again if they had not continued university studies (unlike EUROGRADUATE).

[5] As an example, for Germany a country-specific variable offers information on the kind of study-related stays abroad (e.g. study abroad, internship, …) for all stays combined, whereas the EUROGRADUATE variable offers information on the kind of stay for each stay separately. The consortium has compiled a table documenting all country-specific deviations.

Table 2.3.1: Survey methods and response details for EUROGRADUATE countries

	Valid responses 2016/17 cohort				Valid responses 2020/21 cohort				Total valid responses	Invited to survey	Net response rate	Sample or census	Contact data source	Field phase start	Field phase end
	ISCED level				ISCED level										
	5	6	7	Total	5	6	7	Total							
AT	-	2.455	3.008	5.463	-	3.450	3.520	6.970	**12.433**	22.000	56,5%	sample	central	10/2022	01/2023
BG	-	577	751	1.328	-	947	1.331	2.278	**3.606**	67.734	5,3%	census	decentral	02/2023	02/2023
CY	24	228	272	524	56	340	496	892	**1.416**	22.159	6,4%	census	decentral	02/2023	04/2023
CZ	-	1.624	1.868	3.492	-	1.980	1.846	3.826	**7.318**	63.798	11,5%	census	decentral	11/2022	03/2023
DE[1]	-	453	446	899	-	2.942	2.824	5.766	**6.665**	50.527	13,2%	sample	decentral	11/2022	06/2023
EE	-	907	607	1.514	-	1.133	876	2.009	**3.523**	18.936	18,6%	census	central	11/2022	02/2023
GR	-	2.871	1.942	4.813	-	7.605	2.982	10.587	**15.400**	78.298	19,7%	census	decentral	11/2022	02/2023
HR	-	578	1.453	2.031	-	2.120	2.847	4.967	**6.998**	60.420	11,6%	census	central	12/2022	03/2023
HU	-	1.749	1.062	2.811	-	2.352	1.633	3.985	**6.796**	94.891	7,2%	census	central	11/2022	01/2023
IT[2]	-	5.177	64.225	69.402	-	1.562	1.778	3.340	**72.742**	186.371	39,0%	mixed[2]	central	11/2022	02/2023
LV	-	366	268	634	-	523	319	842	**1.476**	19.347	7,6%	sample	central	01/2023	05/2023
MT	23	55	47	125	91	109	99	299	**424**	15.580	2,7%	census	decentral	03/2023	05/2023
NO	-	1.457	1.745	3.202	-	1.662	0	1662	**4.864**	24.343	20,0%	sample	central	12/2022	02/2023
PT	217	4.427	2.776	7.420	467	6.610	3.720	10.797	**18.217**	85.966	21,2%	census	decentral	11/2022	05/2023
RO	-	332	209	541	-	610	394	1.004	**1.545**	149.065	1,0%	census	central	11/2022	04/2023
SI	-	1.368	1.190	2.558	-	1.554	902	2.456	**5.014**	24.314	20,6%	census	central	05/2023	08/2023
SK	-	543	1.058	1.601	-	555	1.203	1.758	**3.359**	42.443	7,9%	sample	central	11/2022	02/2023
Σ	*217264*	*25.167*	*82.927*	*108.358*	*614*	*36.054*	*26.770*	*63.438*	***171.796***	*1.026.192*	*16,7%*[3]				

[1] Germany: based on national survey sampling design (stratified by region, degree level, type of HEI; clustered by field of study and kind of degree within HEIs).
[2] Italy: cohort 2016/17 based on national census survey, surveyed twice starting 03/2022 and 12/2022 respectively; cohort 2020/21 random sample from census, re-surveyed 11/2022 – 02/2023.
[3] Net response rate of total survey (total valid responses/total number of invitations sent).

The cohort 2020/21 has had much less time after graduation than the older cohort. Therefore, the deviations in timing and target group would have had a much stronger relative impact and especially the comparability of labour market results would have been questionable. Therefore, AlmaLaurea and the EUROGRADUATE Consortium developed an alternative design for this cohort. Firstly, the target group was defined in equivalence with EUROGRADUATE as graduates of the academic year 2020/21 (in this case graduation between September 2020 and July 2021). Secondly, a random sample of respondents of the AlmaLaurea survey of the academic year 2020/21 has been surveyed again in the core field phase of EUROGRADUATE (November 2022 to December 2022). In telephone interviews, information collected in the previous survey has been updated. About 75% of all cases for the cohort 2020/21 stem from these interviews. Another 25% are graduates of July 2021 which have been surveyed in July 2022, i.e. close to the EUROGRADUATE field phase. This way, the definition of the cohort 2020/21 and the timing of the survey have been more closely aligned with EUROGRADUATE.

For Germany, the definition of the target group is identical to EUROGRADUATE. The timing of the survey is in line with the EUROGRADUATE framework, even though the field phase was timed somewhat later (cohort 2016/17) or was prolonged to allow institutions a flexible timing of the survey (cohort 2020/21). To ensure international comparability, parts of the collected information are reported differently in the context of EUROGRADUATE compared to the standards applied in national reporting in Germany. In EUROGRADUATE, we distinguish between ISCED level 6 and equivalent degrees and ISCED level 7 and equivalent degrees. This means that traditional German degrees (such as state examinations or diplomas) and master level degrees jointly form the category ISCED level 7 and equivalent in this report. In national reporting on Germany, these degrees are usually not grouped, i.e., state examinations or diplomas are reported separately from master's degrees. In addition, German national reporting defines the academic year less strictly than EUROGRADUATE, meaning that a larger group is considered to be an eligible part of the population than in the EUROGRADUATE statistics. Therefore, results for Germany published in this report may deviate from results published in national reports using the German national graduate survey.

To summarise: the option of participating in EUROGRADUATE with data collected by a national graduate survey is important to facilitate the participation of countries which could not coordinate their national survey with EUROGRADUATE otherwise. For both countries, procedures were established to ensure comparable data could be provided and to make transparent where comparability is limited. Thus, this approach seems a viable option for future rounds and for further countries with long-standing national surveys and very restricted flexibility to otherwise participate. At the same time, it should be noted that the scope of comparable data was lower than for countries fully applying the EUROGRADUATE research design and master questionnaire. Limitations of comparability regarding specific groups or variables are not always easy to assess and increase the complexity of the report for both the authors and the readers. Last but not least, country-specific solutions had to be found to ensure comparability, especially in the case of Italy, which required additional resources for the NRTs and the consortium.

2.3.4. Data quality and measures to ensure comparability

The most crucial challenge for a large-scale international survey project is to ensure the comparability of results across countries. Therefore, in each phase of the project a number of activities of the consortium were taken to achieve comparable data in the end.

- A master questionnaire was provided to NRT to ensure identical (or, more precisely, linguistically equivalent) survey instruments are used across countries
- A strong focus has been placed on arriving at linguistically equivalent survey instruments: The master questionnaire has been checked by NRT and where necessary adapted to the context of the country, to picture the country's education

system, labour market or other country-specifics. Adaptations have been cross-checked by the consortium. The adapted version of the master questionnaire has been translated by the country experts of the NRT. Translations have been validated by the linguistic experts of cApStAn. Occurring issues have been resolved cooperatively among the NRT, cApStAn, and the project coordination.

- For the questionnaire, survey instruments from other large-scale international surveys have been used (e.g. REFLEX, the European Social Survey, the European Values Study, the International Social Survey Programme, and the previous round of EUROGRADUATE) and international classifications such as ISCO, ISCED, NACE, or NUTS and norms (ISO norms) have been applied. NRT have been provided with lists of these classifications and norms and detailed instructions on how to use them.
- A comprehensive data collection handbook with definitions to be applied and instructions on all aspects of the data collection has been provided to NRT to ensure a joint methodology and common standards.
- NRT have been provided with templates for their data collection plans. Data collection plans have been reviewed by the consortium and discussed with the NRT.
- Guidance on programming the online questionnaire has been provided in written and through webinars. This was particularly important as the data for EUROGRADUATE 2022 was collected decentral and countries had to set up their own online survey platforms. Before the data collection started in a country, at least one bilateral check-up meeting with the consortium took place. All online surveys have been systematically pre-tested at least once by the consortium and countries were given feedback on necessary corrections or adaptations. This way it was ensured that online surveys are working as intended and in line with central standards despite the decentral programming.
- To standardize the data processing across countries, detailed data cleaning guidelines were issued and complemented by syntax for the statistical software most teams were using.
- Cleaned data has been quality checked by the consortium, and NRT have been feedbacked to solve remaining issues or correct errors if needed.
- Results of the EUROGRADUATE project have been presented to country teams on various occasions and a draft of this report has been sent to country teams for feedback. Several teams provided feedback in written or at events on results in general or regarding their country. This helped the consortium strongly in interpreting country differences and in taking into account the specific situation or specific characteristics of individual countries.
- Throughout the project, guidance on the current tasks has been provided to country teams by frequent webinars and through bilateral contacts. This helped setting the standards for the project and streamlining the data collection, data processing, and data analysis to finally arrive at comparable data. The consortium has benefited greatly from this close collaboration and the exchange of expertise and experience.

Table 2.3.1 below gives some key information on the field phase and the number of valid cases achieved (more details on the data collection will be publicly available in a technical assessment of the project). In seven countries graduates were contacted via the higher education institutions. Teams of 10 countries could either use one or more existing central registers or were able to compile such a register. As already mentioned above, most countries conducted a census survey, i.e. they contacted all graduates of the target population. The field phase period varied across countries to a certain extent with a core field phase between October 2022 and March 2023 but as well with larger deviations from the field phase in some countries. For countries with a clearly later surveying period such as Cyprus, Latvia, Malta,

and Slovenia, labour market outcomes should be compared with care against the results of the other countries.

Table 2.3.1 shows the numbers of respondents by country, cohort, and degree as well as the total number of invitations sent and the net response rate. The data set of EUROGRADUATE (version 3.2.0) contains 171,796 valid cases, 63,438 cases for the cohort 2020/21 and 108,358 cases for the cohort 2016/17. Note that about 69.000 cases of the cohort 2016/17 have been collected by AlmaLaurea before EUROGRADUATE 2022. Taking this into account, more than 100,000 valid cases have been collected in course of the project. Compared to the around 16,500 cases of EUROGRADUATE 2018 this is a major leap forward. Numbers of cases vary across countries and span from 424 respondents in Malta to 18,217 cases in Portugal (not considering IT 2016/17). Except for Malta, all countries were able to collect 1,400 respondents and more which facilitated reporting differentiated statistics.

The overall net response rate is 16.7%.[6] The response rate varies strongly across the 17 participating countries from 56,5% in Austria to only 1% in Romania. For most countries response rates range between 11,5% (Czech Republic) and 21,2% (Portugal). Two countries, Malta and Romania, are facing very low response rates clearly below 5%. For Romania, the NRT was able to compare the results obtained by the EUROGRADUATE survey with results obtained by the national graduate survey. The latter achieves clearly higher response rates. This cross-validation showed that results obtained by the EUROGRADUATE data are very much in line with the results obtained by the national graduate survey data. Therefore, despite the very low response rate, the data for Romania seems of acceptable quality. For Malta such a cross-validation was not possible. Rather we face the additional challenge of very low numbers of respondents for Malta. In differentiated statistics numbers of respondents for Malta often fall below the threshold of too few cases, i.e. below 30 cases. If so statistics are not reported.

Overall and for most countries the response rates are moderately low and at about a level not unusual for online surveys today. Compared to EUROGRADUATE 2018, the response rate has slightly improved against a general trend of decreasing response rates. Measures taken by some countries have yielded some success. Among the relevant measures seem to be: an operator of the survey with a high reputation in the target group, multiple contacting channels (including post or telephone), and incentives (especially pre-paid).

At the same time, some countries have not achieved high response rates despite considerable efforts taken. Some countries report that they achieve higher response rates in their national graduate surveys. While high response rates do not guarantee unbiased statistics, they are likely to reduce the risk for statistical bias. They increase the sample size, which leads to more precise estimates of population parameters. Clearly, it is important to take further measures to increase response rates for future rounds. To mention three examples:

(1) It is important to (further) improve the availability of high-quality and up-to-date *contact information* which is a necessary condition for high response rates.

(2) The EUROGRADUATE questionnaire was seen as very long by many respondents. Announcing a long survey in the survey invitation may well discourage potential respondents. A considerable share of respondents has dropped-out during completing the questionnaire which most likely is connected to the length of the questionnaire. Thus, it is important to arrive at a substantially *shorter questionnaire*. Revision of the questionnaire should enhance its user-friendliness.

[6] The net response rate is defined by the number of valid cases in the dataset divided by the total number of invitations sent. Valid cases are cases with complete weighting variables, a valid value in at least 50% of a set of crucial variables, and no strong indication of insufficient answer accuracy. In calculating the response rates, we have not considered undeliverable e-mails (bounced e-mails) or letters. Considering this, the response rates would increase to a certain extent.

(3) *Awareness* of EUROGRADUATE among prospective respondents needs to be increased, before and during the survey.

Regarding the latter two points, EUROGRADUATE 2022 already undertakes certain activities with a view towards the next round. Countries are strongly encouraged to improve contact data and in fact some countries, e.g. Austria, have already initiated improvements in this regard.

For reliable results, it is crucial to avoid biases in survey participation. It is important to set up complete lists of the overall target population (the sampling frame) and to avoid systematic non-response and, as far as possible, non-participation of specific institutions. For sample surveys it is key to draw a random sample. To account for nonresponse and over- and underrepresentation of certain groups of graduates, statistical weights have been estimated and are used in the descriptive analyses of this report.

Another measure to ensure the quality of the reported results is that we are using thresholds for the number of cases in a statistic. If the number of cases is below 100 and above 30 this is indicated by an asterisk next to the country acronym and a note underneath the graph. Such results should be taken with care and are not interpreted comparatively in the text. If numbers of cases are below 30 they are a classified as unreliable and not reported.

2.4. Background information: higher education systems and demographic profile of graduates

In this chapter we offer some background information which gives an overview on country differences and can be helpful in interpreting the data.

Tables 2.4.1 shows the numbers of higher education institutions (by type of institution) and of graduates (by degree level). The numbers show that the systems covered differ strongly in size. Note that the numbers of the different types of institutions say very little about the share of graduates per type of institutions. Universities are usually larger than non-universities, i.e. there may be clearly more non-universities than universities, but the majority of graduates comes from universities. Italy is a case in point. Table 2.4.1 shows a large number of non-universities, but the higher education system is clearly dominated by universities and the non-universities primarily consist of academies of arts and musical conservatories. In fact, the graduate survey of Italy therefore focusses on universities only (see Table 2.4.2).

Table 2.4.1: Higher education institutions (2020) and total number of target group graduates in EUROGRADUATE countries

	HE institutions 2020			Higher education graduates					
	Univer-sities	Non-Univ.	Total	ISCED 5		ISCED 6		ISCED 7	
				2017	2020	2017	2020	2017	2020
AT	38	35	**73**			26.047	31.176	21.597	22.904
BG	45	7	**52**			30.111	24.001	23.125	20.990
CY	8	18	**26**	1.029	1.145	3.846	4.325	5.603	7.935
CZ	28	32	**60**			37.261	31.893	32.985	26.818
DE	171	201	**372**			260.117	243.857	211.719	205.382
EE	7	11	**18**			6.056	5.522	3.273	3.874
GR	24	23	**47**			44.994	56.396	19.025	24.006
HR	11	29	**40**	20	14	18.039	17.942	12.358	12.565
HU	27	25	**52**	2.835	2.644	41.717	42.382	21.413	22.294
IT	92	116	**208**			69.354	167.455	116.724	128.890
LV	6	35	**41**	2.854	2.971	7.206	6.970	4.132	4.154
MT	1	6	**7**	2.726	3.416	2.361	3.041	1.659	2.377
NO	18	16	**34**	658	775	27.407	30.918	14.808	18.362
PT	37	55	**92**	3.200	5.162	39.699	47.833	24.214	28.050
RO	52	38	**90**			65.422	78.740	44.174	41.823
SI	5	47	**52**			7.617	8.359	4.493	3.845
SK	18	13	**31**			22.294	18.358	23.959	17.670

Source: European tertiary education register (ETER). Graduate population numbers: EUROGRADUATE country research teams (except for DE – Germany: ETER).

Table 2.4.2: Sociodemographic characteristics of EG country samples (weighted):

Cells: *% of all core group (BA + MA) graduates in the respective category within the given country:* ***Gender****: f=female, nb/oth=non-binary/other – remaining up to 100: male;* ***ISCED Lvl****:ISCED-6 (Bachelor level or 7 (Master level) – ISCED 5 excluded;* ***Migration BG****: 1st generation (not born in survey country) or 2nd generation (born in survey country, both parents born abroad) migration background.* ***Parent with HE****: at least 1 parent/guardian with an HE degree;* ***HEI type Univ****: Reference programme from university* ***Fields of study****: see Appendix 8.2.*

	Gender		ISCED Lvl		Migration BG	Parent with HE	HEI type: Univ.	Field of study (reference programme)							
	f	nb/oth	6	7				EDU TT	ART HUM	SOC JOU	BUS LAW	NAT MAT	HEA LTH	ICT ENG	OTH
Cohort 2016/17:															
AT	60	0,3	64	36	19	30	50	21	3,7	12	30	6	5	22	0,5
BG	63	0,3	53	47	2,1	48	87	10	8	8	42	2,8	8	17	4,2
CY	66	0,0	36	64	34	40	92	31	8	8	28	1,7	9	12	2,5
CZ	61	0,5	50	50	10	43	95	12	8	13	22	4,5	11	21	9
DE	52	n.a.	54	46	9	54	59	4,7	11	7	26	9	10	26	6
EE	63	0,2	62	38	9	60	78	7	12	7	24	4,9	13	23	9
GR	60	0,4	61	39	n.a.	3,0	100	10	13	10	24	7	9	22	4,7
HR	59	0,7	58	42	13	30	79	4,0	8	7	31	4,3	8	25	12
HU	58	n.a.	64	36	6	51	98	12	10	11	25	4,2	8	22	9
IT	58	n.a.	10	90	n.a.	31	100	7	11	15	21	7	16	18	4,3
LV	64	n.a.	61	39	2,3	31	99	6	10	10	31	2,3	14	19	8
MT	54	n.a.	60	40	6	31	87	4,7	20	5	24	4,0	22	19	1,7
NO	63	0,1	76	24	15	61	64	6	2,6	13	31	1,8	30	13	3,3
PT	58	0,3	62	38	8	30	62	6	10	12	24	4,2	16	20	9
RO	58	0,4	63	37	n.a.	41	100	8	11	11	22	6	7	33	2,0
SI	66	0,3	51	49	5	26	n.a.	15	6	15	15	8	13	20	7
SK	58	n.a.	48	52	1,6	34	85	9	2,2	13	35	3,0	12	20	5
Cohort 2020/21:															
AT	61	0,5	45	55	22	35	46	15	3,6	4,8	40	3,6	13	19	0,8
BG	61	0,5	47	53	5	45	80	18	4,5	6	30	2,1	14	22	3,1
CY	66	0,0	33	67	53	50	90	28	6	10	35	1,7	10	6	4,0
CZ	58	0,3	30	70	14	43	90	14	7	11	22	2,8	13	21	9
DE	n.a.	n.a.	37	63	n.a.	50	51	6	8	12	27	6	7	30	3,5
EE	63	0,3	52	48	14	59	81	9	10	8	26	2,8	13	24	7
GR	63	0,5	69	31	n.a.	2,6	100	10	13	14	22	5	14	17	7
HR	58	0,5	34	66	12	25	77	7	8	8	23	4,1	13	23	14
HU	58	n.a.	54	46	11	50	98	16	8	9	24	2,3	10	22	9
IT	57	n.a.	35	65	n.a.	32	100	7	12	17	20	7	15	16	5
LV	65	n.a.	60	40	4,8	33	99	8	10	8	30	1,2	14	16	13
MT	57	n.a.	50	50	22	25	52	16	5	6	41	1,8	14	11	6
NO*	73	0,2	100	0,0	8	55	55	7	2,6	7	29	0,6	44	6	4,3
PT	62	0,6	50	50	12	33	61	4,8	10	11	25	3,3	20	18	8
RO	61	0,2	52	48	n.a.	42	100	5,0	7	11	29	2,5	11	30	5
SI	63	0,4	45	55	5	28	n.a.	14	5	7	20	6	19	22	7
SK	63	n.a.	25	75	5	36	75	12	3,2	10	25	2,1	24	16	7

Source: EUROGRADUATE Survey 2022.Percentages per column category within country in %. Notes: NO: cohort 2020/21 MA level: No data.

2.5. How to read graphs in this report

This report applies some fundamental principles for displaying information throughout the different chapters in order to present detailed information and enable consistent reading. This section describes these principles an provides some reading examples.

Context information and notes on the figures

Each figure and table in this report is presented in a layout featuring the necessary context information. The layout is subdivided as follows:

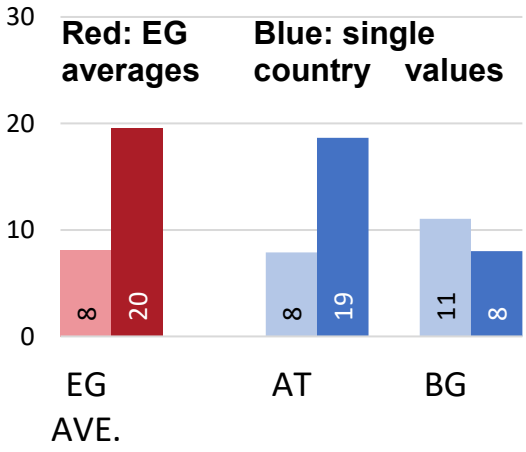
2.6.1. Figure Title [naming the indicator]
Definition: Verbal description of the indicator, number of the questionnaire question(s) used for the indicator
Group analysed [some figures are shown for all indicators, some only for specific groups e.g. employed graduates, graduates not enrolled currently] by
Break variables [Description of graphical element that indicate values for certain break groups]

Figure or table

Notes and methodological limitations, e.g. EUROGRADUATE countries not included or with deviating question implementation.

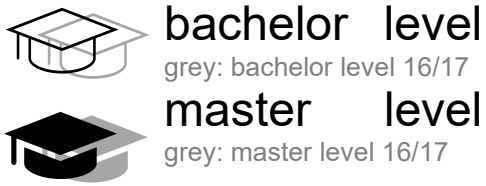
Blue for country figures, red for averages across EUROGRADUATE countries

In bar charts and tables, the colour of bars and highlighted cells indicate whether it represents the value for a single country (blue) or the average of all countries that have collected data on the indicator that is shown (red). Figures that apply to single countries are weighted on a country level as described above (2.4) to be representative for the covered higher education graduate cohorts in each country. EUROGRADUATE averages constitute a simple mean of the weighted country values that cover the shown indicator. This means that bigger countries with many graduates contribute the same to EUROGRADUATE averages as smaller countries with fewer graduates. This way, the averages provide a robust condensation of the outcomes of the national higher education systems in the included countries. As some countries did not cover the whole questionnaire, always check the notes for the possibility of countries not covered when interpreting average values.

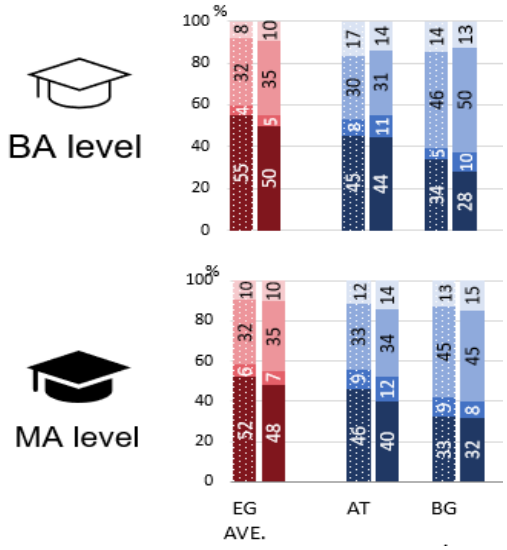


Neighbouring bars for cohort comparison, hat icons for marking degree-level specific values

The first EUROGRADUATE pilot survey showed that most outcomes differ considerably depending on the cohort and on whether people hold solely a bachelor level degree or a master level degree. Therefore, this report in most charts displays separate values for four mutually exclusive groups: 2016/17 bachelor level, 2020/21 bachelor level, 2016/17 master level and 2020/21 master level graduates. For the comparison of cohorts, readers will often find twin bars for each country or break group in a bar chart. The **left ones** of those twin bars, which are either brighter (when the bars only show a single value) or checkered with white dots (when



differently shaded stack bars indicate different categories) **depict the 2016/17 cohort**; the **right ones** which are darker, respectively solid/not checkered, **depict values for the 2020/21 cohorts**. To distinguish bachelor level and master level graduates, graduate hat markers are used: an unfilled hat marks the values for bachelor level graduates, a filled hat marks values for the group of master level graduates. In accordance with the brighter and darker shading for the cohort bars, grey markers represent the respective degree levels in the 2016/17 cohort while black markers represent the degree levels in the 2020/21 cohort. In stacked bar charts, a separate chart is displayed each for bachelor level and master level to not overcrowd the charts.



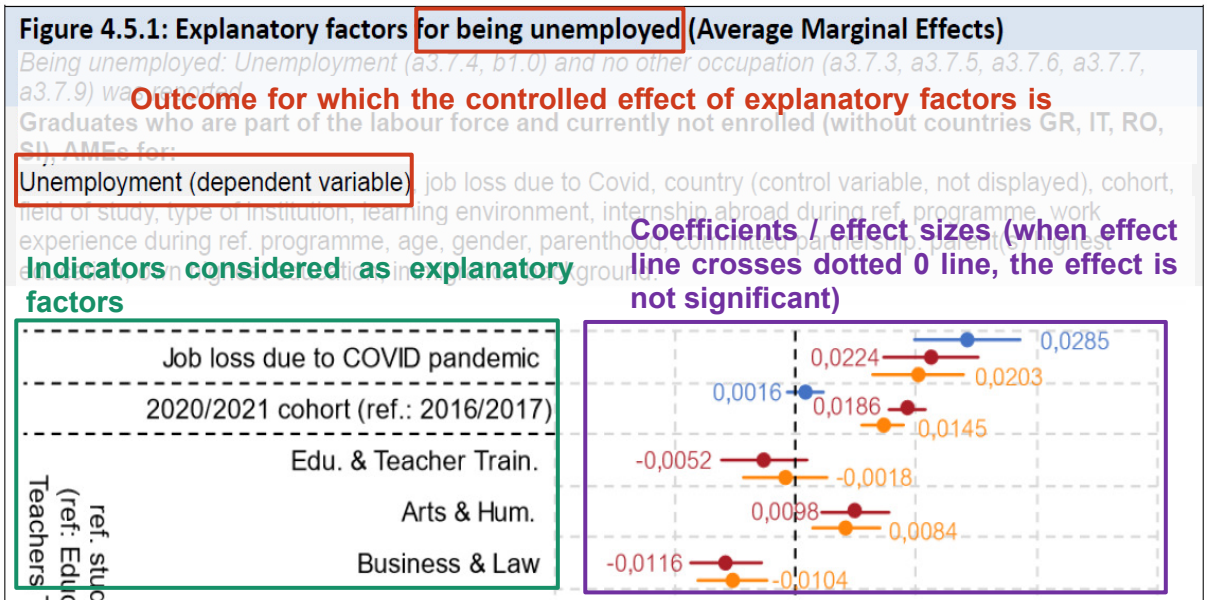
Coefficient plots: Effects that do not cross the zero line are statistically significant

Descriptive charts and tables are important to characterize group difference for certain indicators. However, in many cases, certain relevant sub-groups of graduates overlap in different ways. For example, the gender split differs between study fields; or, in the nature of the survey design, the 2016/17 cohort will include older graduates on average than the 2020/21 cohort, which has biographical implications for many outcomes. Therefore, this report examines controlled links between certain conditions and outcomes with multivariate regression models. For instance, they can show how outcomes still differ between the two cohorts when their different composition in terms of study field, age, gender, parenthood, and many other factors are controlled for. Readers will find coefficient plots in this report. In these plots, the outcome that is explained is named in the chart title and definition, while the explanatory factors are listed on the left of the chart. On the plotting area to the right, coefficients (dots) and the respective confidence intervals (spikes) are displayed for each potential explanatory factor. If the dot or a spike crosses the dashed zero line, the effect is statistically insignificant, i.e. statistically not different from zero.

In some analyses, effects from several models which are building on each other are shown. Effects of one model can be identified by the colour of the dots. As an example:

- In a first model (blue dots), only cohort, country and a possible factor of special interest are included.
- A second model (red coefficients) includes specifics of the study experience (study field, type of institution, learning modes, practical experiences).
- A third model (yellow coefficients) includes individual characteristics of the graduate (age, gender, partnership and parenthood status, academic family background, highest education, immigration background).

If an explanatory factor has different coefficients in the three models, this means that the factors added in the second and third model have either explained or obscured (some of) the correlation between the outcome and the respective explanatory factor.



Reading examples: (A) Job loss due to COVID has positive coefficients and the confidence intervals do not cross zero in any model. This means that it is linked with an increased unemployment risk for graduates. The coefficient is smaller in the models controlling for more factors (red/yellow), meaning that institutional and individual factors explain a small part of this relationship, but job loss due to COVID still makes a difference regardless of them. (B) Having studied in the field Business & Law has a significant link to the unemployment risk as well, but the coefficients for this field are negative – indicating that graduates of these fields are less likely to be unemployed. As the yellow confidence interval line also does not cross zero, the specific demographics of Business & Law graduates do not explain their lower unemployment risk compared to the other fields.

3. The Education Experience

3.1. Main findings

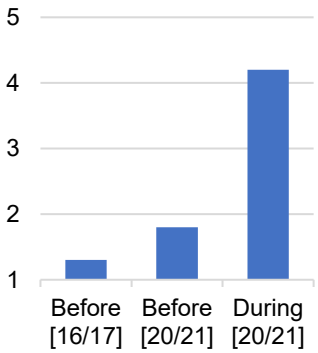
Teaching & Learning

Mixed teaching and learning styles, for instance lectures combined with problem-based learning, seem to be provided increasingly, replacing the dominant pure lecture style and thereby creating room for more innovative learning.

Environmental sustainability appears to be increasingly integrated in the curriculum across all study fields. The field of Natural Sciences & Mathematics offers most links to the topic.

International learning mobility decreased due to the COVID-19 pandemic. While 17% of the cohort 2016/17 engaged in internships, language courses, and studies abroad, this reduced to 13% in the younger cohort.

Online Education



There had been a clear shift to online education during the COVID-19 pandemic in the EUROGRADUATE 2022 countries, from almost no online courses before, to at least more than half of the courses offered online during the pandemic.

Learning Mobility

Students from southern and eastern European countries have a considerably lower chance of participating in learning mobility. Also, the social background, international instruction language and the university type affect the chance to learn and study abroad.

Overall, more than **80%** of the graduates reported to have gained some kind of labour market experiences while studying, with around **60%** indicating that these were related to their study programme. Study-related labour market experiences are most common among **education** and **health** graduates.

Labour Market Experience

Subjective Assessment of Studies

Master level graduates perceive their programme as a good basis for their professional career, even more so than bachelor level graduates. Thus, continuing with a master's programme seems to add value to the graduates' perception of feeling prepared for the labour market.

Further Education

Further education is common after graduation, but we see differences regarding the type of further education based on the degree level. While bachelor level graduates rather purse an additional higher education degree, master level graduates engage in further education outsider of the higher education sector.

3.2. Introduction: Overview and key issues

Analysing the education experiences of European higher education graduates yields crucial insights into the effectiveness of higher education for a broad spectrum of stakeholders, including policymakers, higher education institutions, and prospective students. Comprehending the structure of higher education systems and students' engagement within them, can serve as a guiding principle for policy development aimed at enhancing educational quality, relevance, and alignment with the demands of the labour market. Moreover, by considering socioeconomic factors and evaluating graduates' educational experiences, policymakers can better gauge the accessibility and equity in the supply of higher education. The evaluation of students' study experiences is also an important basis for the quality assurance of education and degree programmes in higher education. Similarly, insights into education experiences from recent graduates can be valuable for prospective students, also regarding future career prospects (see Council of the European Union, 2017).

Therefore, this chapter thoroughly investigates different aspects of graduates' study experiences across the 17 EUROGRADUATE 2022 countries. Conducting analyses of education experiences on an internationally comparative level, offers valuable insights into best practices and areas for improvement. Therefore, all chapters include two types of analysis focusing on: (1) international comparisons across the countries and (2) EUROGRADUATE averages. In the following, there is a short description of each chapter, providing an overview of the different foci set on the education experience.

To begin with, Chapter 3.3 focuses on the description of the main characteristics of higher education (i.e. type of institution, type of degree, study field). Even though the main goal of the European Higher Education Area (EHEA) is the enhancement of comparability and compatibility of higher education structures and degrees in Europe (Vögtle, 2019), the education experiences of European graduates differ depending on structural factors. For instance, the type of institution (research-oriented university vs. applied higher education institutions), the level of degree (basic bachelor's degrees vs. specialised master's degrees), and the field of study can influence the way how students learn, engage with study-content, and build different sets of competencies (Hauschildt et al., 2021). Therefore, Chapter 3.3 analyses and delivers important background information on the distribution of these higher education characteristics across the EUROGRADUATE 2022 dataset.

Another interesting aspect of the graduates' education experience are the modes of teaching and learning offered during the study programme. Every person has its own best way of processing information and learning. Thus, providing students with different types of teaching and learning is a way to reach a broad range of individuals. Likewise, there is an increasing discussion about innovative methodologies, fostering a broader set of skills and competencies among students (Salas Velasco, 2014). Therefore, Chapters 3.4 and 3.5 focus on analysing the prevalence of different teaching and learning modes across the European countries participating in EUROGRADUATE 2022 (pilot survey). Chapter 3.5 particularly analyses recent developments with regards to traditional in contrast to more innovative teaching and learning styles.

With global warming requiring a more sustainable way of living, there is an increased demand for educating people about topics on the environment, climate change, and sustainability. Accordingly, Chapter 3.6 analyses to which extent environmental sustainability was integrated in the curricula of the study programmes of the higher education graduates.

Another goal of the European Higher Education Area is to increase the mobility of students by "adjusting mutual recognition of study time and qualifications obtained" (Vögtle, 2019, p. 407). Further, international mobility is regarded as an important factor for increasing the employability of students and allowing them to distinguish from others when competing on the labour market (Clarke, 2018). Therefore, Chapter 3.7 focuses on the topic of learning mobility,

looking at the numbers on student mobility as well as causes and consequences of studying abroad.

Chapter 3.8 deals with labour market experiences while studying. Gaining labour market experiences becomes increasingly important to successfully prepare students for and to compete on the labour market (Clarke, 2018). Thus, this chapter analyses the prevalence of labour market experiences while studying amongst the EUROGRADUATE 2022 graduates.

Investigating graduates' subjective assessment of their studies delivers insights into the quality of higher education and study programmes (Wong & Chapman, 2023). In this context, study satisfaction is analysed in Chapter 3.9. Further, the assessment of feeling well prepared for the professional career through the study programme and perceiving room for personal development while studying, are crucial factors contributing to graduates' overall satisfaction (Wong & Chapman, 2023). Thus, these aspects are additionally addressed in Chapter 3.9.

Finally, a focus was put on further education after graduation (see Chapter 3.10). With a rapidly changing labour market, it is necessary to continuously equip individuals with relevant skills and competences. Thus, engaging in further education can be relevant to increase one's own employability. Chapter 3.10 analyses if EUROGRADUATE 2022 graduates engage in continuous learning after they terminate their (reference) degree programme, and what type of further education they chose to proceed with (formal and /or non-formal further education).

3.3. Main higher education characteristics: Type of institution, type of degree, fields of study

Structural factors of higher education, such as type of institution, type of degree, and field of study, can shape students' learning experiences as well as their transition to the labour market. These three factors are considered main characteristics of higher education, providing a framework to structure and compare higher education systems across Europe. To begin with, this chapter offers important background information by showing how these characteristics are distributed across the EUROGRADUATE 2022 data. Later, they are used as breakdown variables to describe potential differences in learning experiences, labour market outcomes, mobility, or social outcomes of higher education (see chapters 3.4-3.10; 4-8).

Regarding the type of institution, we differentiate between universities and non-universities[7]. Universities typically offer a broad range of study programs and are more theory-driven, whereas non-universities often focus on specific branches, such as technical subjects, and are oriented towards practice and the labour market (Hauschildt et al., 2021).

We further distinguish between bachelor level degrees (or equivalent; ISCED 6) and master level degrees (or equivalent; ISCED 7)[8]. Bachelor level degrees provide intermediate academic and/or professional knowledge and skills, while master level degrees, that are often more theory-driven, allow for specialization and impart advanced knowledge and skills (European Commission et al., 2022).

Lastly, we consider eight study fields (a reduced version of ISCED-F-2013): Education & Teacher Training, Arts & Humanities, Social Sciences & Journalism, Business & Law, Natural Sciences & Mathematics, Health, ICT & Engineering, and other fields[9]. It is generally

[7] Non-universities encompass e.g., universities of applied sciences, colleges, or specialized institutions such as art schools, colleges for teacher training, theological colleges etc.

[8] If not specified differently, we are always referring to the reference degree of graduates, i.e. the degree they have been surveyed for. Graduates may have obtained further degrees before or after the reference degree. For some analysis we use the highest degree obtained.

[9] "Other fields" represents the ISCED-F-2013 category "generic programmes and qualification" plus answers coded as "unknown". It is displayed in the graphs but will not further be discussed in the results.

understood that the subjects studied correspond to varying degrees with future professional skills and general career prospects.

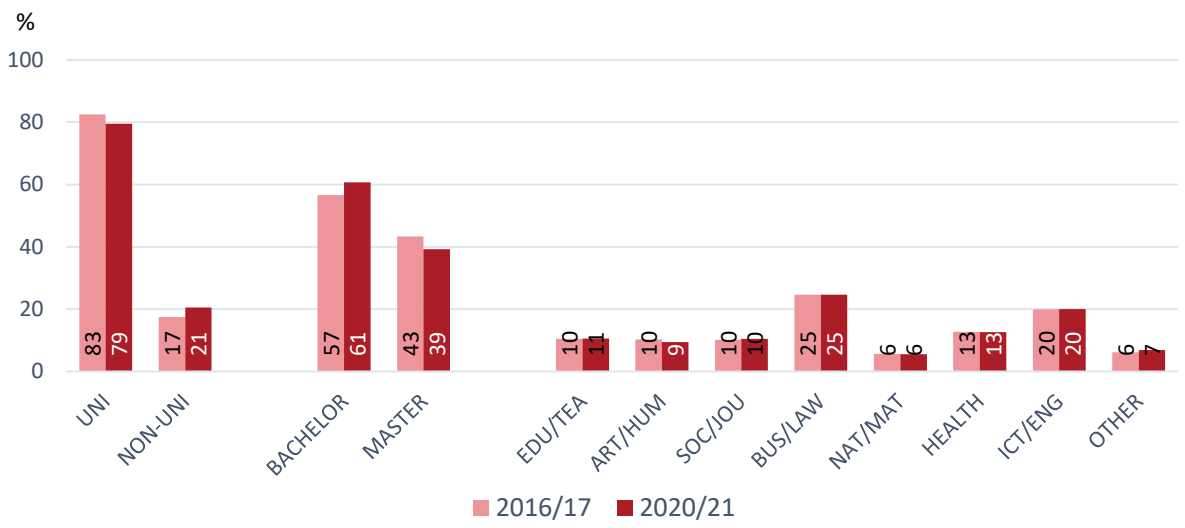
Against this background, Figure 3.3.1 displays the percentages of graduates per (1) type of institution, (2) degree level and (3) study field. Around 81% (83%$_{16/17}$; 79%$_{20/21}$) of all graduates that participated in EUROGRADUATE 2022 obtained their degree at a university, while around 19% (17%$_{16/17}$; 21%$_{20/21}$) graduated from a non-university. In the cohort 2016/17, 57% earned a bachelor level degree and 43% graduated from a master level degree. In the cohort 2020/21, 61% obtained a bachelor level degree, and 39% a master level degree. With 25% (both cohorts), most graduates obtained a degree in the field of Business & Law, followed by ICT & Engineering (20%$_{16/17}$; 20%$_{20/21}$).

Figure 3.3.1: Main higher education characteristics, EUROGRADUATE averages

Definition: Percentages of graduates per type of institution, degree level and study field (a1.1a5, a1.1a3, a1.1a4)

All graduates by:

Cohort (twin bars); type of institution, degree level, study field (x-axis)



Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: IE included; SI not included in type of institution.

In the following, we will examine the distribution of graduates across the main higher education characteristics, i.e. type of institution, degree, and study field, more closely. To begin with, Figure 3.3.2 presents the distribution of graduates among universities and non-universities by degree level, study fields, gender, academic background, and immigration background.

Study fields. Across all study fields, most graduates studied at universities. Still, the distribution of university and non-university graduates differs to some extent across the study fields. With 94% or more, Natural Sciences & Mathematics graduates mostly studied at a university. Consequently, studying in this field at a non-university is uncommon among the EUROGRADUATE 2022 sample. We see a different pattern among Business & Law and Health graduates. Although most graduates in this field also studied at a university, we simultaneously observe the highest proportion of non-university graduates, particularly at the bachelor's degree level.

Socio-demographics. Female master level graduates finished their studies somewhat more often at a university than male master level graduates. Further, graduates with an academic background studied more often at a university than those without an academic background. Besides, graduates without an immigration background graduated slightly more often from a university than those with an immigration background. Note that such differences may further have repercussions on dissimilarities in labour market outcomes of social groups.

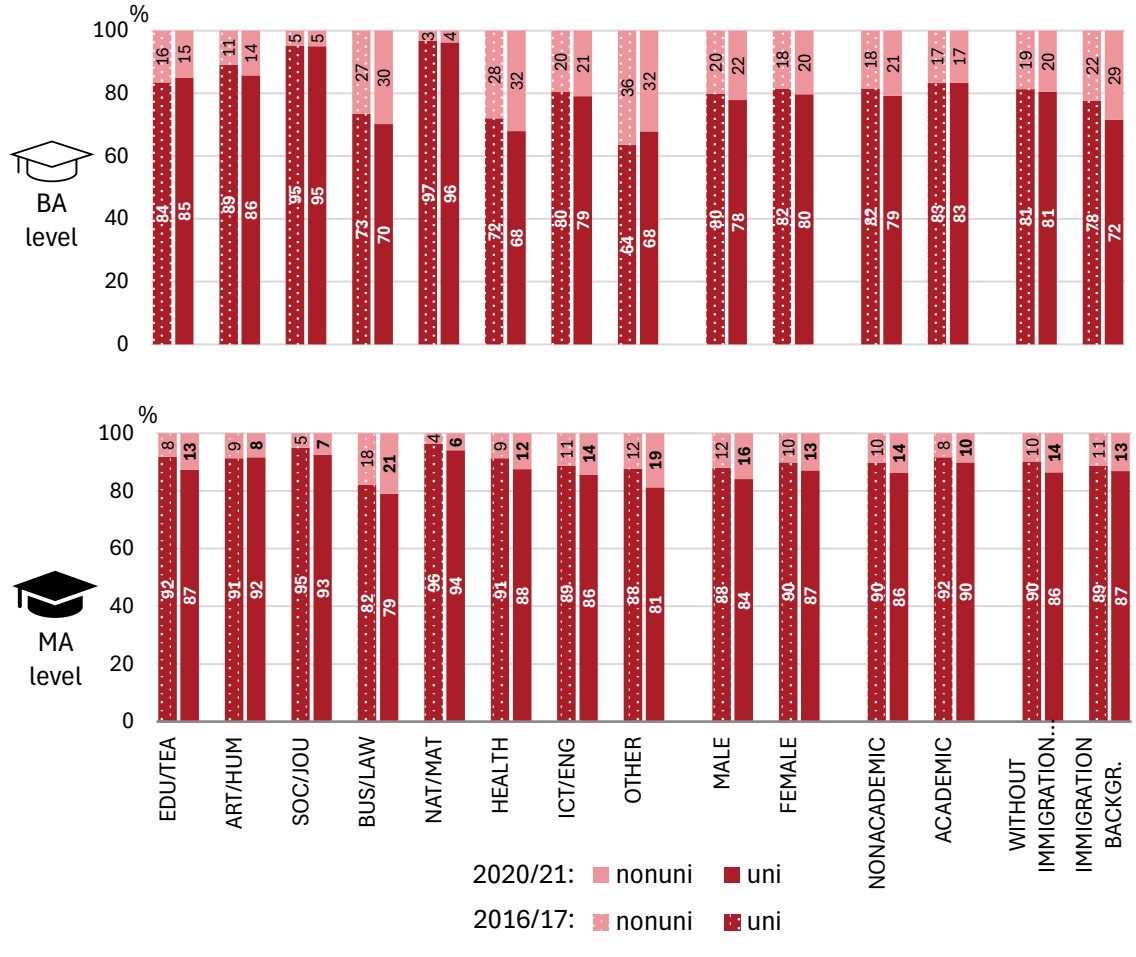
Cohort and degree level. Overall, there is a greater mix of university and non-university graduates on the bachelor level, meaning that the share of non-university graduates is greater on the bachelor level than on the master level. For example, 28%$_{16/17}$ and 32%$_{20/21}$ of the Health graduates obtained their bachelor level degree at a non-university compared to only 9%$_{16/17}$ and 12%$_{20/21}$ of the master level graduates (see Figure 3.3.3). Similarly, in the field of ICT & Engineering, more bachelor level graduates (20%$_{16/17}$; 21%$_{20/21}$) studied at a non-university, than master level graduates (11%$_{16/17}$; 14%$_{20/21}$). Comparing the two cohorts, the share of graduates at non-universities is slightly higher across the cohort 2020/21 in all study fields (except Arts & Humanities). Accordingly, graduation from a non-university seems to have become more prevalent in the EUROGRADUATE 2022 countries over the past years.

Figure 3.3.2: Type of institution, EUROGRADUATE averages

Definition: Percentages of graduates per type of institution (a1.1a5)

All graduates by:

Cohort (twin bars); study field, gender, academic background, immigration background (x-axis); degree level (top/bottom chart area)



Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: IE included in study fields and gender; SI no data.

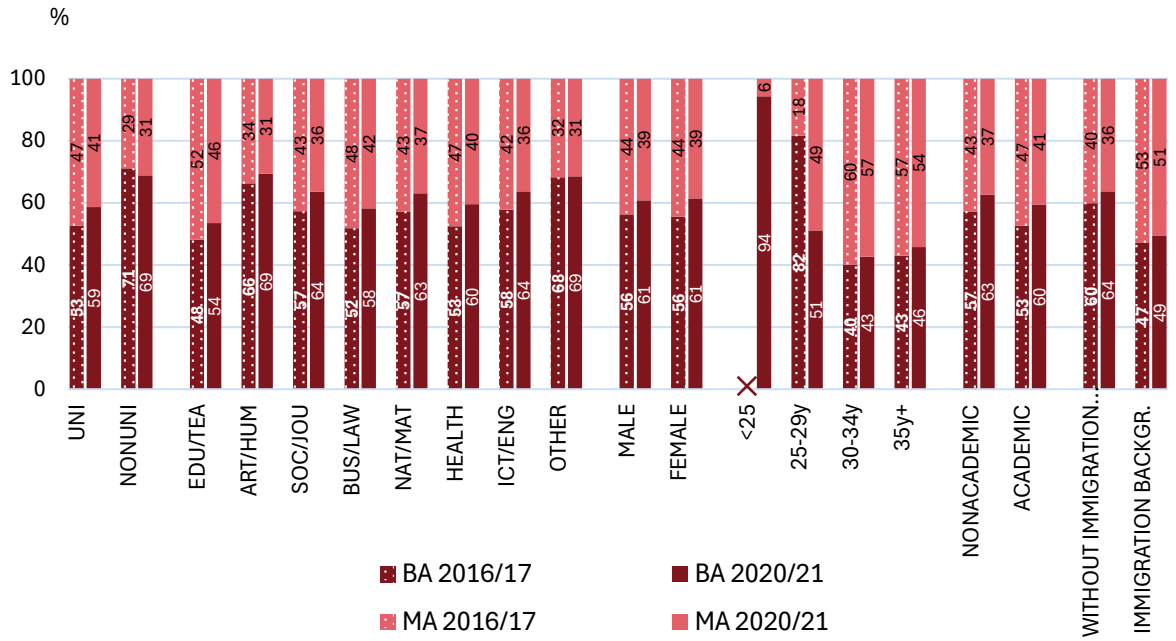
Figure 3.3.3 focuses on the type of degree and provides the distribution of all bachelor level and master level graduates of EUROGRADUATE 2022 per type of institution, study field, gender, academic background, and immigration background.

Figure 3.3.3: Type of degree, EUROGRADUATE averages

Definition: Percentages of graduates per degree level (a1.1a3)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, age, academic background, immigration background (x-axis)



Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: Age group <25 too few cases (<30); IE included in type of institution, study fields, gender, age; IT not included in age; SI not included in type of institution.

Type of institution. At both types of institutions, the share of bachelor level graduates is larger than the share of master level graduates. At non-universities, around two thirds of the graduates did a bachelor level degree, while one third completed a master programme. At universities the distribution is somewhat more equal.

Study field. Across the EUROGRADUATE 2022 sample, there are more bachelor level graduates than master level graduates across all study fields. In Education & Teacher Training there are almost equal shares of bachelor (48%$_{16/17}$; 54%$_{20/21}$) and master level graduates (52%$_{16/17}$, 46%$_{20/21}$), whereas the share of bachelor level graduates is specifically large in Arts & Humanities (66%$_{16/17}$; 69%$_{20/21}$). Note that graduates may have obtained further degrees before or after the reference degree used in our analysis.

Socio-demographics. In line with the expectations, younger graduates (<25) mostly graduated from a bachelor level degree, while the share of graduates that obtained a master level degree increases with age. More than 40% of graduates that are now 30 years or older graduated from a bachelor level degree, indicating that accessing higher education at a later stage of life seems to be quite common. This supports the idea of starting and re-entering higher education at any time and age, as envisioned by the Bologna reform.

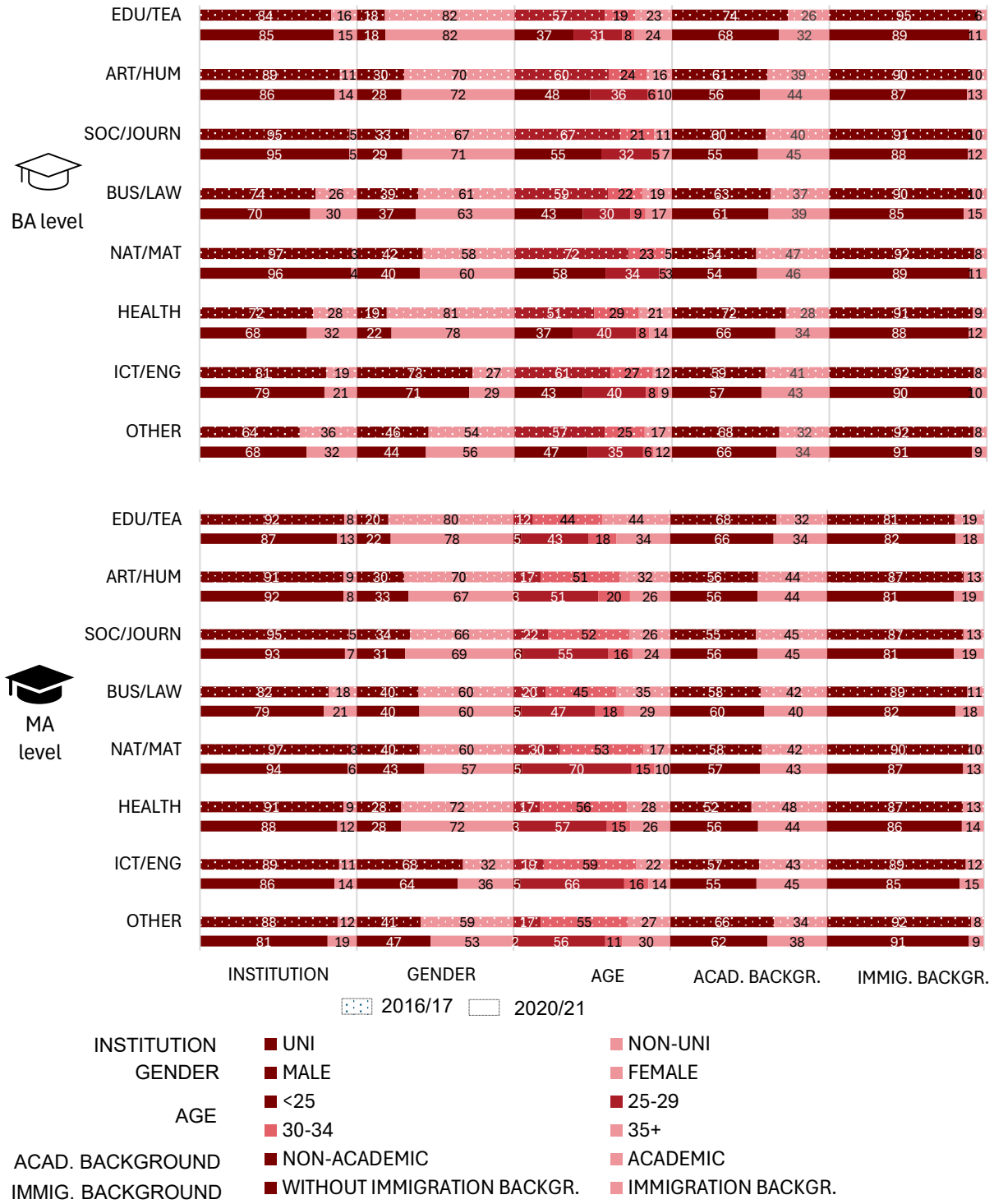
Finally, Figure 3.3.4 displays the distributions of type of institution, gender, age, academic background, and immigration background for each study field. That way, we can understand the structure of each study field with regards to the main higher education characteristics, and socio-demographics. In the following we will describe some interesting aspects in a comparative manner in-between study fields.

Figure 3.3.4: Study fields, EUROGRADUATE averages

Definition: Percentages of graduates per study field (a1.1a4)

All graduates by:

Cohort (twin bars); type of institution, gender, age, academic background, immigration background; degree level (top/bottom charts area)



Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.

Notes: Age group <25 too few cases (<30) in cohort 2016/17; IE included in type of institution, gender, age; IT not included in age; SI not included in type of institution.

Type of institution. Across all fields, the proportion of graduates from universities is generally higher than that of graduates from non-universities. Additionally, non-university graduates are more common at the bachelor level than at the master level. Notably, the field of Business & Law has the highest proportion of non-university graduates on the master's degree level.

Socio-demographics. Across all study fields, we find more female than male graduates (on both degree levels; on average >60%). The study field ICT & Engineering forms an exception; on both degree levels, there are more male graduates than female ones (>60%). We see the highest share of female graduates in the fields of Education & Teacher Training (around 80%, both degree levels) and Health (>70%, both degree levels).

Regarding academic background, there are slightly more graduates without an academic background across all study fields at both degree levels. Further, looking at the immigration background of graduates, we see that across study fields, most graduates do not have an immigration background. This applies to the bachelor's degree level (>90%$_{16/17}$; >85%$_{20/21}$) and the master's degree level (>81%$_{16/17}$; >81%$_{20/21}$). The share of graduates with an immigration background is somewhat higher for bachelor graduates of the cohort 2020/21 (9%$_{20/21}$-15%$_{20/21}$) compared to bachelor graduates from 2016/17 (6%$_{16/17}$-10%$_{16/17}$). Over time, more students with an immigration background might have entered/gained access to the higher education system. The share of master level graduates with an immigration background is somewhat higher (9%$_{16/17}$-19%$_{16/17;}$ 8%$_{20/21}$-19%$_{20/21}$) compared to the bachelor level (see above). Accessing a foreign European higher education institution might to be particularly appealing for students when obtaining a master.

3.4. Modes of teaching and learning

The main goal of higher education is to ensure that students develop competencies matching the need at the job market and respective job-skills. Here, the choice of teaching and learning modes is crucial to enhance those competencies, to foster students' active engagement with content and skills and to add value to the students' learning experiences. Overall, there is evidence that more innovative teaching and learning modes play a key role in the development of competencies and increase student's satisfaction. Thus, a major challenge of the higher education sector is to create modern learning environments, incorporating more alternatives to the classical lecture style (Salas Velasco, 2014; Whelan & McGuinness, 2021).

Therefore, EUROGRADUATE 2022 collected data on different teaching and learning modes that graduates encountered during their study experience. More precisely, the data show the extent to which 10 teaching and learning modes[10] were prevalent in the study programmes (Figure 3.4.1). This was measured on a five-point scale, with 1 indicating "to a very high extent", and 5 representing "not at all". The scale was reversed for the descriptive analyses. Figure 3.4.1 displays mean values, with higher values indicating a greater extent to which a teaching and learning mode was present during the graduates' study experience in the cohorts 2020/21 and 2016/17.

Teaching and learning modes. On average, lectures (4.5$_{16/17}$; 4.4$_{20/21}$), written assignments (4.0$_{16/17}$; 4.0$_{20/21}$) and self-study (4.2$_{16/17}$; 4.2$_{20/21}$) were the most prevalent modes offered during the study programmes. In contrast, graduates report that, on average, research projects (2.3$_{16/17}$; 2.3$_{20/21}$), internships (2.7$_{16/17}$; 2.8$_{20/21}$), interdisciplinary learning activities (2.7$_{16/17}$; 2.8$_{20/21}$) and exposure to entrepreneurial activities (2.1$_{16/17}$; 2.2$_{20/21}$) were least present while studying.

Overall, "traditional" teaching and learning modes (i.e., lectures, group assignments, written assignments, oral presentations, self-study; >3.0, both cohorts) were still more frequently provided during the study programs than more "innovative" modes (i.e., research projects,

[10] i.e., lectures, group assignments, research projects, internships/work placements, project and/or problem-based learning, written assignments, oral presentations, self-study, interdisciplinary learning activities, exposure to entrepreneurial activities

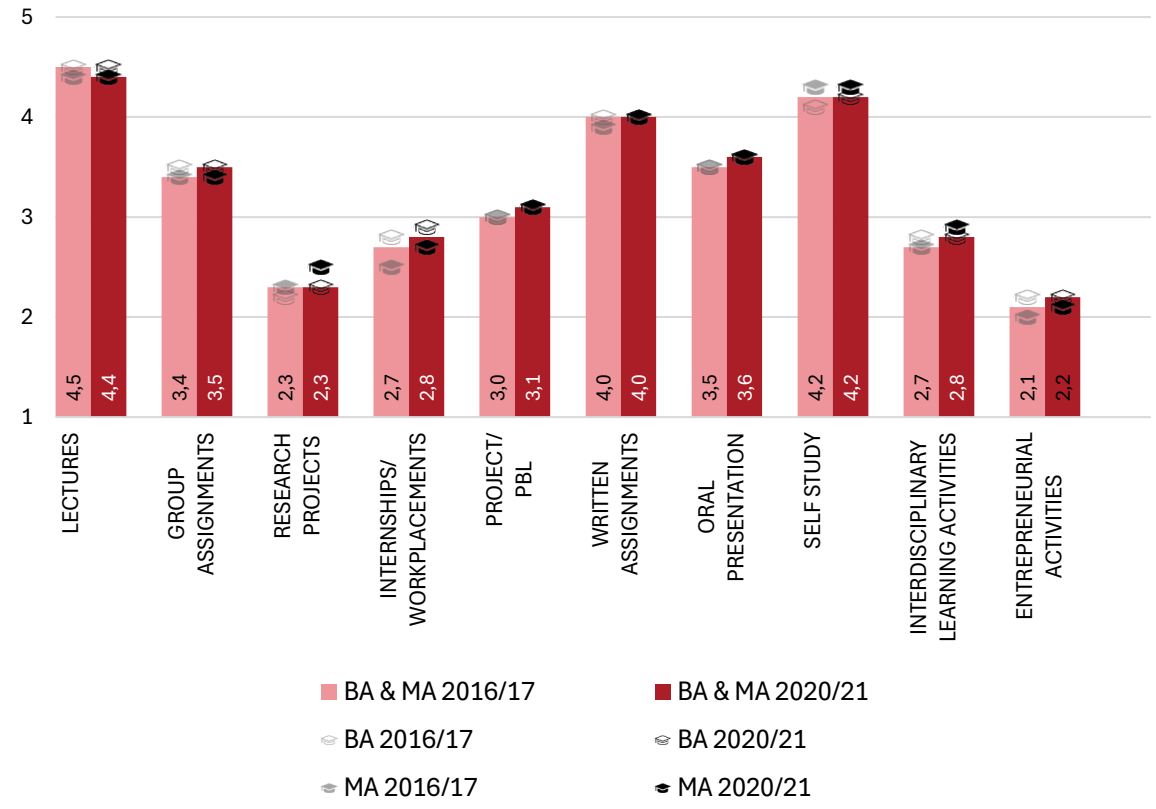
internships/work placements, project and/or problem-based learning, interdisciplinary activities, exposure to entrepreneurial activities; <=3.0, both cohorts). However, as can be seen in the following Chapter 3.5, there seems to be a trend away from pure lecture style towards more innovative mixed styles (e.g. lecture combined with problem-based learning).

Figure 3.4.1: Teaching and learning modes, EUROGRADUATE averages

Definition: Mean values of the extent to which different teaching and learning modes were part of the study programme (1 "not at all" to 5 "to a very high extent"; a1.3a-j)

All graduates by:

Cohort (twin bars); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: GR, IT, RO no data.

Cohort and degree. Master level graduates ($2.3_{16/17}$; $2.5_{20/21}$) engaged somewhat more often in research projects than bachelor level graduates ($2.2_{16/17}$; $2.3_{20/21}$), which matches the (often) more research-oriented nature of master programmes. Correspondingly, bachelor level graduates ($2.8_{16/17}$; $2.9_{20/21}$) report more often about internships and work placements than master level graduates ($2.5_{16/17}$; $2.7_{20/21}$), matching the more applied and basic education of bachelor level programmes. There are only minor to no differences between the cohorts.

Next to general teaching and learning modes, EUROGRADUATE 2022 gathered data on **online education** in the context of the COVID-19 pandemic. The shut-down of the physical campuses during the COVID-19 pandemic forced many higher education institutions worldwide to a sudden turn to online education and/ or distance learning (OECD, 2021). Therefore, EUROGRADUATE 2022 aims at providing data on the spread of online education before and during the pandemic (Figure 3.4.2). Both cohorts were asked about the number of courses offered online *before* the pandemic (i.e., before March 2020; bright blue/medium blue bars). Additionally, graduates of the cohort 2020/21 were asked about the number of courses offered online *during* the pandemic (i.e., from March 2020; dark blue bar). This was not applicable to graduates from the academic year 2016/17. The number of courses offered was

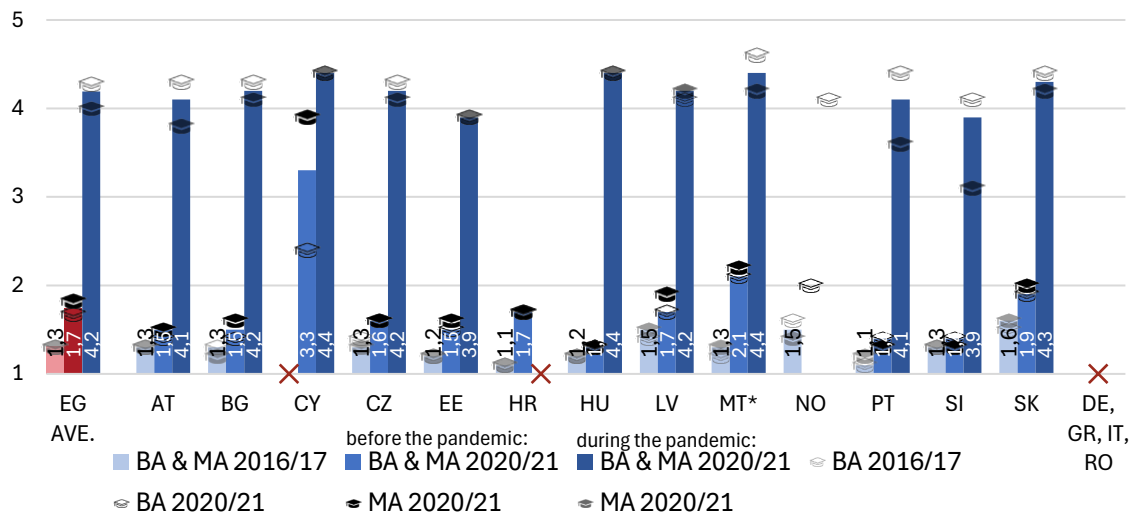
measured on a scale from 1 (none of them), over 3 (about half of the), to 5 (all of them). Figure 3.4.2 shows mean values, with higher values indicating a greater number of courses that were offered online. On average, almost no courses or a very limited amount of them ($1.3_{16/17}$; $1.7_{20/21}$), were offered online before the pandemic for both cohorts. In contrast, more than half of the courses were held online during the pandemic ($4.2_{20/21}$).

Figure 3.4.2: Online courses before and during the pandemic, international comparison

Definition: Mean values of the number of courses offered online before/during the COVID-19 pandemic (1 "none of them", 3 "about half of them", 5 "all of them"; a1.4, a1.5)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; DE, GR, IT, RO: no data.

Country. On a country level, very few courses were offered online across most countries *before* the pandemic. Only graduates that obtained their degree in Cyprus in 2020/21 report that about half of their courses were offered online already *before* the pandemic.[11] In contrast, graduates across all countries report that at least more than half of the courses offered, were provided online *during* the pandemic (>$3.0_{20/21}$). Accordingly, graduates from most countries that participated in EUROGRADUATE 2022 experienced a shift from close to no online education before the pandemic to great extents of online education during the pandemic. This impression matches a report by the OECD (2021), which describes the closure of higher education facilities worldwide and the transition from low levels of distance learning to (full) emergency distance learning within the first year of the pandemic.

Degree and cohort. *Before* the pandemic, the mean values of courses offered online do not differ considerably when comparing the degree levels. Hence, the provision of online education was very limited for both bachelor and master programmes before the pandemic. Comparing the two cohorts with regards to online education *before* the pandemic, somewhat higher mean values are reported in cohort 2020/21 compared to 2016/17. There seemed to be a beginning trend towards more online education already before the pandemic. *During* the pandemic, online education was, on average, somewhat more often provided for bachelor level students than for master level students across most countries. In Cyprus, Estonia, Hungary, we see no

[11] This might be due to many study programmes that are offered in the form of distance learning in Cyprus, which are highly frequented by Greek students.

difference between the degree levels, while in Latvia slightly more courses were provided for master level graduates.

3.5. Innovative teaching and learning modes

As mentioned earlier, more innovative modes of teaching and learning are expected to be beneficial for the development of competencies of students (Salas Velasco, 2014). Therefore, we analysed the prevalence of the traditional lecture style and, in contrast, the innovative problem-based learning style. For the analyses, 4 types of learning environments were defined: (1) lecture style, (2) problem-based-learning (PBL) style, (3) mixed style (lecture & PBL), (4) other modes (see Meng, 2006; Meng, 2020). The teaching experience of graduates is classified as "lecture style" if they report a (very) high extent of lectures and at the same time no high extent of problem-/project-based learning. The teaching experience of graduates is classified as "PBL style" if they report a (very) high extent of problem-/project-based learning and at the same time no high extent of lectures. If graduates report a (very) high extent of both forms, their teaching experience is classified as "mixed style". The teaching experience of graduates with neither a high extent of lectures nor a high extent of problem-/project-based learning is classified as "other modes".

Figure 3.5.1 shows the percentages of the 4 types of learning environments by country as defined before. In cohort 2016/17, around half of the learning environments of bachelor level graduates are allocated to lecture style, $4\%_{16/17}$ to problem-based learning, $32\%_{16/17}$ to the mixed style and $8\%_{16/17}$ to other modes. For cohort 2020/21, around $50\%_{20/21}$ of the learning environments of bachelor graduates were provided in form of lecture style, $5\%_{20/21}$ in problem-based learning style, $36\%_{20/21}$ as mixed style and $10\%_{20/21}$ via other modes.

For master level students of cohort 2016/17, on average across all countries, $52\%_{16/17}$ of the learning environments are reported to be lecture style, $6\%_{16/17}$ problem-based learning style, $32\%_{16/17}$ mixed style, and $10\%_{16/17}$ other modes. In cohort 2020/21, we can see that $49\%_{20/21}$ of the learning environments were held in lecture style, $7\%_{20/21}$ in problem-based learning style, $35\%_{20/21}$ in a mixed style and $10\%_{20/21}$ via other modes.

Country. In most countries (i.e. Austria, the Czech Republic, Germany, Estonia, Croatia, Hungary, Latvia, Norway, Portugal, Slovenia, and Slovakia), lecture style was most commonly provided as learning environment during bachelor level studies (>44%) and master level studies (>42%). In the same countries, between $22\%_{16/17}$-$36\%_{16/17}$ and $24\%_{20/21}$-$40\%_{20/21}$ of the learning environments for bachelor level students were offered via a mixed style, and similarly, between $25\%_{16/17}$-$36\%_{16/17}$ and $23\%_{20/21}$-$38\%_{20/21}$ for master level students. Pure problem-based learning classes and other modes were offered least often across all countries. Relatively large prevalence of the lecture style is reported for Estonia, Croatia, Hungary, Latvia, Portugal, and Slovenia. The share of learning environments offered during the study programmes are quite differently distributed in Bulgaria and Cyprus. Here, the mixed style is reported to be most common, for both bachelor and master level students[12].

Degree and Cohort. Comparing the two cohorts, we see a trend towards more mixed style courses in most countries (i.e., Austria, Bulgaria, Cyprus, the Czech Republic, Germany, Estonia, Croatia, Hungary, Malta, Norway). This is based on the observation that the shares of lecture style are lower, and the shares of the mixed style are higher in cohort 2020/21 compared to 2016/17 in the aforementioned countries. There is no clear trend of offering classes in a mixed style depending on the degree level.

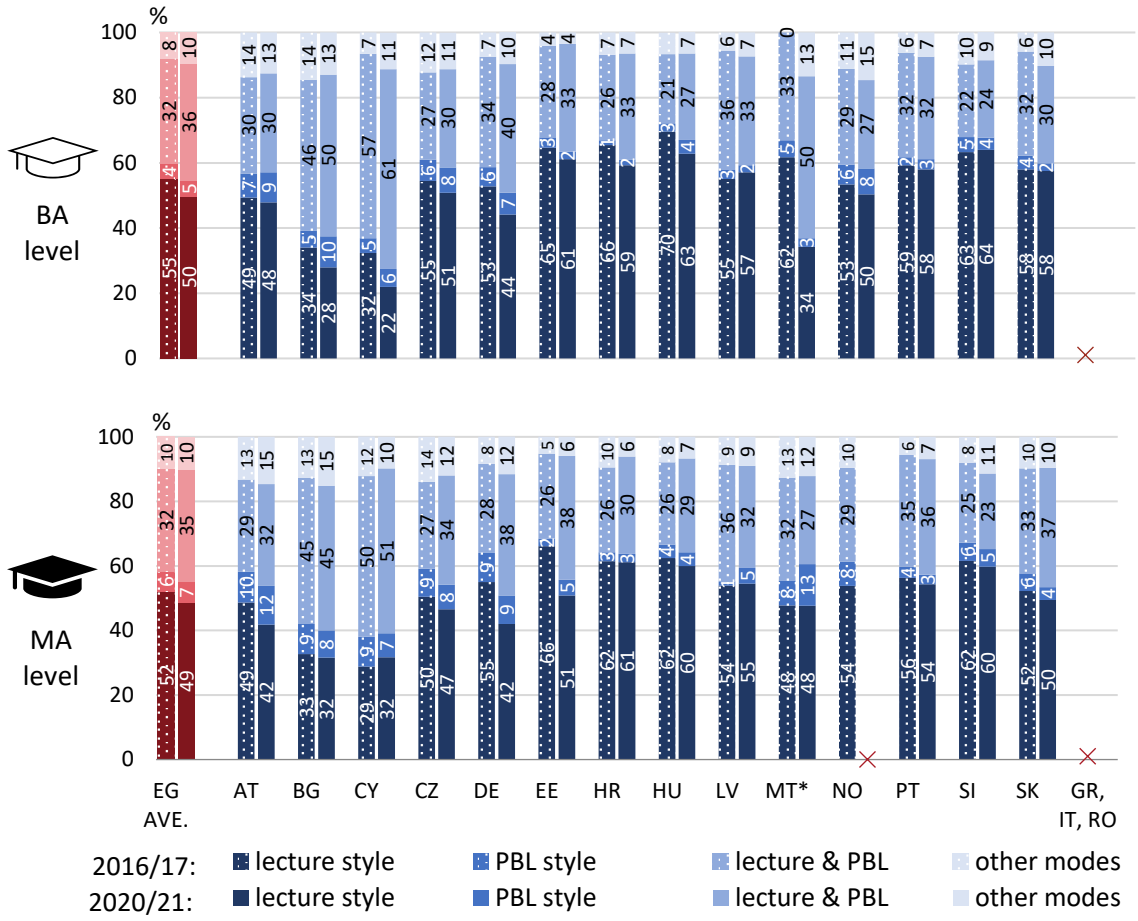
[12] There seems to be a stronger shift in teaching and learning modes specifically in Bachelor level programmes in Malta. However, the number of cases is relatively small, and this finding would need to be backed up by additional evidence.

Figure 3.5.1: Types of learning environments, international comparison

Definition: Percentages of learning environments provided in (1) lecture style, (2) PBL style, (3) mixed style, and (4) other modes (a1.3a-j)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (top/bottom chart area)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, IT, RO no data.

Figure 3.5.2 displays the prevalence of each type of learning environment across the EUROGRADUATE 2022 sample by type of institution, degree level, study field and socio-demographic factors.

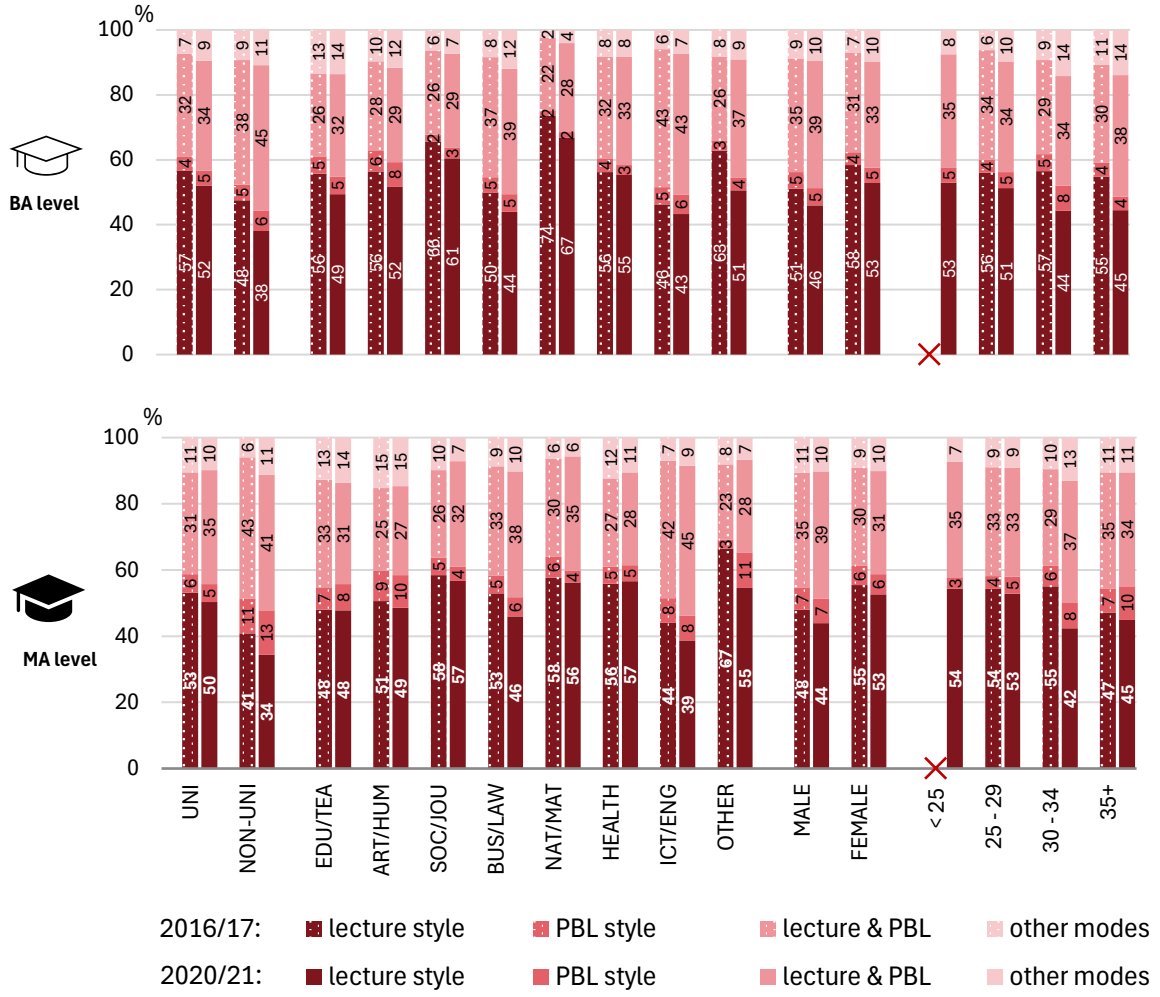
Type of institution. The more traditional lecture style is the predominant learning environment at universities (>=50%, both cohorts). Still, comparing the cohorts, we see a lower proportion of lecture style at universities in cohort 2020/21 compared to 2016/17. This might hint towards a reduction of traditional styles at universities over time. In contrast, we see lower proportions of the lecture style and with that, higher proportions of the mixed style as learning environment at non-universities. Again, comparing the cohorts, the proportion of the mixed style is even higher in cohort 2020/21. Innovative learning environments seem to be more prevalent at non-universities and continue to be integrated in the study programmes. For master level students at non-universities, the mixed style was even the most offered learning environment. Similarly, while problem-based learning is reported of rarely, we find the highest proportion among master level graduates from non-universities. Hence, obtaining a master level degree at a non-university might become increasingly attractive, as more innovative and mixed style learning environments are provided.

Figure 3.5.2: Types of learning environments, EUROGRADUATE averages

Definition: Percentages of learning environments provided in (1) lecture style, (2) PBL style, (3) mixed style, and (4) other modes (a1.3a-j)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, age (x-axis); degree level (top/bottom chart area)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO no data.

Study field. Across study fields, the lecture style is more often reported by graduates from bachelor level degree programmes, than from master level degree programmes. For bachelor level students, the lecture style is most common in the field of Natural Sciences & Mathematics (74%$_{16/17}$; 67%$_{20/21}$), and Social Sciences & Journalism (66%$_{16/17}$; 61%$_{20/21}$). The same is true for master level students with 58%$_{16/17}$-56%$_{20/21}$ of lecture style in the field of Natural Sciences & Mathematics, and 58%$_{16/17}$-57%$_{20/21}$ of lecture style in Social Sciences & Journalism. For several fields of study, a shift from lecture style teaching in bachelor level programmes towards the mixed style over time can be observed. Particularly in the field of Natural Sciences & Mathematics, but also in Education & Teachers Training, Social Sciences & Journalism we see higher proportions of the mixed style in cohort 2020/21 compared to 2016/17. This shift is in line with the somewhat different goals and foci of bachelor and master level programmes. While the former are expected to provide an overview and broad knowledge of the subject, the latter should provide a deepened understanding and are more geared towards an independent use of knowledge. Across study fields, the highest proportion of mixed style can be observed in the field ICT & Engineering, among both bachelor and master graduates.

Gender. Finally, gender differences can be observed, which mirror the gender-specific choice of institutions and subjects. Men are more likely to choose universities of applied sciences and are strongly overrepresented in ICT & Engineering programmes. This results in relatively large shares of the mixed style. Women are more likely to visit universities and choose programmes in the fields of Social Sciences & Journalism or Health where lecture style teaching is more common.

3.6. Education for environmental sustainability

Next to the demand for more innovative teaching and learning modes in higher education, there is a rising interest in integrating the topic of environmental sustainability in the curriculum. With global warming and climate change posing one of the greatest challenges to the planet and our socio-political systems (IPCC, 2022a), there is the need to educate people on the topic to raise awareness, initiate pro-environmental behaviour and commence transformative development in society. UNESCO (2024) sees the educational sector as a main starting point to bring the topic of environmental sustainability closer to the public. Thus, they recommend the integration of education for sustainable development[13] in the general curriculum at (higher) education institutions, across all types of institutes, degrees and study fields.

Against this background, the EUROGRADUATE 2022 data are analysed regarding the extent to which environmental sustainability had been part of the curriculum during the reference study programme. It was measured on a five-point scale, with 1 indicating “to a very high extent” and 5 “not at all”. The scale was reversed and recoded into a binary distinction to display the proportions of graduates that reported a high (2) or very high (1) extent to which environmental sustainability was included in the curriculum.

Figure 3.6.1 displays the proportion of graduates with a (very) high extent of environmental sustainability topics during their study programme at the country level. On average, 21% of the graduates from cohort 2016/17 reported a high or very high extent of topics related to environmental sustainability. In cohort 2020/21, the share is 28% and thus clearly higher.

Country. On the country level, we see the highest shares of graduates who reported a high or very high extent of environmental sustainability as a topic during their study programme in Austria ($19\%_{16/17}$, $29\%_{20/21}$), Bulgaria ($23\%_{16/17}$, $31\%_{20/21}$), Cyprus ($33\%_{16/17}$, $37\%_{20/21}$), Croatia ($18\%_{16/17}$, $28\%_{20/21}$) and Slovakia ($27\%_{16/17}$, $31\%_{20/21}$). With $14\%_{16/17}$ and $19\%_{20/21}$, the proportion of those who engaged with environmental sustainability through their curriculum is lowest in the Czech Republic.

Cohort and degree. The proportions of graduates who reported a (very) high extent of topics on environmental sustainability as part of their curriculum are higher in cohort 2020/21. Thus, environmental sustainability appears to be increasingly integrated in study programmes across all countries. Looking at the degree level, we see a mixed picture. In Austria, the Czech Republic and Slovakia master level graduates had been more exposed to the topic of environmental sustainability than bachelor level graduates. In Bulgaria, Cyprus, Croatia, Latvia, Malta, Portugal (cohort 2020/21) it is the other way around.

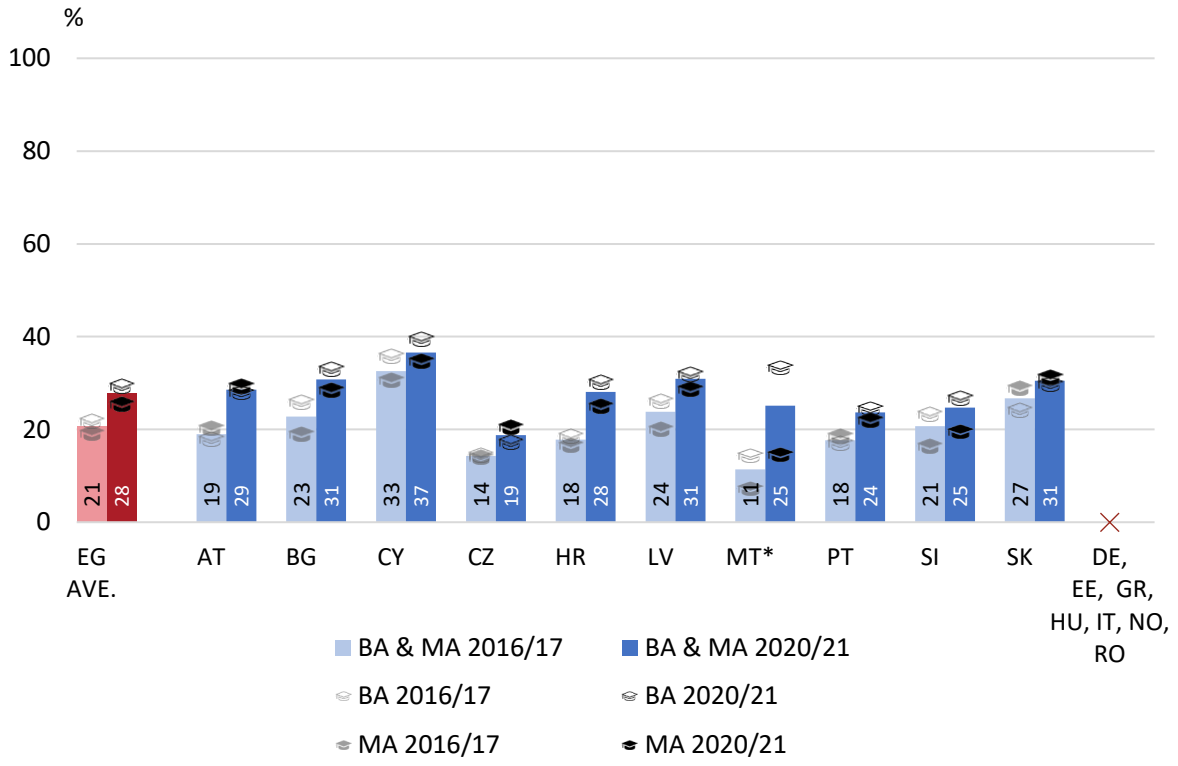
[13] Education for sustainable development focuses on global challenges including climate change, loss of biodiversity, unsustainable use of resources, and inequality (UNESCO, 2024).

Figure 3.6.1: Environmental sustainability as part of the curriculum, international comparison

Definition: Percentages of graduates whose curriculum included the topic of environmental sustainability to a high or very high extent (a1.7)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: MT both cohorts, both degrees low number of cases (<100); DE, EE, GR, HU, IT, NO, RO no data.

Figure 3.6.2 shows the share by type of institution, degree level, study fields, gender and age. With regards to the t**ype of institution**, we see that environmental sustainability was more often a topic at non-universities (26%$_{16/17}$, 33%$_{20/21}$) compared to universities (20%$_{16/17}$, 27%$_{20/21}$). With 38%$_{20/21}$, the share is largest among bachelor level graduates at non-universities in cohort 2020/21.

Study field. The highest share of graduates that encountered environmental sustainability as part of their curriculum is reported for the field of Natural Sciences & Mathematics (34%$_{16/17}$, 40%$_{20/21}$), followed by ICT & Engineering (26%$_{16/17}$, 33%$_{29/21}$). The shares are larger in cohort 2020/21, indicating an increased integration of the topic across all study fields. Regarding the degree level, there is no clear hint on whether environmental topics are particularly included in bachelor level or master level programmes.

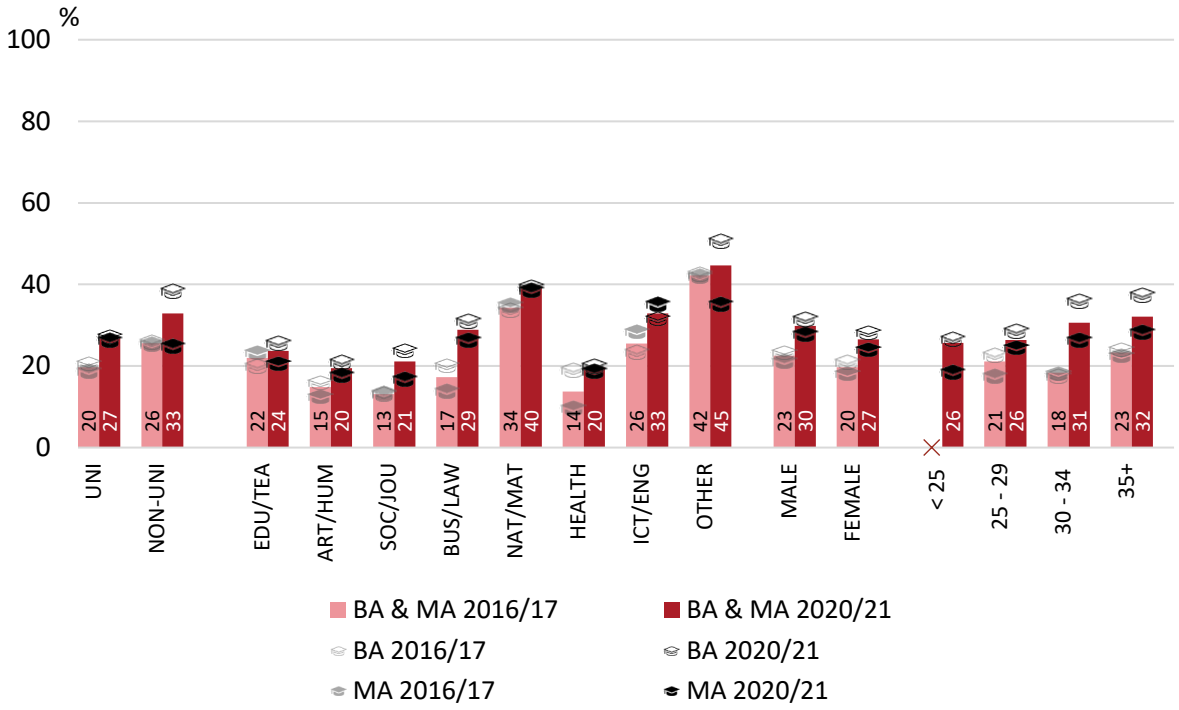
Socio-demographics. In both cohorts, the share of male graduates (23%$_{16/17}$, 30%$_{20/21}$) with high levels of environmental sustainability during their study programmes is higher than for women (20%$_{16/17}$, 27%$_{20/21}$). This may be due to the fact, that men more often study in the field of Natural Sciences & Mathematics as well as ICT & Engineering (i.e., study fields that include topics on environmental sustainability most often).

Figure 3.6.2: Environmental sustainability as part of the curriculum, EUROGRADUATE averages

Definition: Percentages of graduates whose curriculum included the topic of environmental sustainability to a high or very high extent (a1.7)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: Age group <25 too few cases (<30); SI not included in type of institution; DE, EE, GR, HU, IT, NO, RO no data.

3.7. Learning mobility

International learning mobility (e.g. study-abroad stays, internships abroad, summer schools) is regarded a powerful mean to add to intercultural understanding, but also to expand on competencies of students and work options after graduation. The promotion of European cooperations in all areas of education is an important concern of the European Commission. Thus, a crucial component of the successful EU programme Erasmus+ for education, youth, and sports is to foster learning mobility across Europe (Cairns et al., 2018; Dvir & Yemini, 2017).

With EUROGRADUATE 2022 it is possible to describe different forms of learning mobility and analyse its causes and consequences, which will be presented in the following.

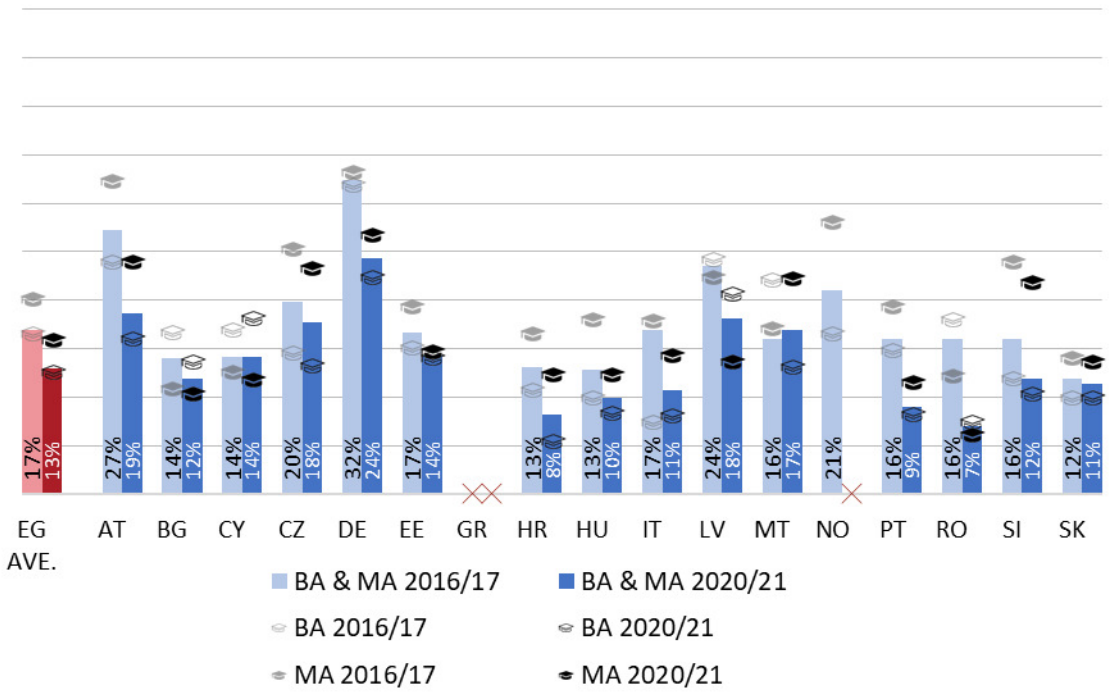
To gain a first impression on the matter, Figures 3.7.1 and 3.7.2 illustrate forms of learning mobility during the reference programme for the two survey cohorts. In Figure 3.7.1, **any of the surveyed experiences** (study stay, work/internship, language course, summer school etc.) is displayed. Figure 3.7.2 concentrates on a subgroup of the above and displays **learning mobility** (study experiences that lasted for at least 2 months during which at least 2 ECTS points were received) during the reference programme.

Figure 3.7.1: Graduates with (any) experience abroad during reference programme, international comparison

Definition: Proportions of graduates with any experience abroad covering all stays in another country including study stay, work/internship abroad, language course abroad, summer school abroad (a2.1a)

All graduates by:

Survey country (X-Axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: NO 2020/21: bachelor level graduates only; GR no data.

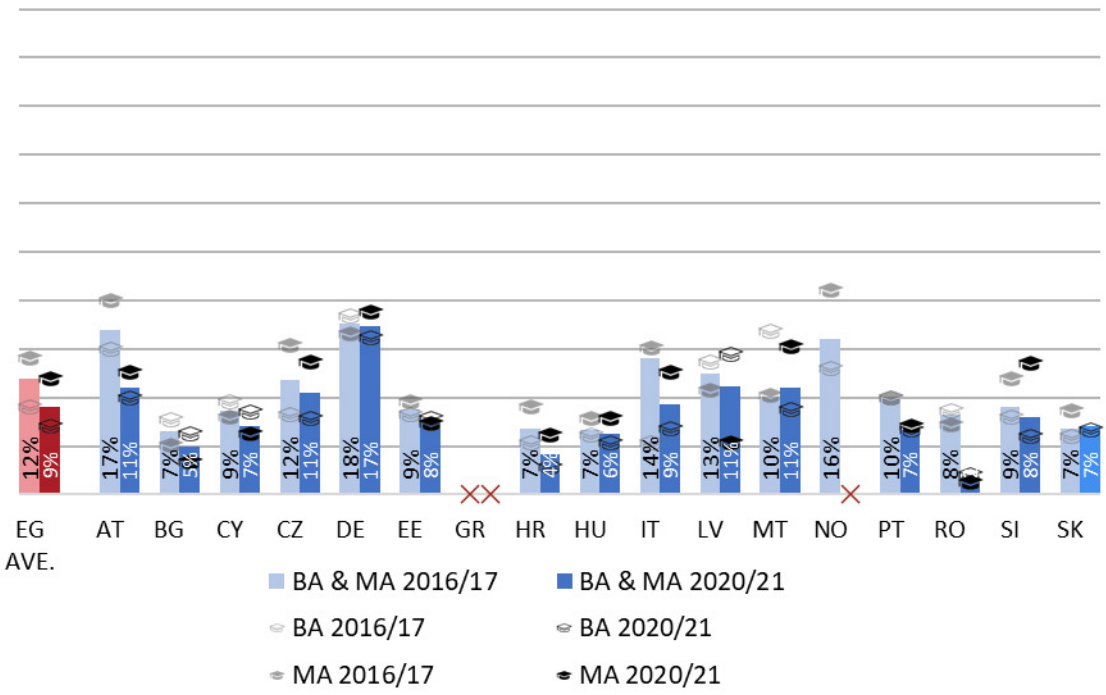
Evident are the differences between the two survey cohorts, pointing to the hindrance posed by the COVID-19 pandemic on international mobility. While a notable 18% of individuals who completed their studies in 2016/17 engaged in international learning mobility, internships, or language courses, this number reduces to 13% of graduates from the younger cohort. This downward trend is observed across all countries and forms of mobility yet to different degrees. Furthermore, the two figures display considerable country differences. The share of graduates, who become mobile is at the lowest level of 7% for Romanian graduates, who graduated in 2020/21 and it is highest for German graduates from the older cohort with 32%. When comparing differences with regard to degree levels, master level students are more likely to engage in international learning experiences than bachelor level students.

Figure 3.7.2: Graduates with learning mobility during reference programme, international comparison

Definition: Proportions of graduates with learning mobility including study experiences that lasted for at least 2 months and where at least 2 ECTS points were obtained (a2.1a, a2.1a3, a2.1a4)

All graduates by:

Survey country (X-Axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: DE, IT: limited comparability; NO 2020/21: bachelor level graduates only; GR no data.

In the following, the learning mobility definition as displayed in Figure 3.7.1 is employed to further analyse determinants of learning mobility and differences in these determinants across countries.

Determinants for studying abroad. In Figure 3.7.3. determinants are grouped in three categories of influencing factors. First, in blue circles country-level effects and cohort information on being mobile for learning purposes during the reference programme are displayed. Second, red squares additionally capture higher education and study-related factors. Third, sociodemographic information is included in the models and illustrated by yellow diamonds.

Country differences. Observed country differences are substantial. Austria represents the reference category, indicating that all countries with dots displayed left of the red-dotted line have a lower chance for participating in learning mobility than Austrian students, whereas all countries to the right of the red-dotted line have a higher chance of participating in learning mobility than Austrian graduates. Overall, black, blue or grey lines crossing the red-dotted indicate no significant difference compared to Austria. There is no significant difference between Austria, Norway, Latvia and Malta. Yet, in particular graduates from southern and from most eastern European countries have a considerably lower chance of participating in learning mobility than Austrian graduates, with Romanian graduates having the comparatively lowest chance to participate in learning mobility.

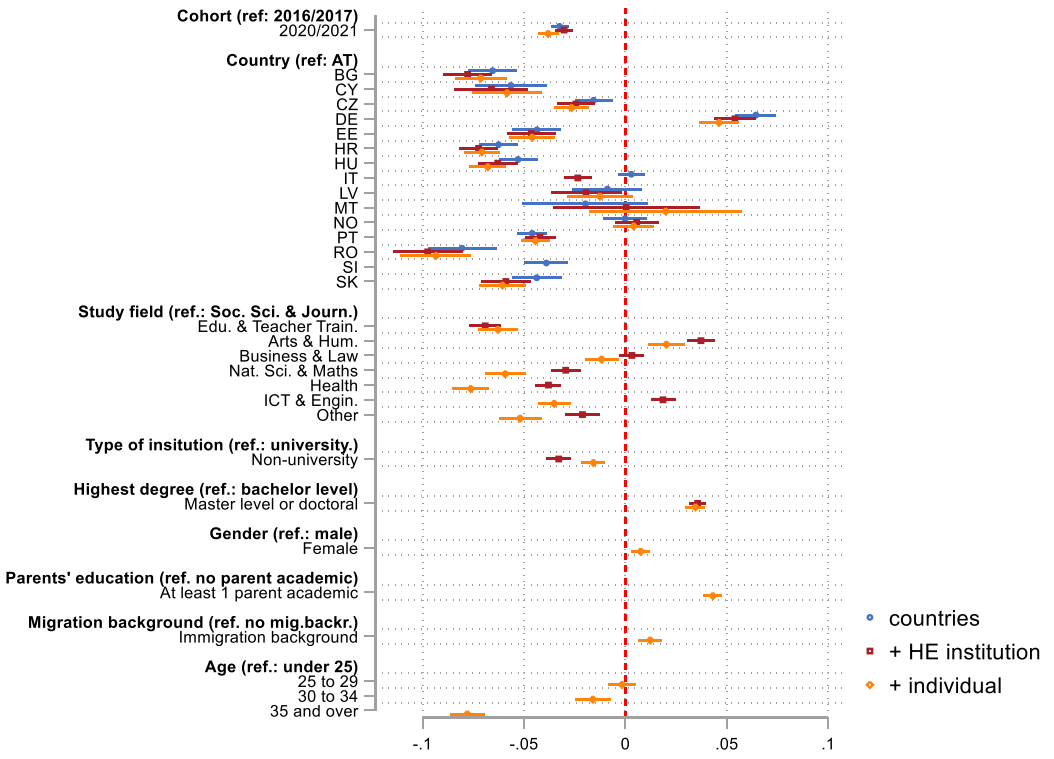
Study-related factors. The model suggests that master level students are more likely to become mobile than bachelor level students. Moreover, considerable differences between fields of studies can be observed – with graduates from language, arts, and humanities having the highest chances of an international study experience, and graduates from fields such as

health, natural science, and engineering having comparatively low chances of studying abroad. Moreover, the type of institution matters: Graduates who have been most likely to engage in international learning mobility are from universities. Students from universities of applied sciences etc. have much lower chances to participate in international learning mobility.

Figure 3.7.3: Explanatory factors for the chance to participate in any abroad mobility experiences

Definition: Average marginal effects (AME) for the likelihood of participating (vs. not participating) in any experience abroad covering all stays in another country including study stay, work/internship abroad, language course abroad, summer school abroad (a2.1a)

All graduates



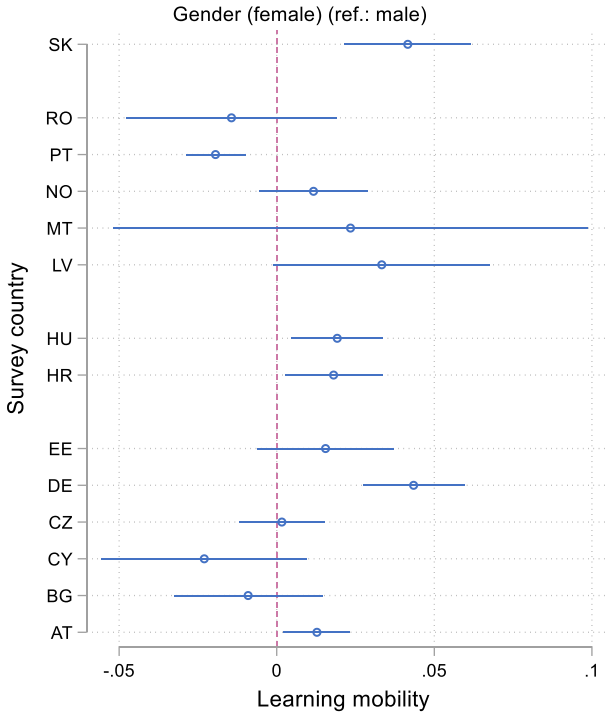
Data source: EUROGRADUATE 2022, data version 3.1.0.
Notes: GR not covered.
Method: Logistic regression analyses; coefficients are average marginal effects (AME).

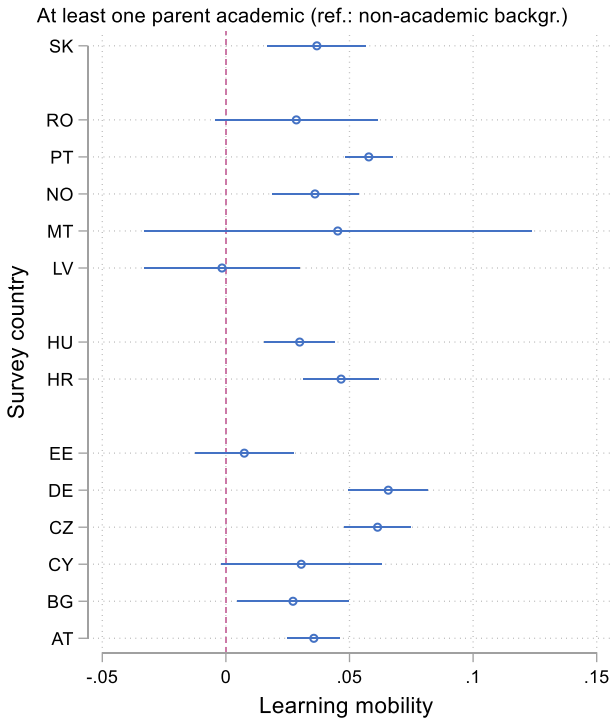
Sociodemographics. The yellow diamonds in Figure 3.7.3 capture, well-established individual-level predictors of student mobility that are additional to study-related factors and country variables included in the model. The picture is in line with previous research, indicating that students from lower socioeconomic backgrounds and older students exhibit decreased participation in learning mobility (Entrich et al., 2024). Moreover, little advantages in participating in international learning mobility are found for female and immigrant students. Country differences remain largely untouched by the control of sociodemographic variables, indicating only little interrelations between the predictors.

Figure 3.7.4: Country-specific effects of social background and gender on the chance of experiencing learning mobility.

Definition: Average marginal effects of the interaction between the social background/gender and the survey country, describing the likelihood of participating (vs. not participating) in any experience abroad covering all stays in another country including study stay, work/internship abroad, language course abroad, summer school abroad (a2.1a)

All graduates





Data source: EUROGRADUATE 2022, data version 3.1.0.
Notes: GR not covered; MT < than 100 cases.
Method: Logistic regression analyses; coefficients are average marginal effects (AME).

Country-specific heterogeneity in studying abroad. EUROGDRADUATE's strength lies in its possibility to allow for cross-country comparisons of effects. Thus, it is possible to analyse whether sociodemographic predictors (e.g. social background) that are well-known to impact the likelihood of participating in international learning mobility are equally relevant across countries. This capacity is leveraged by investigating whether parental education – measured as at least one parent has a higher education degree (Figure 3.7.4, upper figure) – and gender (Figure 3.7.4, lower figure) hold similar importance across countries. Effects to the right of the red-dotted line indicate that graduates from a higher social background and female graduates respectively exhibit a higher likelihood to be mobile during studies.

The data reveals a clear pattern: graduates from higher socioeconomic backgrounds have a significantly higher likelihood of engaging in learning mobility during their study time across most survey countries. The association is particularly pronounced in Portugal, Croatia, Germany, the Czech Republic, and Austria. However, parental education does not appear to influence the probability of learning mobility in Romania, Malta, Latvia, Estonia, and Cyprus. It should be noted that point estimates of some countries are relatively insecure as shown by the large confidence intervals. This is due to the low numbers of respondents and concerns Malta and Latvia in particular. Thus, there is even more reason to conclude that there is a high degree of social inequality in the participation in learning mobility across most European countries exists.

It can be considered good news in terms of gender equality that there are no significant gender differences in learning mobility in most countries – indicating that it is equally likely for male and female students to engage in international learning mobility. An effect greater than 0 (right of the red-dotted line) indicates a female advantage in learning mobility, which is observed for Slovakian, Hungarian, Croatian, German, and Austrian graduates. On the contrary, only in Portugal male students are more likely to participate in learning mobility.

3.8. Labour market experience during studying

The topic of graduate employment plays a crucial role in assessing the success of higher education, from both government and employer perspective. "[…] Graduates are expected to exit their studies in work-ready mode and with demonstrable levels of employability" (Clarke, 2018, p. 1923). To increase graduates' employability and to prepare them best to join the labour force, higher education institutions more and more include internships, work placements and international study as fixed parts during the study programmes. Similarly, from the graduates' perspective, there is a rising pressure to get hands-on job experiences while studying to improve their chances when entering the labour market (Clarke, 2018). Previous research shows a positive effect of labour market experience during studying on employability and labour market outcomes, though the strength of the effect differs between countries (e.g. Passaretta & Triventi, 2015). Therefore, this chapter focuses on labour market experiences of graduates during their study period.

Figure 3.8.1 shows the proportions of graduates who have gained any kind of labour market experience (i.e., internships/work placements (abroad), paid labour, student jobs) during the time of their study programme[14]. On average, across the full EUROGRADUATE 2022 dataset, $85\%_{2016/17}$ and $84\%_{2020/21}$ of the graduates report some kind of labour market experience while they were studying. Little differences can be observed between bachelor ($86\%_{16/17}$; $84\%_{20/21}$) and master level students ($85\%_{16/17}$; $82\%_{20/21}$), with bachelor level students indicating to have worked while studying slightly more often.

Country. On a country level, gaining labour market experiences while studying is common in most countries (i.e., Austria, Bulgaria, the Czech Republic, Germany, Estonia, Croatia, Hungary, Italy, Latvia, Norway, Slovenia, Slovakia). In these countries more than 80% of the

[14] Including both, study-related and -unrelated jobs.

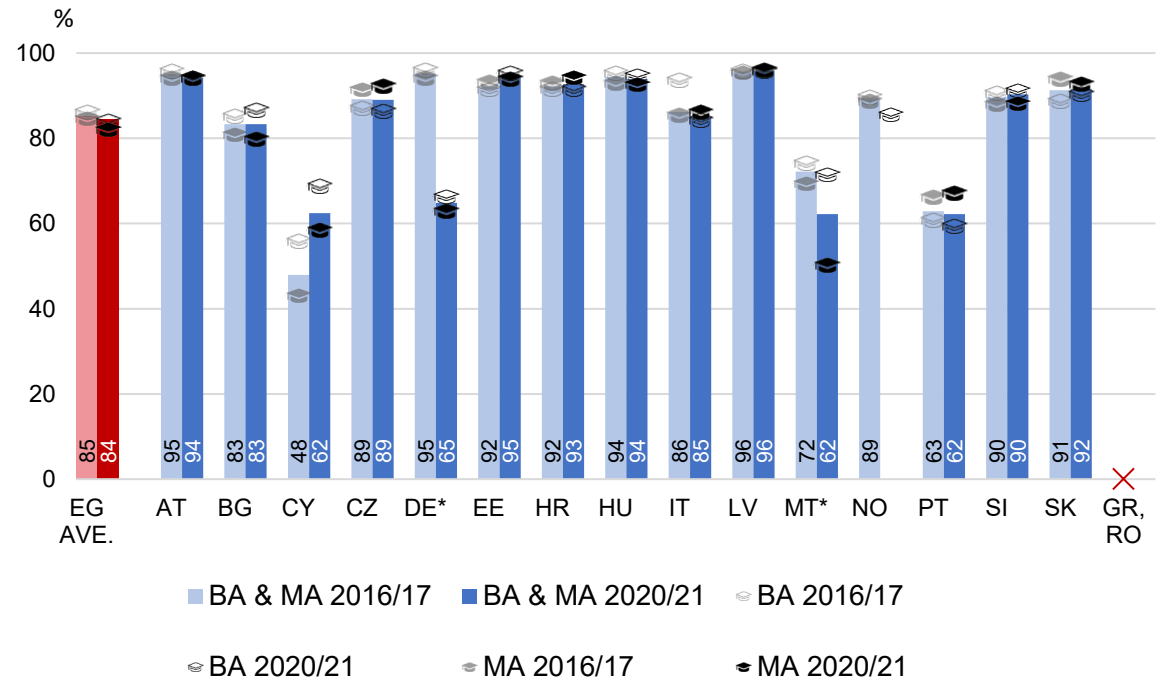
graduates report some kind of labour market experience that they have gained while studying. In contrast, labour market experiences while studying are less common in Cyprus (48%$_{16/17}$; 62%$_{20/21}$), Malta (72%$_{16/17}$; 62%$_{20/21}$) and Portugal (63%$_{16/17}$; 62%$_{20/21}$).

Figure 3.8.1: Graduates with labour market experience while studying, international comparison

Definition: Percentages of graduates with any kind of internship/work placement[15]/paid labour while studying (a2.1a1/b1/c1/d1/e1, a2.2a, a2.2b)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: DE: limited comparability for cohort 2020/21; MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, RO: no data.

Cohort and degree. There are minimal differences between the cohorts in the EG average and most countries, suggesting that gaining work experience while studying held similar importance for graduates from 2016/17 and 2020/21. However, some differences could be observed for Cyprus, Germany, and Malta. While the number of graduates with work experiences is higher in cohort 2020/21 in Cyprus, it is lower for graduates of the same cohort in Germany[16] and Malta compared to graduates from 2016/17.

In many countries, slightly more bachelor than master level graduates report labour market experiences (i.e., in Bulgaria, Cyprus, Germany, Malta, and Slovenia). In these countries, gaining labour market experiences during a bachelor level programme seems to be already highly relevant. This matches the expectation that a bachelor level degree by itself should be sufficient to enable graduates to join the labour market, making work experience crucial at this stage of education (Hovdhaugen & Ulriksen, 2023; Hauschildt et al., 2021). In contrast, in the Czech Republic, Portugal, and Slovakia, more master than bachelor graduates report having engaged in labour market activities while studying. However, the differences between the degree levels are rather small and proportions are generally high across both degree levels.

[15] Includes internships/work placements that were completed in the country of study and/or abroad.

[16] For Germany it should be noted that this is likely due to a different measurement of working experiences for cohort 2020/21 that is not fully comparable with the EUROGRADUATE survey.

This indicates a high prevalence of work experiences during studying among most of the graduates across the countries.

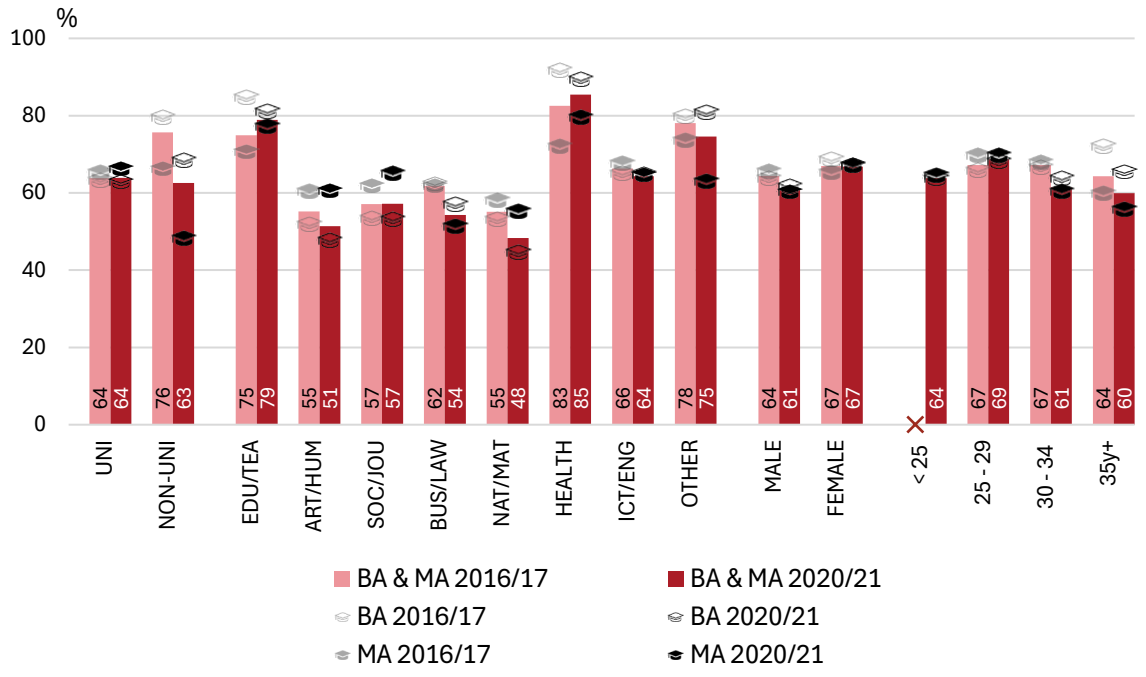
If labour market experiences are related to the field of study, they can be particularly helpful for a successful labour market transition (Passaretta & Triventi, 2015). In accordance with that, Figure 3.8.2 displays the percentages of graduates that gained labour market experiences which had relevance for their study programme. This includes, for instance, mandatory internships, internships abroad that were rewarded with ECTS, work placements or student jobs.

Type of institution. For both, graduates at universities and non-universities, more than 60% (both cohorts) report that they have gained study-related work experiences while studying. The share is particularly high for graduates at non-universities, who graduated in the academic year 2016/17 ($76\%_{16/17}$). Expectantly, the share of graduates with study-related working experiences should be similarly high for those who obtained their degree in 2020/21 at a non-university. However, the proportion of graduates that studied at a non-university and gained study-related work experience is lower among the cohort 2020/21 compared to 2016/17. This trend might have been impacted by the COVID-19 pandemic, during which possibilities for internships or work placements were limited.

Figure 3.8.2: Graduates with study-related labour market experiences, EUROGRADUATE averages

Definition: Percentages of graduates with labour market experience that was related to their study programme (e.g., compulsory internship, ECTS awarded, and/or content-related relevance; a2.1a1/b1/c1/d1/e1, a2.1a4, a2.2a1, a2.2b1)

All graduates by:
Cohort (twin bars); type of institution, study field, gender, age (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0
Notes: Age group <25 too few cases (<30); SI not included in type of institution; IT not included in age; GR, RO no data.

Study field. Graduates in the field Education & Teacher Training ($75\%_{16/17}$; $79\%_{20/21}$) and Health ($83\%_{16/17}$; $85\%_{20/21}$) report most frequently to have gained study-related work experiences. In both fields, study-related work experiences are more prevalent for bachelor level students than for master level graduates. Often, gaining practical experience is part of the curriculum in these fields. Study-related work experiences are least often reported among graduates in the fields of Art & Humanities ($55\%_{16/17}$; $51\%_{20/21}$) and Natural Sciences &

Mathematics (55%$_{16/17}$; 48%$_{20/21}$) with somewhat higher levels of study-related labour market in master level programmes.

When comparing the two cohorts, graduates from the academic year 2020/21 report somewhat fewer study-related labour market experiences across most study fields. Interestingly, an opposite trend can be observed for master level students in the fields Education & Teacher Training and Health. Here, we see that, on average, more graduates of the 2020/21 cohort report study-related labour market experiences. These opposing trends might be explained by the COVID-19 pandemic. While internships/work placements, in general, took place less often, options to work in the health sector (e.g., in test or vaccination centres) increased. Thus, students might have profited in terms of increased possibilities to engage in study-related labour market activities. Further, working in the areas of education and teaching had to be continued throughout the pandemic. Thus, students in this study field might similarly have had more possibilities to gain relevant work experience.

Socio-demographics. Female graduates (67%$_{16/17}$; 67%$_{20/21}$) report to have gained study-related labour market experiences somewhat more often than male graduates (64%$_{16/17}$; 61%$_{20/21}$). Further, gaining study-related labour market experiences while studying slightly decreases across age categories. However, the differences are rather small.

3.9. Subjective assessment of studies

Student's satisfaction forms an important indicator for the success and performance of higher education institutions and their study programmes. At the same time, it is an interesting proxy for future students when choosing a higher education institution and study programme (Wong & Chapman, 2023). Therefore, this chapter focuses on the graduates' overall study satisfaction, as well as the extent to which graduates evaluated their study programme to be a good basis for their professional career and personal development.

Figure 3.9.1 shows the overall study satisfaction of the graduates in each country. Study satisfaction was measured on a scale from 1 (very satisfied) to 5 (very unsatisfied). The scale was reversed for the analysis. Thus, Figure 3.9.1 shows mean values with higher values indicating higher study satisfaction. On average, the overall study satisfaction is moderately high across all countries (3.8$_{16/17}$; 3.8$_{20/21}$). The study satisfaction is, on average, somewhat higher among graduates of master level programmes (3.9$_{16/17}$; 3.9$_{20/21}$) than among graduates of bachelor level programmes (3.7$_{16/17}$, 3.8$_{20/21}$).

Country. On the country level, graduates in Cyprus report the highest levels of study satisfaction (4.1$_{16/17}$; 4.1$_{20/21}$), while it is lowest in Croatia (3.5$_{16/17}$; 3.6$_{20/21}$), Hungary (3.6$_{16/17}$; 3.7$_{20/21}$), Latvia (3.7$_{16/17}$; 3.7$_{20/21}$), Slovenia (3.7$_{16/17}$; 3.7$_{20/21}$) and Slovakia (3.7$_{16/17}$; 3.6$_{20/21}$).

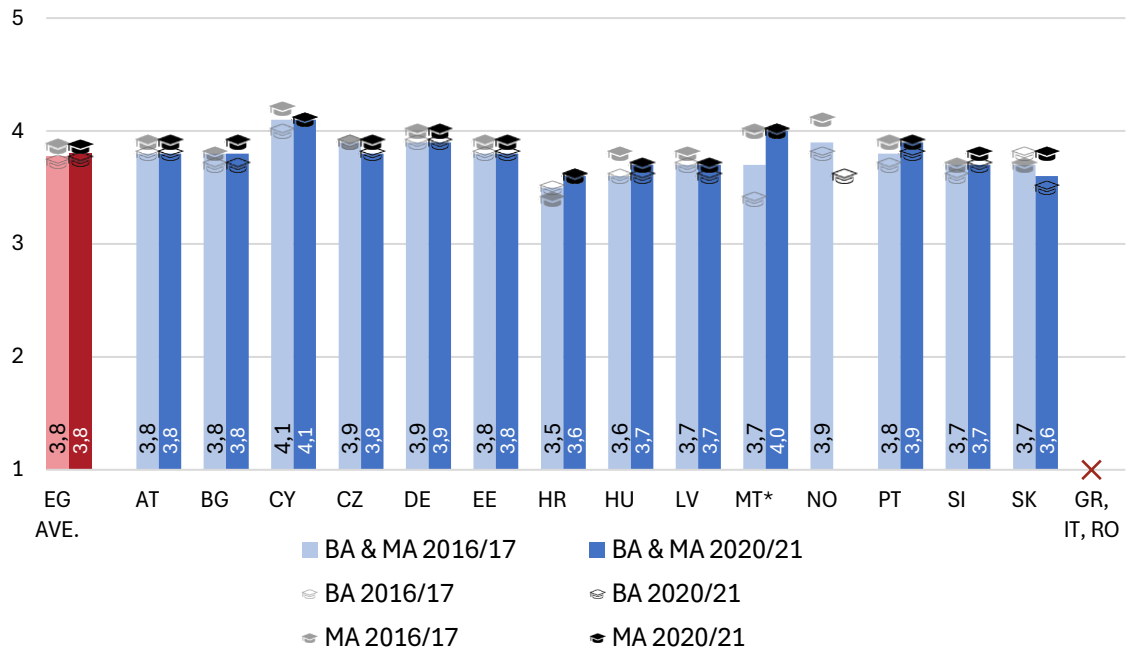
Degree and cohort. In most countries, the study satisfaction was somewhat higher on the master level degree than on the bachelor level. This might reflect the fact, that master programmes are often smaller with regards to the number of students and more specialized.

Figure 3.9.1: Study satisfaction, international comparison

Definition: Mean values of the overall satisfaction with the study programme (1 "very unsatisfied" to 5 "very satisfied"; a1.8)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, IT, RO no data.

Figure 3.9.2 displays the extent to which graduates evaluate their study programme to be a good basis for their professional career. This was measured on a scale from 1 (to a very high extent) to 5 (not at all). The scale was reversed for the analysis, which means that higher values indicate a greater extent to which graduates perceive their study programme as a good basis for their professional career. Hence, mean values across the EUROGRDUATE sample by cohort, type of institution, study field, gender, age, and degree level are reported.

Type of institution. Graduates from both cohorts evaluate their study programme as a moderately good basis for the professional career, with a mean value of 3.7 (both cohorts) for university graduates and 3.9 (both cohorts) for non-university graduates. Non-university graduates rate their study programme slightly higher, which might be due to the more applied nature of non-university institutions. Master level students at universities ($3.8_{16/17}$; $3.8_{20/21}$) report higher degrees of their study programme being a good basis for their professional career than bachelor level students ($3.6_{16/17;}$ $3.6_{20/21}$). Within the group of non-university graduates, those completing a master level degree in the cohort 2016/17 report an even higher extent to which they perceive their study programme to be a good basis for the professional career ($4.1_{16/17}$).

Degree. Across most categories, master level programmes are rated slightly higher in terms of providing a good basis for professional career than bachelor level programmes. This matches the impression that most students continue their education (also see Chapter 3.9) after their bachelor level degree, and often use their master level degree to enter the labour market. Accordingly, obtaining a master level degree might be associated with a better preparation of students for the labour market.

Study fields. Across all fields, graduates from both cohorts evaluate their study programme moderate to moderately high (means between three and four) in terms of being a good basis

for their professional career. According to the data, the study fields Education & Teacher Training ($3.9_{16/17}$; $3.9_{20/21}$), as well as Health ($4.1_{16/17}$; $4.0_{20/21}$) are rated best in building a solid foundation for the graduates' professional careers. This might be linked to the close connection between programmes and occupations of these subjects. The study fields Arts & Humanities ($3.5_{16/17}$; $3.4_{20/21}$) as well as Social Sciences & Journalism ($3.4_{16/17}$; $3.6_{20/21}$) are rated lowest in terms of providing a good basis for the professional career. For these fields, programmes and future jobs are often less clearly linked. Across most study field, master level graduates felt more often that their study programme provided a good basis for their career than bachelor students, (i.e. Education & Teacher Training, Arts & Humanities, Social Sciences & Journalism, Business & Law, Natural Sciences & Mathematics). Thus, adding a master's degree after finishing a bachelor's degree in these fields seems to have a positive impact in terms of feeling well prepared for the professional career.

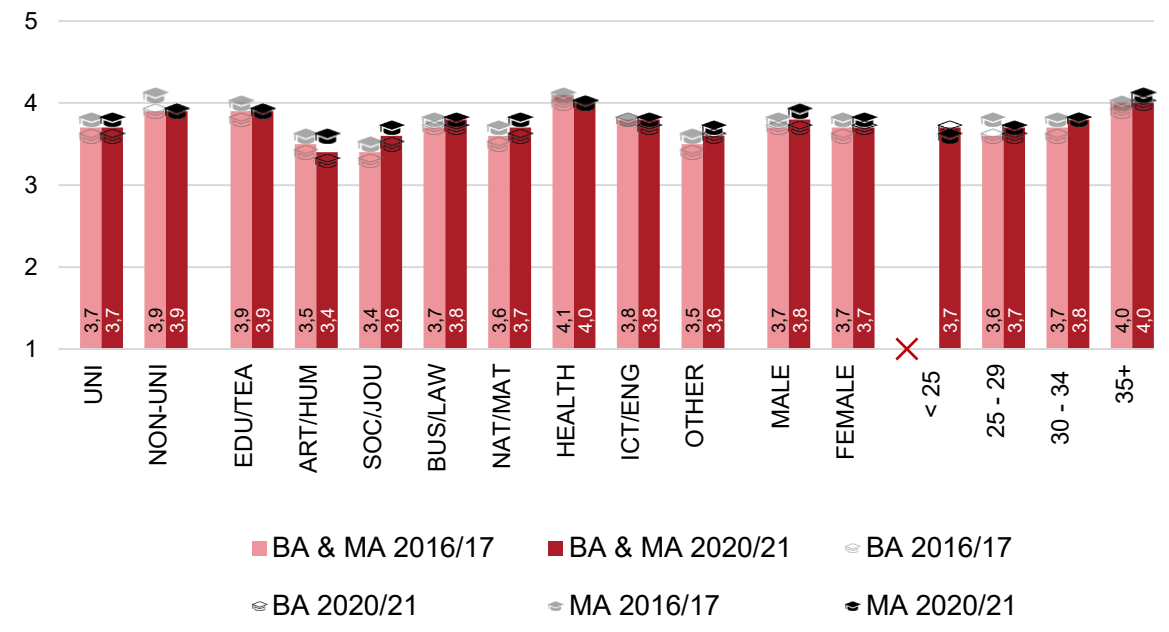
Socio-demographics. Both, male ($3.7_{16/17}$; $3.8_{20/21}$) and female ($3.7_{16/17}$; $3.7_{20/21}$) graduates rate their study programmes to be moderately good in terms of providing a good basis for their professional career with pretty much no gender-differences. Further, in terms of being a good basis for the job, older graduates (i.e. 35+, $4.0_{16/17}$; $4.0_{20/21}$) rate their study programme higher than younger graduates (i.e. <25y, $3.7_{20/21}$; 25-29y, $3.6_{16/17}$; $3.7_{20/21}$).

Figure 3.9.2: Study programme as a good basis for the professional career, EUROGRADUATE averages

Definition: Mean values of the extent to which graduates rated their study programme as good basis for the professional career (1 "not at all" to 5 "to a very high extent"; a1.6a)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, age (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: Age group <25 too few cases (<30); SI not included in type of institution; DE, GR, IT, RO no data

In Figure 3.9.3 we look at the evaluation of study programmes as a good basis for the personal development. This was, again, measured on a scale from 1 (to a very high extent) to 5 (not at all). The scale was reversed for the analysis. Thus, mean values are presented, with a higher mean value indicating a greater extent to which graduates perceive their study programme to be a good basis for their personal development.

Overall, graduates rate their study programmes with a mean value around of ± 4.0. Thus, most study programmes seem to provide a good basis for the personal development of the graduates. On average, graduates rate their study programmes somewhat higher regarding

personal development than regarding the professional career. This indicates that higher education plays a crucial role in supporting graduates' individual development, as well beyond forming specific professional skills and competencies.

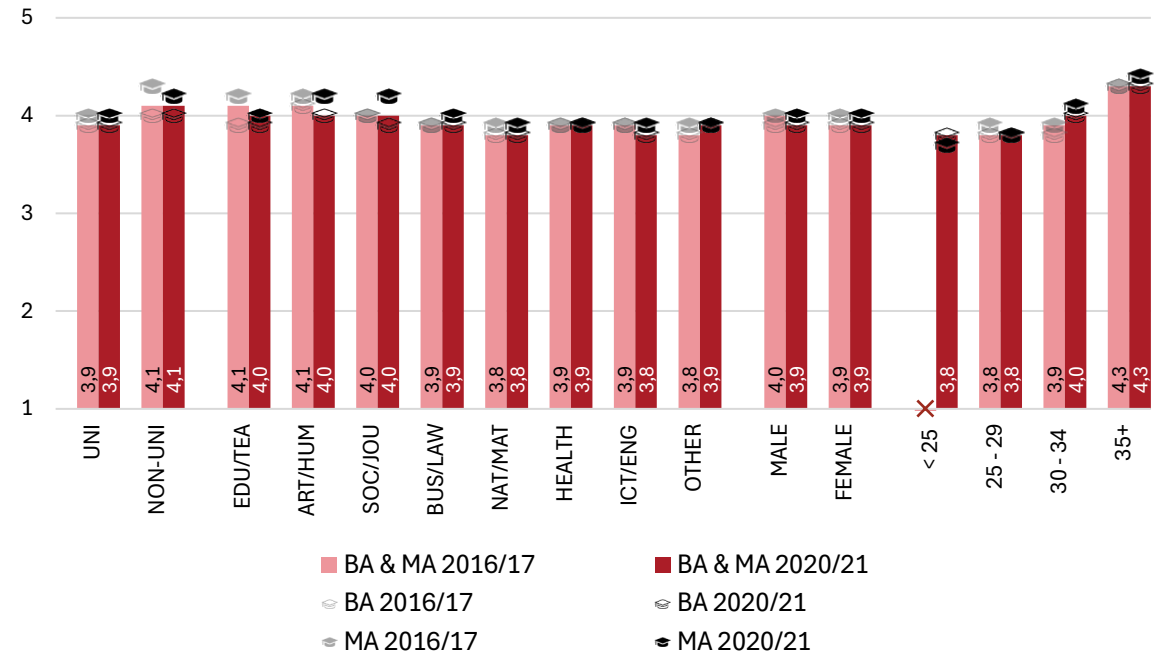
Type of institution. Graduates from universities ($3.9_{16/17}$; $3.9_{20/21}$) and from non-universities ($4.1_{16/17}$; $4.1_{20/21}$) rate their study programmes at similar levels in supporting the personal development. A somewhat larger extent is observed for the master level, and specifically for master level graduates from non-universities in the academic year 2016/17 ($4.3_{16/17}$).

Figure 3.9.3: Study programme as a good basis for the personal development, EUROGRADUATE averages

Definition: Mean values of the extent to which graduates rated their study programme as a good basis for the personal development (1 "not at all" to 5 "to a very high extent"; a1.6b)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, age (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0

Notes: Age group <25 too few cases (<30); SI not included in type of institution; DE, GR, IT, RO: no data

Study field. Across the EUROGRADUATE 2022 data, study programmes in the fields Education & Teacher Training ($4.1_{16/17}$; $4.0_{20/21}$), Arts & Humanities ($4.1_{16/17}$; $4.0_{20/21}$), and Social Sciences & Journalism ($4.0_{16/17}$; $4.0_{20/21}$) are rated with the highest extent to which they provide a good basis for personal development. The rating is lowest for study programmes in the field of Natural Sciences & Mathematics ($3.8_{16/17}$; $3.8_{20/21}$). However, graduates of the different fields of study vary only little in this regard. Across all study fields, master level graduates rate their study programme slightly higher in terms of being a good basis for personal development than bachelor level graduates. Accordingly, adding a master level degree after graduating from a bachelor level degree seems to be valuable in further promoting and supporting the personal development of the students.

Socio-demographics. Almost no differences are observed for male and female graduates. Further, older graduates (i.e., +35y, $4.3_{16/17}$, $4.3_{20/21}$) report higher extents to which their study programme was a good basis for their personal development. Older students seem to profit even more from higher education in terms of personal development than younger students (i.e., >25y, $3.8_{20/21}$; 25-29y, $3.8_{16/17}$, $3.8_{20/21}$; 30-34, $3.9_{16/17}$, $4.0_{20/21}$).

3.10. Additional studies and further education

With a rapidly changing labour market, it is necessary to continuously equip individuals with relevant skills and competences. Thus, engaging in further education can be relevant to increase one's own employability. The concept of lifelong learning supports this with its goal to provide formal, non-formal, and informal learning opportunities throughout life and by that, allow for continuous professional and personal development (European Commission, 2001). Thus, Chapter 3.10 investigates graduates' tendencies to pursue further education after completing their reference degree, with a particular focus on comparing different degree levels as this might influence graduates' decisions to continue with formal and/or informal education.

Figure 3.10.1 displays the country-wide proportions of graduates who indicated to have studied in at least one further higher education degree programme after finishing their reference study programme (i.e., further formal higher education). The numbers are irrespective of the degree level or the scope of the programme of these additional studies. Figure 3.10.1 shows the percentages of bachelor level and master level graduates each separately, omitting the shares across the whole sample. This aims at highlighting the differences between bachelor level and master level graduates, as the degree level of the reference study programme (partly) predetermines graduate's tendencies to continue with higher education (or not).

On average, 52%$_{16/17}$ of the bachelor level graduates from the academic year 2016/17 continued with their studies after graduation. In contrast, only 24%$_{16/17}$ of the master level graduates 2016/17 studied in another higher education programme. Among the 2020/21 graduates, 46%$_{20/21}$ of the bachelor level graduates continued with higher education, while only 16%$_{20/21}$ of the master level graduates continued to study. This indicates that about half of the bachelor level graduates or even more see their degree rather as an intermediate step towards a master level degree than as the degree they want to access the labour market with.

Country. On a country level, bachelor level graduates from Austria (65%$_{16/17}$; 68%$_{20/21}$), the Czech Republic (70%$_{16/17}$; 70%$_{20/21}$), Germany (65%$_{16/17}$; 65%$_{20/21}$), and Romania (74%$_{16/17}$; 59%$_{20/21}$) engaged most often in additional studies after they obtained their reference degree. Similarly high proportions are observed for bachelor level graduates from the academic year 2016/17 in Greece (61%$_{16/17}$), Malta (65%$_{16/17}$), and Slovakia (60%$_{16/17}$), and from the academic year 2020/21 in Italy (67%$_{20/21}$). In these countries, a majority of the graduates continues their studies and decides not to use their bachelor level degree as entry for the labour market. In other countries, such as Cyprus (43%$_{16/17}$; 34%$_{20/21}$), Estonia (45%$_{16/17}$; 32%$_{20/21}$), and Latvia (39%$_{16/17}$; 30%$_{20/21}$) the share of bachelor level graduates that continue with their academic, educational path is lower compared to the other countries. Here, more graduates seem to use their bachelor level degree as entry for the labour market, while around a third of the graduates decides for further higher education.

Looking at the master level degree, we see the highest share of graduates that continued with higher education after their reference programme in both cohorts in Romania, with 36%$_{16/17}$ and 34%$_{20/21}$. The share is similarly high for graduates from the academic year 2016/17 in Greece (31%$_{16/17}$), Hungary (35%$_{16/17}$), and Malta (41%$_{16/17}$). In all other countries the proportion ranges around 20%. Compared to the other countries, the share of graduates who continue with further formal education is specifically low in Italy (8%$_{16/17}$, 6%$_{20/21}$), Slovenia (10%$_{16/17}$; 8%$_{20/21}$) and Slovakia (14%$_{16/17}$; 12%$_{20/21}$). Country-specific labour market situation and needs might influence graduates' decisions to either continue with further education or to enter the labour market with their master level degree.

Degree and cohort. As already highlighted above, bachelor level students continued their studies more often than master level students, matching the general bachelor/master-degree structure within the European Higher Education Area. Thus, obtaining a master level degree before entering the labour market is relevant for most graduates, while less than half of the graduates decides to use their bachelor level degree for labour market entry. Accordingly, the bachelor/master-degree structure seems to foster further education among European

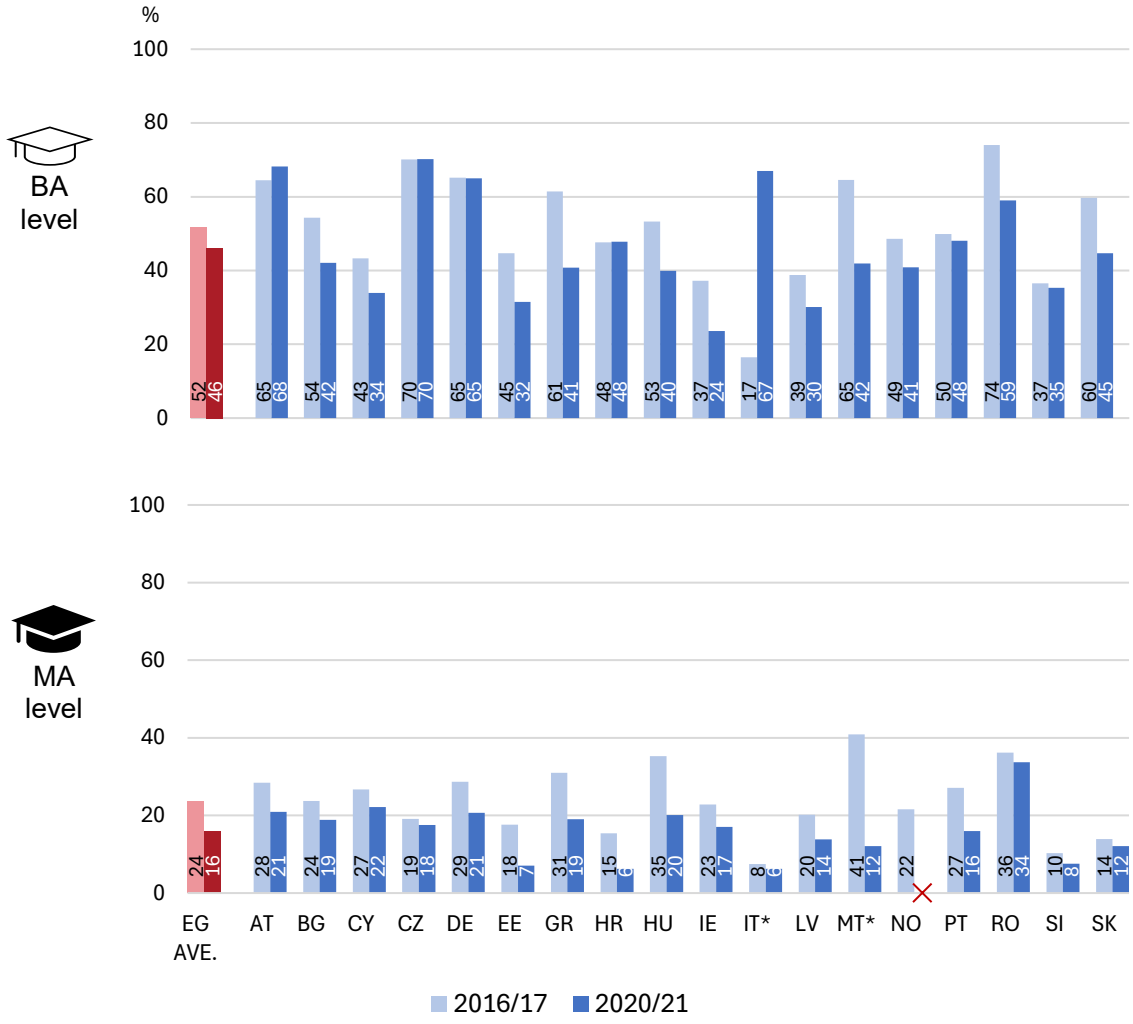
graduates. Besides, graduates from the academic year 2020/21 continued less often with an additional study programme compared to graduates from the academic year 2016/17, which is not surprising as the latter have had more time after graduation to engage in additional studies.

Figure 3.10.1: Graduates with further higher education after graduation, international comparison

Definition: Percentages of graduated that started an additional higher education programme after the graduation from their reference study programme[17] (a3.5.1)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: IE included; IT 2016/17: data not comparable; MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: no data on master level graduates

Figure 3.10.2 shows the proportions of graduates who continued higher education after graduation from the reference degree across the whole EUROGRADUATE 2022 sample. Again, to highlight the differences between bachelor level and master level graduates, the figure is split into two charts, showing the percentages of each degree level separately. Further,

[17] Includes all graduates that started a programme, meaning students did not necessarily graduate from the programme (yet).

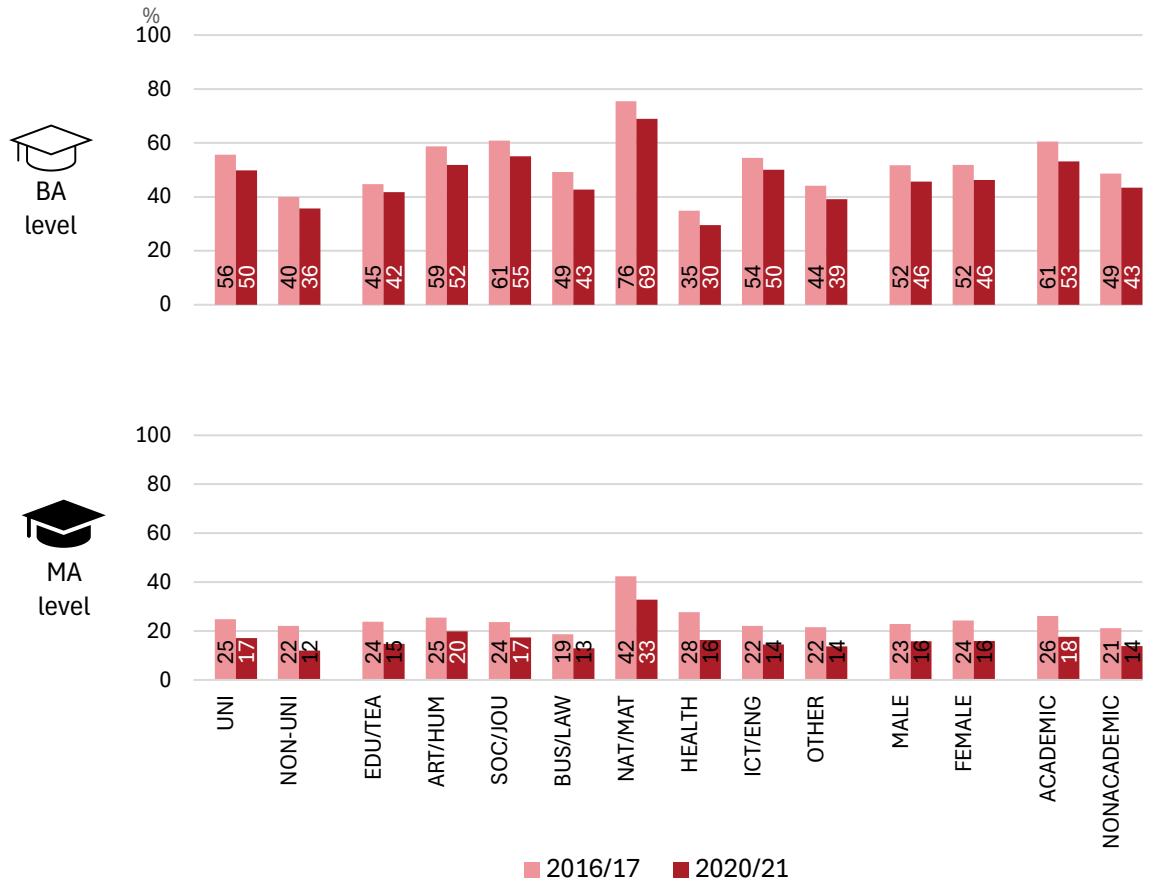
the percentages are reported by type of institution, study field, and socio-demographic factors (i.e., gender, social origin (academic vs. non-academic)).

Figure 3.10.2: Graduates with further higher education after graduation, EUROGRADUATE averages

Definition: Percentages of graduates that started an additional higher education programme after the graduation from their reference study programme[18] (a3.5.1)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, academic background (x-axis); degree level



Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: IE included in type of institution, study field, gender; SI not included in type of institution

Type of institution. Bachelor graduates from universities (56%$_{16/17}$; 50%$_{20/21}$) continued more often with another study programme than those from non-universities (40%$_{16/17}$; 36%$_{20/21}$). Accordingly, bachelor level degrees from non-universities seem to be more often used as direct qualification for the labour market than university degrees. On the master level, again, slightly more university (25%$_{16/17}$; 17%$_{20/21}$) than non-university graduates (22%$_{16/17}$; 12%$_{20/21}$) continue with their studies.

Study field. Bachelor graduates from the field of Natural Sciences & Mathematics report most often to have continued with an additional study programme (76%$_{16/17}$; 69%$_{20/21}$). Hence, further pursuing academic training and obtaining a master level degree seems to be specifically relevant in this field. Besides, around half of the bachelor graduates in the fields of Arts & Humanities (59%$_{16/17}$; 52%$_{20/21}$), Social Sciences & Journalism (61%$_{16/17}$; 55%$_{20/21}$), and ICT &

[18] Includes all that started a programme, meaning students did not necessarily graduate from the programme (yet).

Engineering (54%$_{16/17}$; 50%$_{20/21}$) registered in further formal higher education. In these fields, tendencies to enter the labour market or continue with higher education are almost balanced among the graduates. The share of those who continue with further formal higher education is smallest among Health graduates (35%$_{16/17}$; 30%$_{20/21}$). Many jobs in the health sector might only require a bachelor level qualification (with medicine posing an exception in this regard).

On the master level, graduates in the field of Natural Sciences & Mathematics most often continue in further formal higher education (42%$_{16/17}$; 33%$_{20/21}$). The shares of graduates that engage in another study programme after graduating from a master's degree is similarly distributed among all other study programmes (±20%$_{16/17}$; ±15%$_{20/21}$). Thus, unless studying Natural Sciences & Mathematics, the study field does not seem to influence graduates' decisions to continue with higher education.

Socio-demographics. There are no remarkable differences between male and female graduates in choosing to continue with additional studies, both on the bachelor's and master's degree level. Bachelor graduates with an academic background (61%$_{16/17}$; 53%$_{20/21}$) engaged in additional studies more often than those without an academic background (49%$_{16/17}$; 43%$_{20/21}$). On the master level degree, 26%$_{16/17}$ and 18%$_{20/21}$ of the graduates with an academic background decide to engage in further formal higher education. In contrast, only 21%$_{16/17}$ and 14%$_{20/21}$ of the graduates without an academic background continue their academic training. This might be due to differences in financial security and social support for higher education that is linked to the social origin of the graduates.

Figure 3.10.3 displays the proportions of graduates who report on further non-formal education within 12 months after their graduation. This can include, for instance, courses, workshops, seminars, on-the-job training, or private lessons (that were not part of any kind of higher education). Figure 3.10.3 focuses on differences between the countries participating in EUROGRADUATE 2022. On average, 64%$_{16/17}$ of the graduates from the academic year 2016/17, and 60%$_{20/21}$ from the academic year 2020/21 did engage in some kind of learning activity within 12 months after graduation. The proportion of master students who engaged in further education (67%$_{16/17}$; 66%$_{20/21}$) is higher than those of bachelor students (62%$_{16/17}$; 56%$_{20/21}$).

Country. On a country level, Austria (67%$_{16/17}$; 55%$_{20/21}$), the Czech Republic (66%$_{16/17}$; 65%$_{20/21}$), Greece (63%$_{16/17}$; 65%$_{20/21}$), Croatia (68%$_{16/17}$; 59%$_{20/21}$), Latvia (72%$_{16/17}$; 68%$_{20/21}$), Portugal (69%$_{16/17}$; 66%$_{20/21}$), Slovenia (68%$_{16/17}$; 62%$_{20/21}$) and Slovakia (68%$_{16/17}$; 67%$_{20/21}$) report the highest amounts of graduates that engaged in further education within 12 months after graduation.

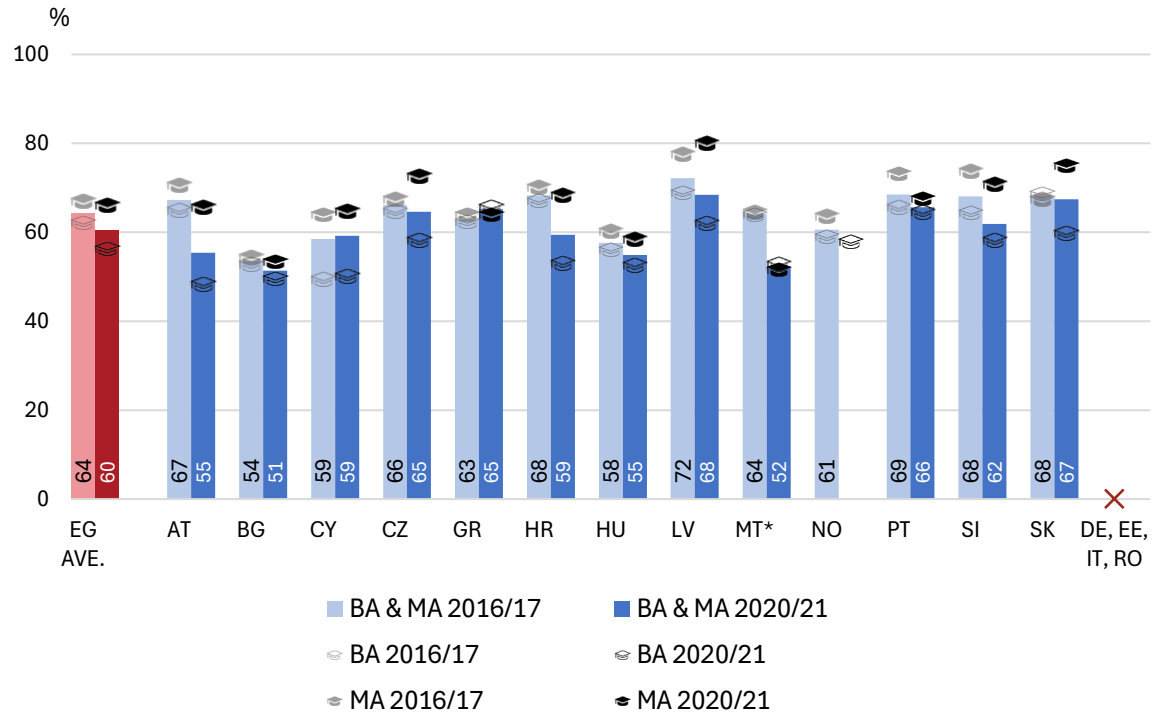
Degree and cohort. In general, master level students engage more often in further learning activities than bachelor level students. While master level graduates seek to gain additional skills to a larger share outside of higher education, bachelor level graduates rather continue with higher education for improving their skills.

Figure 3.10.3: Graduates with further education after the reference degree, international comparison

Definition: Percentages of graduates that engaged in any kind of further education and learning experiences within 12 months after graduation, that are no part of higher education (e.g., life-long-learning; courses, workshops, seminars, on-the-job training, private lessons; a3.6b)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; DE, EE, IT, RO: no data.

4. Labour Market Participation

4.1. Main findings

Labour market participation

For bachelor level graduates of 2020/21, further education is linked to labour market (non-)participation. When graduates are not pursuing further studies, **personal characteristics** like age, gender, and having children **have stronger links towards** being out of labour force **than study programme specifics**, but study fields also make some differences. **Women are more prone to non-participation than men**, even when assuming equivalent education, demographic background, and parenthood status (i.e. having children or not).

Work experience since graduation

5 years after graduation,
83% - 98% had been employed at some point

since graduation, depending on country and degree. These group differences are larger

1 year after graduation, *where*
65% - 98% had been employed at some point

Unemployment risk – explanatory factors

higher risk linked to (difference %-points):

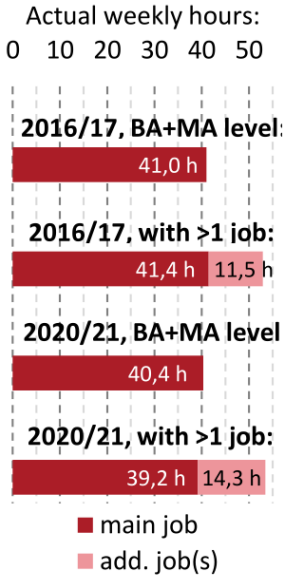
- Job loss due to COVID-19 pandemic (**+2 %pt.**)
- Recent (2020/21) graduation (**+1 %pt.**)
- Arts & Humanities or Nat. Scien. & Maths degree (**+1 %pt.**)
- Gender (women **+0,5**)

lower risk linked to (difference %-points):

- Business & Law or ICT & Engineering degree (**-1 %pt.**)
- Problem-/project-based learning environment (**-1 %pt.**)
- Being in committed partnership (**-1 %pt.**)
- Having child(ren) (**-1 %pt.**)

Working hours

Full-time contracts are the norm for graduates who are not enrolled in further studies, whereas part time only plays a bigger role in few countries. Working in **additional jobs** brings graduates to 50 weekly hours and beyond:



Entrepreneurship

Founding an own business is more likely among:

- Arts & Humanities graduates
- Graduates of higher age (**+2 to +6%pt.**) and cohort 2016/17 (**+1%pt.**)
- male graduates (**+3%pt.**)

Occupations (ISCO)

10% of bachelor level and **11%** of master level graduates work in ***management positions;***

professional positions are held by **47%** of bachelor level and **63%** of master level graduates.

- Five years after graduation, a large majority of graduates had been employed at some point, regardless of survey country and degree level (>80% in all groups). One year after graduation however, both the national context and the study programme characteristics make a difference (proportion ranging between 58% and 98% depending on country and degree).
- Labour market (non-)participation is linked to whether graduates pursue further degrees, especially one year after graduation. For graduates who do not pursue further studies, demographic characteristics age, gender, and having children are strongly related to non-participation and explain many differences that are seemingly caused by characteristics of the higher education degree. A key finding is that there is a gender gap in labour market participation, even when controlling for parenthood, higher education details, and other individual characteristics.
- Unemployment rates of graduates are, in nearly all survey countries, lower than in the general population. Among higher education graduates, explanatory factors for unemployment entail job loss due to COVID, learning environments, study field, experiences abroad during studies, gender, having children, and being in a partnership.
- A large majority of graduates in employment is employed full-time, as part-time employment only plays a noticeable role in a few survey countries. Actual hours exceed 40 hours for graduates in most countries, even when including those who are formally part-time employed.
- Graduates with more than one job work remarkably more than 40 hours per week on average in nearly every survey country.
- While most employed graduates in both cohorts have an unlimited term contract, fixed-term contracts are most common in Cyprus, the Czech Republic, Germany, Croatia, Italy and Portugal.
- Graduates across the board are most often employed in occupations classified (ISCO) as professionals, technicians and associate professionals, or managers. Education & Teacher Training, Natural Sciences & Maths, and Health master level graduates concentrate heavily in the *professionals* category. Other fields and bachelor level graduates in general are more dispersed towards support and service worker categories.
- Self-employed graduates work significantly more weekly hours but are still slightly more satisfied with their possibilities to reconcile work and private live. Arts & Humanities graduates are remarkably more often self-employed (every fourth to fifth graduate, depending on degree level) than those of other fields.
- As such, graduating from an Arts & Humanities study programme has a positive relation to starting one's own business, as has a problem- and project-based learning environment, an internship abroad, and work experiences during the study programme. 2020/21 graduates, graduates of Natural Sciences & Mathematics and Health, younger graduates, and female graduates are less likely to start an own business.

4.2. Introduction: Overview and key issues

The labour market prospects of higher education graduates are a crucial outcome, carrying implications from the individual up to the wholistic societal level: for graduates, the utilization of their studies on the labour market is pathbreaking for their further employment and educational biography and their living situation. For higher education institutions, employers and decision makers on mid-range level, labour market participation and employability of graduates is a key dimension for evaluation and planning of institutional measures. On the level of societies, systems and inter- and intranational cooperation, the availability of

occupations and skills is highly relevant for common goals, policy, and future perspectives. The European Council highlights the improvement of employment and employability as one of the main objectives in its strategic framework for the European higher education Area (European Council, 2021).

As Table 4.2.1 shows, having gained higher education generally comes with an above-average employment rate compared to other educational attainments. This is consistent with other international comparisons of employment and labour market participation outcomes by educational level (e.g. OECD, 2023). Looking at the data of the EUROGRADUATE 2022 survey (which covers comparatively young graduates, as respondents were selected no longer than 5 years after graduation) **81% of the EUROGRADUATE target group participated in the labour market** at the time of the survey (average of all survey countries). This proportion is higher for master level graduates (90% vs. 74% for bachelor level graduates), as the most common reason for graduates being out of labour force is ongoing enrolment in further studies. This applies more frequently to bachelor level graduates shortly after graduation. This gap linked to the degree level therefore also narrows over time, as in the 2016/17 graduation cohort, differences between bachelor and master level graduates' employment rate are much smaller.

Table 4.2.1: Overall and higher education graduates' (un)employment rates in survey countries

Definition: Proportions of persons in unemployment among the labour force (excluding persons out of labour force); Employment rate: Proportion of persons in paid employment among the total population (including persons out of labour force).

	EG countries	Austria	Bulgaria	Cyprus	Czechia	Germany	Estonia	Greece	Croatia	Hungary	Ireland	Italy*	Latvia	Malta*	Norway*	Portugal	Romania	Slovenia	Slovakia
Unemployment rate among	**EG**	**AT**	**BG**	**CY**	**CZ**	**DE**	**EE**	**GR**	**HR**	**HU**	**IE**	***IT***	**LV**	***MT***	***NO***	**PT**	**RO**	**SI**	**SK**
Youth 15 - 29 (LFS)	**10,5**	8,2	8	12	5,2	5	12	22	13	8,1	8,6	17	9,5	6,1	8,1	14	13	7,5	12
General population 25-74 (LFS)	**4,6**	4,4	4,0	5,1	2,2	2,8	5,5	10	5,1	3,5	3,4	6,7	6,1	2,5	2,3	5,5	4,6	3,2	5,1
General population 25–54 (LFS)	**4,8**	4,6	4,2	5,4	2,3	3	5,6	11	5,4	3,6	3,6	3,5	7,5	6,4	2,6	2,7	5,6	4,7	5,5
Tertiary educated 25 - 74 (LFS)	**2,9**	3,1	1,8	5	1,2	2,1	3,5	7,6	3,4	1,5	2,6	3,5	3,2	2,1	2	3,8	1,2	2,1	1,9
EG 2022 sample BA+MA level (EG)	**3,7**	1,1	4,4	4,8	1,2	1,4	2	8,6	5,7	3,2	1,3	7,1	2,8	1,3	2,4	6,5	7,1	2,1	2,9
Employment rate among																			
Youth 15 - 29 (LFS)	**49,5**	64	37	56	44	63	53	35	43	47	59	35	46	69	68	46	35	49	43
General population 25-54 (LFS)	**83,8**	85	83	85	88	85	86	76	82	88	84	74	82	89	84	86	78	89	85
Tertiary educated 25 - 54 (LFS)	**90,5**	90	93	89	88	90	91	84	91	95	90	84	89	93	90	92	94	94	92

Sources: EUROGRADUATE Survey 2022, dataset version 3.2.0 (EG sample unemployment); IE: Central Statistics Office of Ireland; EUROSTAT, European Labour Force Survey (une_rt_a) Youth, General Population, and Tertiary educated unemployment rates, average for 2023.
Notes: IE included; IT: Questionnaire deviation; only single-choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 2020/21, MA level, no data

The table further shows that **unemployment of tertiary educated persons is lower than in the overall population** in most survey countries, sometimes very clearly. However, the EUROGRADUATE sample shows a higher unemployment rate than the European Labour Force survey does for tertiary educated over 25, but a lower one than for the general population aged 25 to 54. This is plausible, as the EUROGRADUATE sample's age structure is more comparable to 25- to 54-year-olds by design. However, it is not the case for all countries shown: we can observe countries both with an EG unemployment rate below as well as above the one of ***both*** those reference groups. This indicates that the dynamics of labour market entry for rather recent graduates differ between countries. Most countries with a rather high unemployment rate in the EUROGRADUATE sample also rank high regarding youth

unemployment. Hence, it could be assumed that high youth unemployment on a national labour market does not spare the tertiary educated. Section 4.5 will assess explanatory factors for higher education graduate unemployment.

The general employment rate and labour market participation however only provide a broad impression of graduates' labour market situation. Therefore, this chapter will also observe some key indicators describing it more thoroughly, including work time, job security, occupations and self-employment. Section 4.6 will elaborate on full- and part time employment and working hours. It will show that full-time employment is the norm for most graduates, while part-time employment is more common mostly for 2020/21 (bachelor level) graduates and in a few countries. Yet, the **actual weekly working hours** are quite similar across survey countries with the exception of graduates in multiple jobs, which often causes considerably more working hours in total. International differences in the frequency of **limited-term contracts**, as an indicator for employment security, are discussed in Section 4.7. Those are more frequent in the Southern European survey countries and Germany.

Section 4.8 provides a broad overview of **occupation classes**, where master level graduates more often hold jobs classified as professional or management jobs. Graduates of certain study fields are concentrated in professional, associate professional, and management occupations, while others are more dispersed between classes. With rising age, a shift from professional towards management positions is observable. Age and field of study is also linked in differences regarding the rate of graduates in **Self-employment**, which are described in section 4.9. An analysis of explanatory factors for **entrepreneurship** (running an own business) is presented in section 4.10, finding that the field differences are robust to controlling for other possible predictors. It also identified other characteristics of the higher education experience and the graduates, such as gender, parents' education, and, once more, partnership and parenthood, as related to the likelihood of starting one's own business.

4.3. Transition to labour market

In younger graduates, who are predominantly represented in the EUROGRADUATE 2022 survey, life situations are not as settled, and status changes are still more common compared to older graduates. It is therefore worthwhile to observe the proportion of those who (n)ever had a job after graduating. While taking up further studies (e.g. master level or doctorate) or first-time parenthood are common reasons for graduates not taking up a job shortly after graduation, a difficult labour market situation can also be the reason why graduates have not taken up a job since graduation.

Across all analysed countries, it can be observed that a clear majority of graduates had an employment at some point since their graduation (see Figure 4.3.1). While master level graduates' shares (92%$_{16/17}$, 93%$_{20/21}$) differ little between cohorts, 2020/21 bachelor level graduates have less frequently (81%) been in employment since graduation. Almost half of bachelor level graduates across all countries have gone on to further study (46%$_{20/21}$). In comparison, only 16%$_{20/21}$ of master level graduates in this cohort are still studying, and if they are, they are more often in employment. In the 2016/17 cohort, an almost equal proportion of 90%$_{16/17}$ of all bachelor level graduates and 92%$_{16/17}$ of all master level graduates had paid employment since graduation. While in some countries, a generally higher unemployment rate might contribute to this, it must be noted that for Italy, another questionnaire was used that did not allow to simultaneously report employment and work and thus likely causes and underestimation of the share of graduates who were employed at some point.

The lowest proportions of 2016/17 graduates ever employed are observable for Romania, the Czech Republic (both 85%$_{16/17}$), and Germany (86%). In Germany, the proportion of graduates still studying in the 2016/17 cohort is above average, but this cannot be observed for the Czech Republic and Romania. For 2020/21 graduates, never having had paid employment since graduation is most common in Italy (42%), Greece (24%), and Germany (24%).

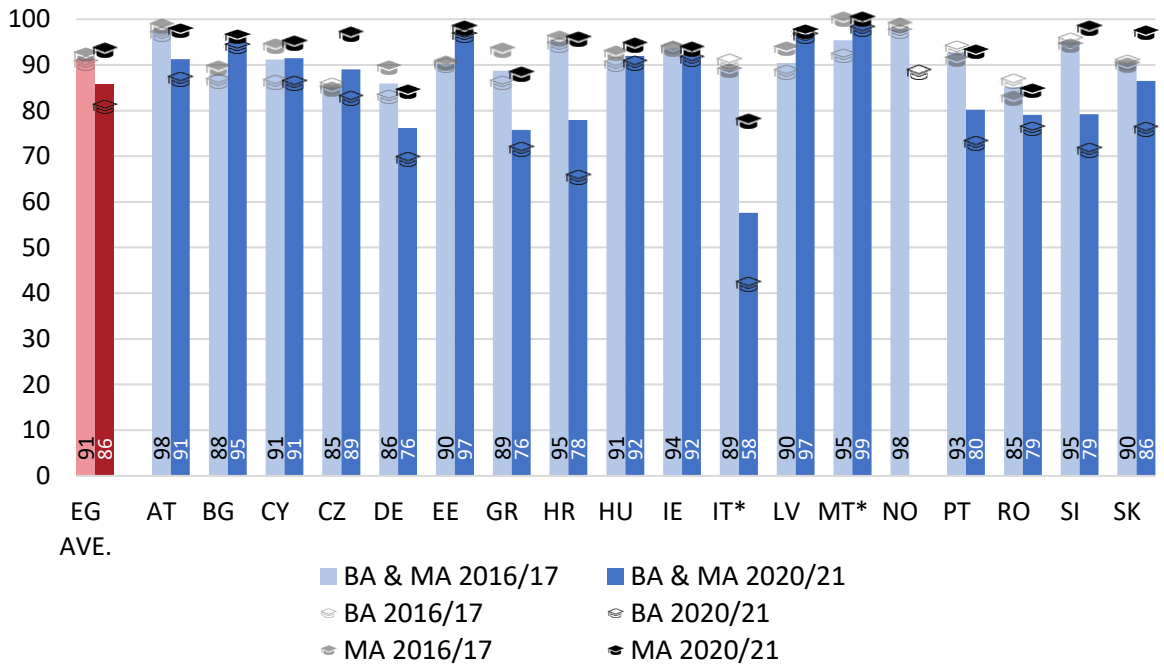
In international comparison, it can be observed that the prevalence of labour market experience does vary considerably by survey country. This is especially visible in 2020/21 bachelor level graduates for whom) the countries differ by as much as 30 percentage points, from 65%$_{20/21}$ in Croatia to 96%$_{20/21}$ in Latvia (omitting Italy and Malta which are not fully comparable For the 2020/21 master level graduates and the 2016/17 graduates in general, this range is smaller but still not marginal, ranging roughly between 83% and 99% in each group Generally, graduates of the 2016/17 cohort report more labour market experience, but it is also noteworthy that in a small number of countries the 2020/21 cohort has more labour market experience than the 2016/17 cohort.

Figure 4.3.1: Graduates in paid employment at any point since graduation, international comparison

Definition: Shares of graduates in paid employment at any point since graduation; if any (self-) employment was reported since graduation, regardless of current occupational status (questions a3.7.1, a3.7.2, b1.0, b7.1)

All graduates by:

Country (X-Axis), cohort (twin bars), degree level per cohort (icons)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: IE included; IT: Questionnaire deviation; only single-choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 20/21, MA level: no data.

Work experience during studying can translate into employment (earlier) after graduation. On the one hand, graduates can continue their job beyond graduation and utilize the received degree for progression within their job. On the other hand, work experience can also be beneficial when applying for new jobs. As seen in Chapter 3, 85%$_{2016/17}$ and 84%$_{20/21}$ of bachelor and master level graduates of the 2020/21 cohort state that they have gained work experience during their studies.

As Figure 4.3.2 shows, graduates in the 2016/17 cohort are more likely to have had paid employment than those in the 2020/21 cohort. In the latter, the differences between the study fields are very noticeable, not only for the bachelor level graduates. Longer after graduation, study field differences are much smaller, as the shares of those who had some employment after graduation is between 84% and 98%. This points towards a slower transition in some study fields, while others – particularly Education & Teachers Training, Business & Law, and Health, show high rates of labour market experiences even shortly after graduation. This may

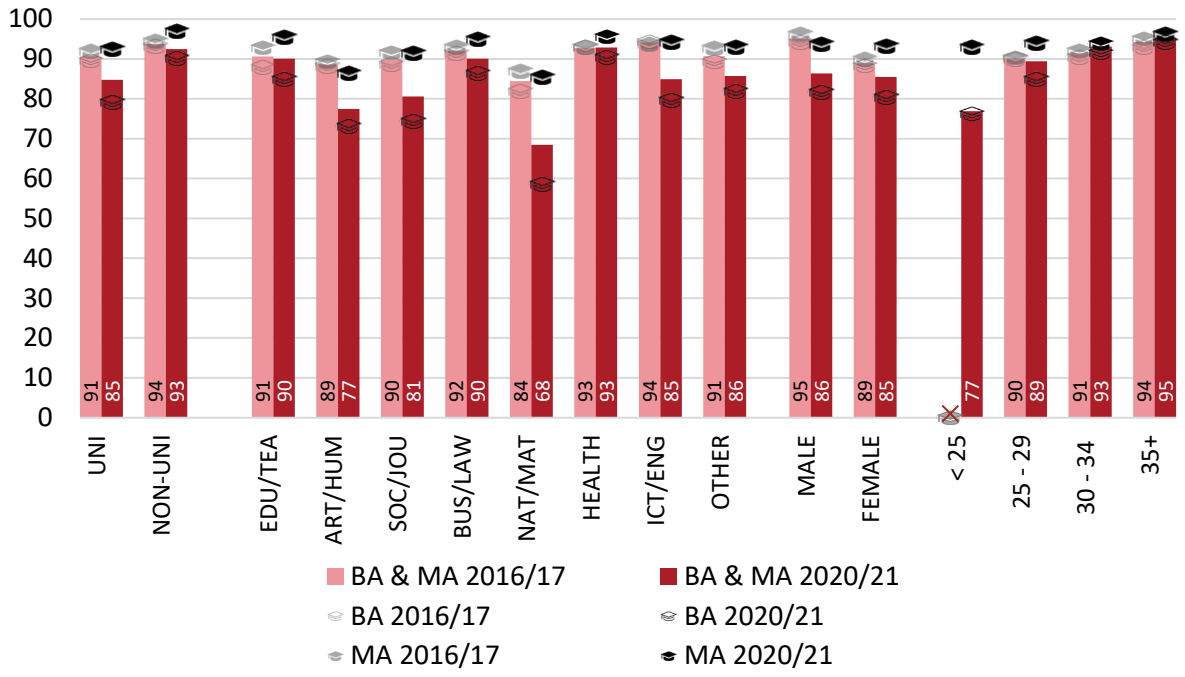
be related to the direct linkage of these fields to distinct occupations (Teachers Training to teachers, Health to doctors and nursing personnel, Law to lawyers and legal officials).

Figure 4.3.2: Graduates with paid employment at any point since graduation, EUROGRADUATE averages

Definition: Shares of graduates that ever have been employed; if any (self-)employment was reported since graduation regardless of current occupational status (questions a3.7.1, a3.7.2, b1.0, b7.1)

All graduates by:

Cohort (twin bars), degree level per cohort (icons), type of institution, study field, gender, age (X-Axis).



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: Age group <25 (16/17) too few cases (<30); IE included; IT: not included in age groups; NO: cohort 20/21, MA level, no data; SI: not included in type of institution.

Graduates in the **study fields** of Arts & Humanities (77%$_{20/21}$), Social Sciences & Journalism (81%$_{20/21}$), and Natural Sciences & Mathematics (68%$_{20/21}$) have been in paid employment less often since graduation in the younger cohort than the average. In comparison, graduates in the fields of Health (93%$_{20/21}$) and Education & Teacher Training (90%$_{20/21}$) are most often in employment after graduation across countries. Among graduates of the older cohort 2016/17, the figures are more similar between fields, but the same fields as in the 2020/21 cohort are found at bottom end. 2016/17 Graduates in the field of ICT & Engineering (94%$_{2016/17}$) are most often in employment after graduation. We can generally observe that among most groups regarding type of institution, fields of study, gender and age, the gap between bachelor and master lever graduates is much narrower in 2016/17 graduates than in the 2020/21 cohort. In the older age groups, labour market experience is comparatively very common regardless of the graduation year and level.

4.4. Labour market participation and employment status

A crucial outcome of higher education, both from an individual and a policy perspective, is the employment status of higher education graduates. On the one hand, it is a straightforward indicator for the return to (especially public) funding that goes into the higher education, showing how beneficial these investments are with regards to labour markets and economic development. On the other hand, gaining employment is highly relevant to graduates themselves, who made a considerable time investment in attaining higher education. In the

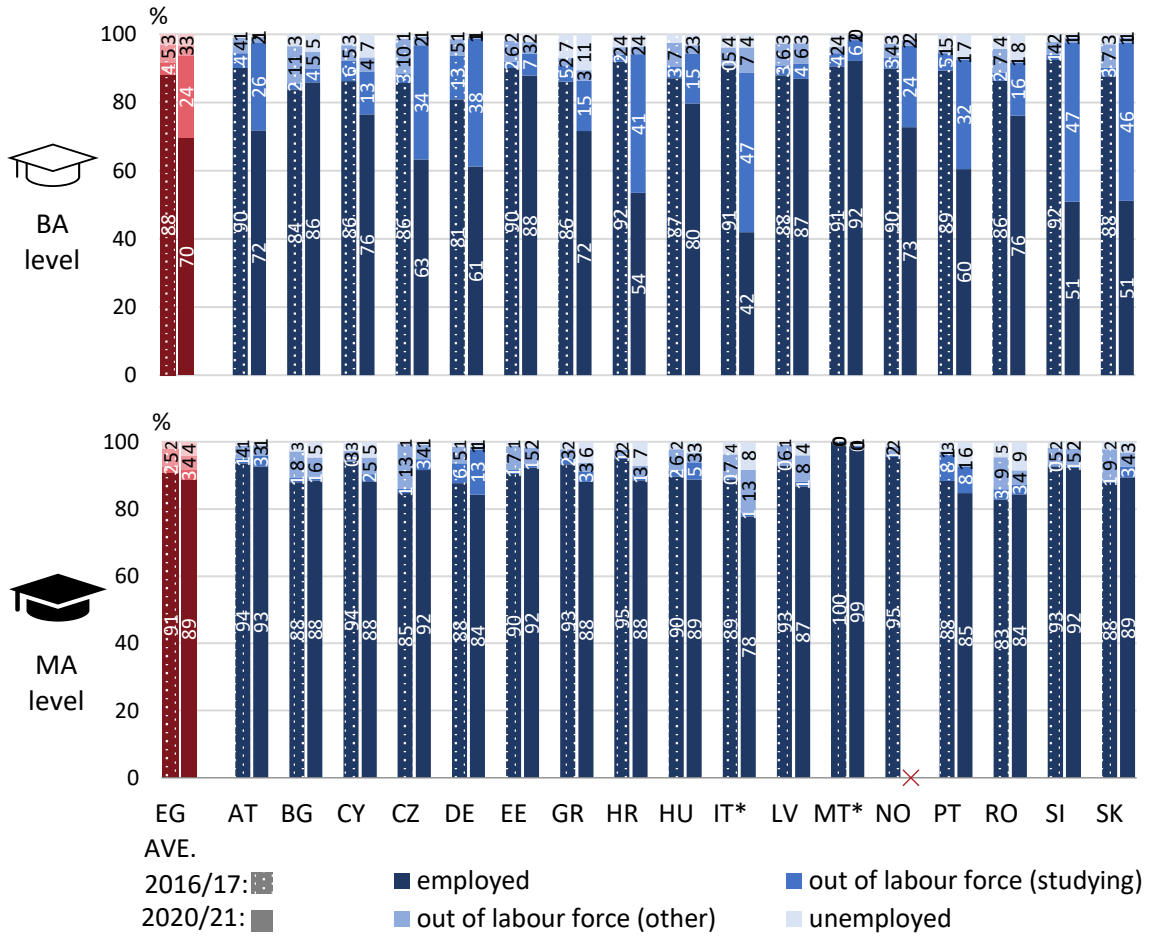
context of the three-cycle-system in the European Higher Education Area, the parting ways between further education, entering the labour market, and other possible occupations must be taken into account.

Figure 4.4.1: Employment status of graduates, international comparison

Definition: Proportions of graduates considered employed if any (self-)employment was reported (a3.7.1, a3.7.2, b1.0); out of labour force (studying) if no employment and studying (a3.7.3); out of labour force (other) if no employment, not studying (a3.7.3), and in another occupation (parental leave, civic/military service, unpaid work, other; a3.7.5, a3.7.6, a3.7.7, a3.7.9); unemployed if unemployment (a3.7.4) and no other occupation was reported.

All graduates by:

Country (X-Axis), cohort (twin bars), degree level (top/bottom chart area)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.

Notes: IT: Questionnaire deviation; only single choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 20/21, MA level, no data.

Therefore, this section will not only consider employment and unemployment, but also take the status "out of labour force" into account. This status entails persons not employed, but also not (fully) available to the labour market due to other obligations. In this regard, follow-up study programmes are an important aspect, amidst not the only one. Graduates who are out of labour force specifically due to further studies are hence handled as a separate category. Figure 4.4.1 shows, firstly, a **general difference between bachelor level and master level graduates**. While the share of employed master level graduates is for no cohort and country below 78% (EG-Average: 91%$_{16/17}$/89%$_{20/21}$), there are large differences among bachelor level graduates in the 2020/21 cohort: **For six countries** (Bulgaria, Cyprus, Estonia, Hungary, Latvia, Malta), **more than three out of four of the recent (2020/21) bachelor level graduates are employed** and these shares differ comparatively little from ones for the bachelor level graduate of 2016/17. This may imply labour markets with good opportunities for higher education

graduates even without a master level degree, or more beneficial conditions for starting work while pursuing a master level degree than elsewhere.

Other countries have a considerable gap between the share of employed bachelor level graduates one and five years after graduation**,** especially Croatia, Italy, Slovakia and Slovenia and, to a smaller extend, the Czech Republic, Germany, and Portugal. These may indicate national conditions which demote or hinder labour market entry directly after gaining a Bachelor degree. **Most graduates not in employment** one year after graduation **are out of labour force.** Yet, some countries show clearly above-average unemployment shares in the 2020/21 cohort, such as Bulgaria, Greece, Croatia, Portugal, and Romania. These exceptions do, however, match with the (un)employment differences in the overall population as seen in section 4.2.

Figure 4.4.2 shows the differences in employment status across all survey countries by reference programme and individual characteristics. As in the country comparison, bachelor level graduates, particularly those of 2020/21, are often out of labour force due to further studies and hence less often in employment. However, there are differences:

Shortly after graduation, **university bachelor level graduates** are much more often out of labour force ($28\%_{20/21}$) than those of non-university institutions ($15\%_{20/21}$). Likewise, they are less often employed than non-university bachelor level graduates, while the unemployment rate is similar.

Among 2020/21 bachelor level graduates, those from **Health fields reach the highest employment share** ($80\%_{20/21}$), while the lowest shares in this sub-group are found in Arts & humanities ($60\%_{20/21}$), Social Sciences & Journalism ($61\%_{20/21}$), and Natural Sciences & Maths (lowest with $42\%_{20/21}$). The field differences are similar, but much less severe, for 2016/17 bachelor level and both cohorts' master level graduates. In these groups, we find higher shares of employed graduates. Graduates of Education and Teachers Training, ICT & Engineering, and Business & Law have similarly high employment shares as Health graduates. In every cohort and degree level combination, Natural Sciences & Maths graduates have the highest share of graduates enrolled in further studies. This could be a pointer towards the importance of high formal degrees in these fields.

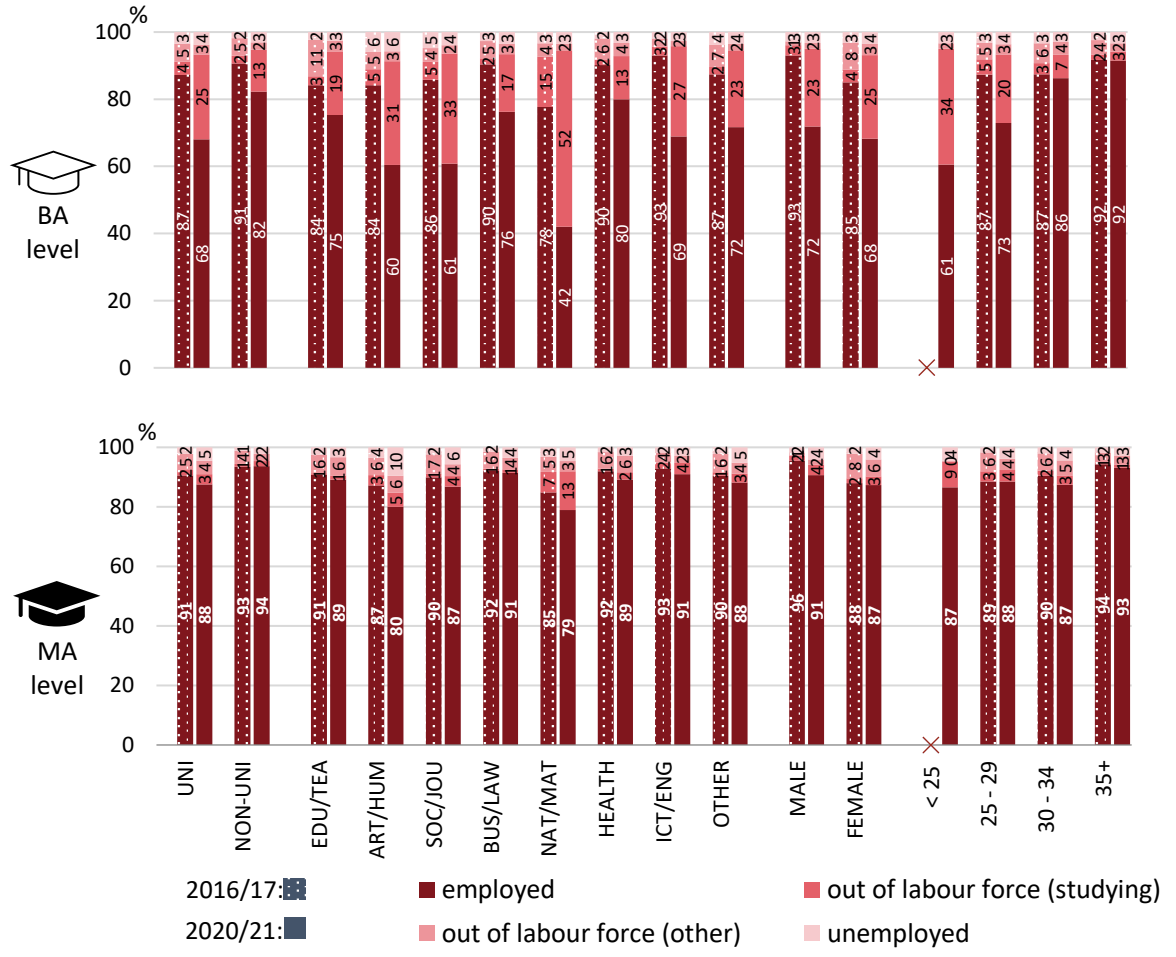
Men are slightly more often employed than women in both cohorts and degree levels. The employment gap between men and women is larger in the 2016/17 cohort for both BA and MA graduates. Only for 2020/21 bachelor level graduates, **age** shows considerable differences in employment and labour market participation. For 2016/17 BA and both cohort's MA graduates, the differences are much smaller and also not as linear.

Figure 4.4.2: Employment status of graduates, EUROGRADUATE averages

Definition: Shares of graduates considered employed if any (self-)employment was reported (a3.7.1, a3.7.2, b1.0); out of labour force (studying) if no employment and studying (a3.7.3); out of labour force (other) if no employment, not studying, and in another occupation (parental leave, civic/military service, unpaid work, other; a3.7.5, a3.7.6, a3.7.7, a3.7.9); unemployed if unemployment (a3.7.4) and no other occupation was reported.

All graduates by:

Cohort (twin bars), degree level (top/bottom chart area), type of institution, study field, gender, age (X-Axis)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.
Notes: Age group <25 (16/17) too few cases (<30); IT: not included in age groups; NO: cohort 20/21, MA level, no data; SI not included in type of institution.

One takeaway from the descriptive results is that the differences in labour market participation, i.e. the shares of the *out of labour force* status, are larger between many sub-groups and countries than the differences in unemployment. Hence, it is worthwhile to examine which factors may influence whether graduates are (not) participating in, or available to, the labour market. Figure 4.4.4 shows effects of such factors based on a logistic regression in three steps (see Section 2 for details on the standard regression models). Only graduates not enrolled in further studies (anymore) are included here, as the focus of the analysis is on identifying factors for non-participation in the labour market <u>besides</u> the very common continuation of studies.

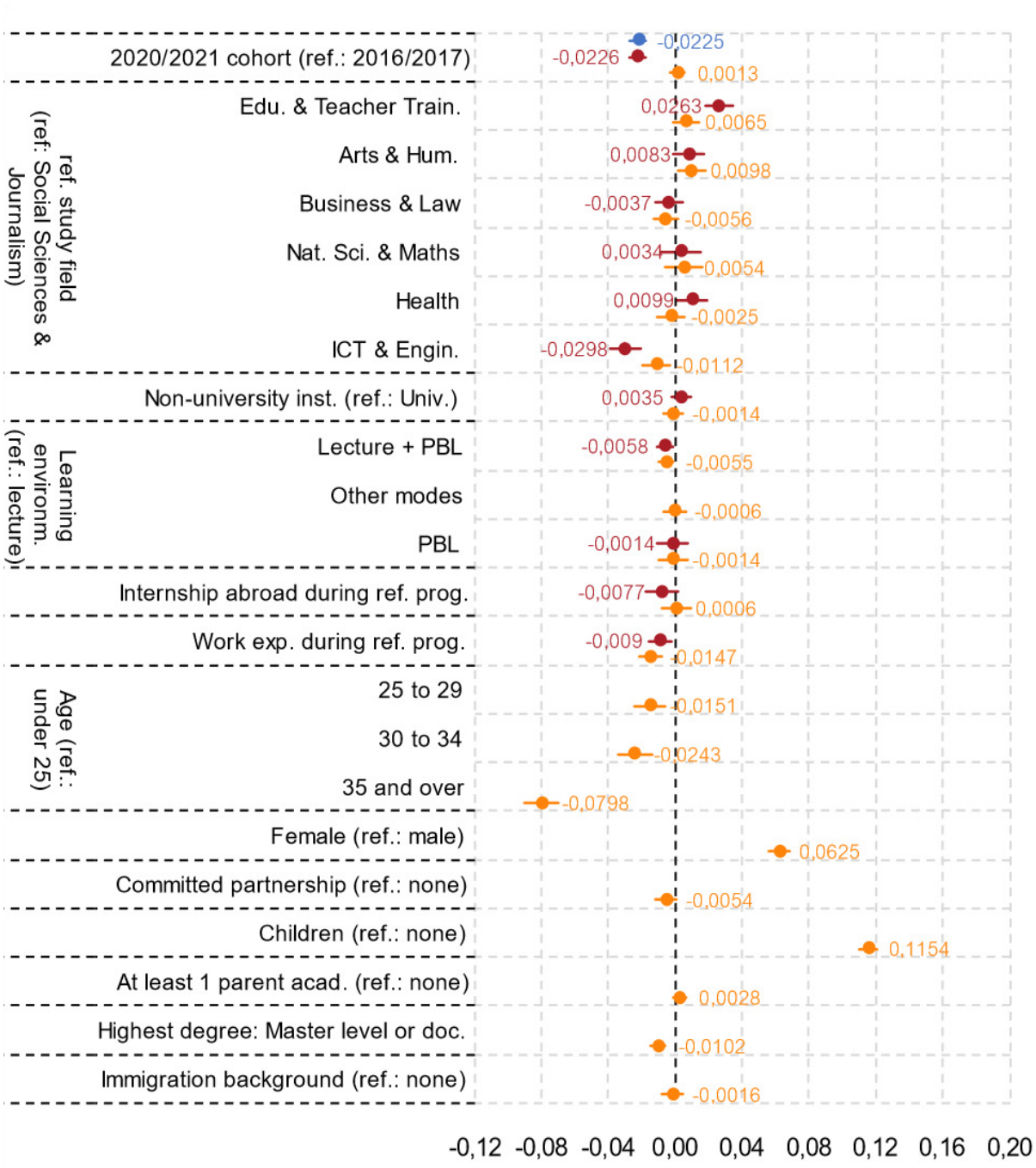
Info box 4.4.1:

From here onwards, the labour market statistics will <u>only include graduates who are currently not enrolled in further studies</u>. Graduates who are still studying are more likely to be employed in minor side jobs or to not seek employment at all. By not considering this group, we aim to focus the analyses on graduates who are available at the labour market and exclude student jobs from the analyses.

Figure 4.4.3: Explanatory factors for being out of labour force (average marginal effects)

Definition: No employment (a3.7.1, a3.7.2, b1.0) and another occupation (parental leave, civic/military service, unpaid work, other) reported (a3.7.3, a3.7.5, a3.7.6, a3.7.7, a3.7.9).

Graduates currently not enrolled



Source: EUROGRADUATE Survey 2022, dataset version 3.1.0.

Notes: Average marginal effects based on stepwise logistic regression models: Blue (country, cohort as independent variables) Nagelkerke R^2= 0,065; Red (country, cohort, reference programme characteristics): Nagelkerke R^2= 0,083; Yellow (country, cohort, reference programme and individual characteristics): Nagelkerke R^2= 0,319. N = 38.932. GR, IT, RO, SI: not included (independent variable(s) not surveyed); NO: cohort 2020/21, MA level, no data.

Comparing the models, it can be observed that before controlling for graduates' individual characteristics (blue/red model), the 2020/21 **cohort** is significantly less likely to be out of labour force. This link vanishes when controlling for gender, age, parenthood, and highest education degree (yellow model). This change implies that the higher labour market

participation of more recent graduates (who did not pursue further degrees) must actually be ascribed to their personal background[19].

When it comes to **study fields**, only ICT & Engineering appears to have a robust effect that indicates a lower likelihood of being out of labour force. Having gained working experience during the reference programme is also negatively related to being out of labour force, as is a learning environment combining lectures and project- and Problem based learning (PBL) rather than only focussing on lectures. The few effects linked to the study experience are relatively weak compared to the following individual background characteristics.

Stronger explanatory factors can be found on the individual level: age, gender and parenthood. Having (a) child(ren) is related to not participating in the labour force stronger than any other explanatory factor. This, on its own, is hardly surprising, as *parental leave* is categorised as being out of labour force. Additionally, taking care of family and home tasks is also more common among graduates with children (9% compared to 5% among graduates without children). An important finding however is that **women show a significantly higher likelihood to be out of labour force** than men in the third model. This shows a **clear gender gap in labour market participation**, when educational level, field, work experience and childcare situation are controlled for, i.e. assumed to be equivalent. **Age** is also a significant explanatory factor: the older the age group, the less likely it is for graduates to be out of labour force. This hints towards a biographical embeddedness of the labour market entry: When getting older, graduates eventually settle for employment or job search, while younger graduates are more likely to take other paths at least temporarily – and the details of higher education don't seem to change much about that. A lower degree level is linked (to a small extent) to being out of labour force. This might be rooted in graduates who require or desire a master degree before seeking employment but are for the moment not studying on.

4.5. *Specific policy issue:* Unemployment risk – pandemic aftermath does not spare the higher educated

The COVID-19 pandemic has had a considerable impact on labour markets and employment across Europe. However, individual (un)employment must be understood as an issue that is interrelated with numerous individual and contextual factors. These include attained education and working/practical experience as well as sociodemographic characteristics on the personal side, but also national and international higher education and labour market conditions and conventions on the contextual side. Therefore, an analytical approach to assess the risk of unemployment was chosen to capture the interrelation of the perceived impact of the COVID-19 pandemic on graduate's employment and other individual and contextual factors.

Figure 4.5.1 displays the effects of these factors on the risk of unemployment from three models. The first model (blue) considered the relation between job loss due to COVID-19 (having lost a job during the pandemic **and** attributing this job loss at least partly *to* the pandemic), cohort and country with unemployment. It is noteworthy that even larger effects were visible between survey countries; however, the survey country was used only as a control variable, since it incorporates many different contextual conditions, and interpretation would hence be vague. The second model (red) then includes explanatory variables regarding the study experience. Finally, the third model (yellow) further includes individual background variables.

Job loss due to the pandemic has the most pronounced effect on unemployment during the survey among all variables observed. The affected graduates have an average unemployment

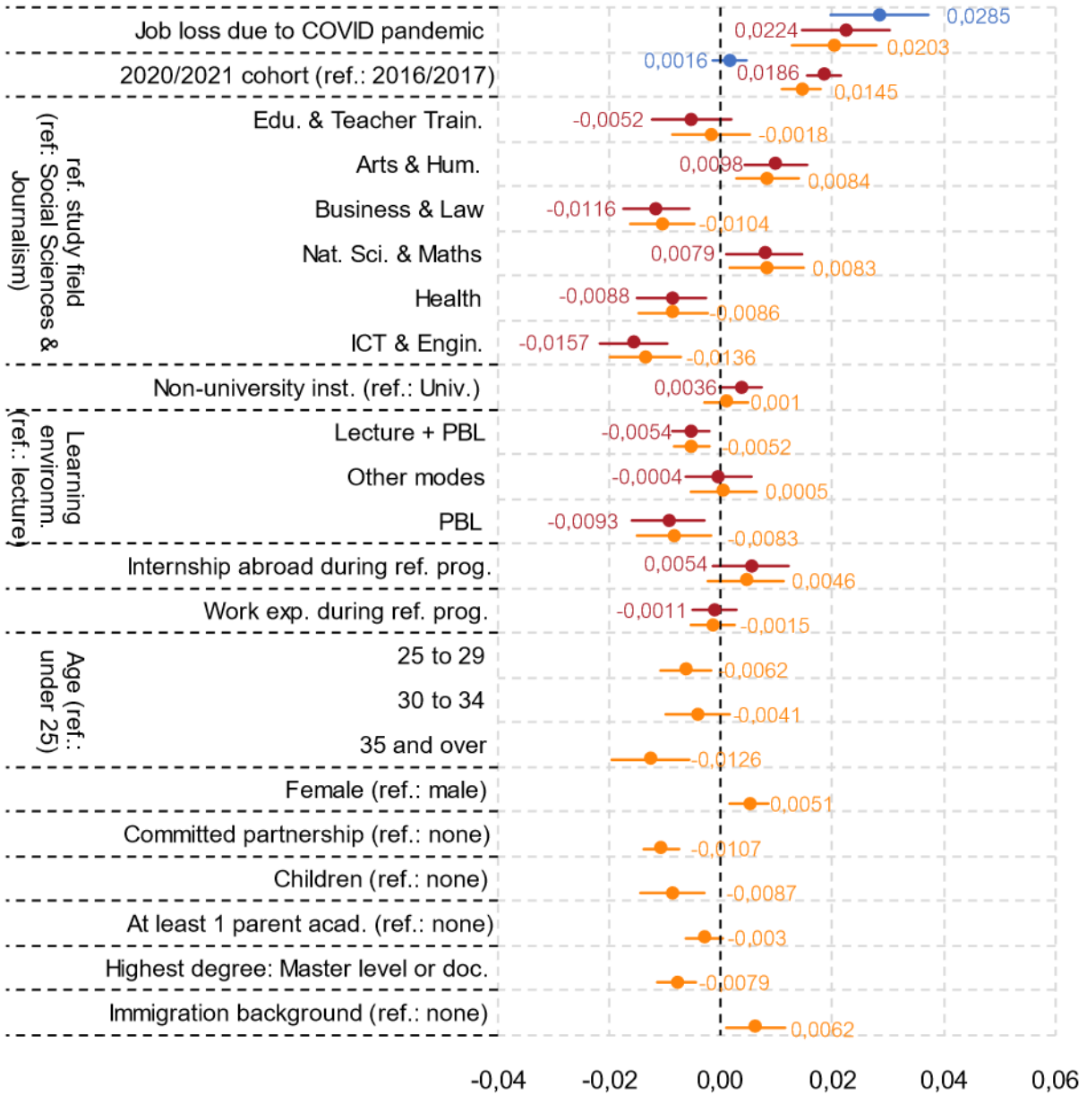
[19] For instance, in the first year after graduation, more graduates might currently have started a job before settling for a family, while those who already graduated in 2016/17 are more often past this stage and started a family, hence being temporarily out of labour force due to childcare. Before controlling for parenthood, the different share of parents is obscured in the cohort, therefore cohort has no effect anymore when including parenthood as an own explaining variable.

rate of 3,7% (only considering labour force) during the survey, compared to 1,5% among graduates who did not report job loss due to the pandemic.

Figure 4.5.1: Explanatory factors for being unemployed (average marginal effects)

Definition: Unemployment (a3.7.4, b1.0) and no other occupation (a3.7.3, a3.7.5, a3.7.6, a3.7.7, a3.7.9) was reported.

Graduates who are part of the labour force and currently not enrolled



Source: EUROGRADUATE Survey 2022, dataset version 3.1.0.

Notes: Average marginal effects based on stepwise logistic regression models: Blue (Job loss due to Covid, country, cohort as independent variables) Nagelkerke R^2= 0,0781; Red (adding reference programme characteristics as ind. var.): Nagelkerke R^2= 0,097; Yellow (country, cohort, reference programme and individual characteristics): Nagelkerke R^2= 0,116. N = 39.665. GR, IT, RO, SI: not included (independent variable(s) not surveyed); NO: cohort 2020/21, MA level, no data.

When it comes to details of the reference programme, recent (cohort 2020/21) graduates are a little more likely to be unemployed. With the exception of Educations & Teachers Training, all **fields of study** differ from the reference category (Social Sciences & Journalism). The unemployment risk is significantly higher for graduates of Arts & Humanities and Natural Sciences & Maths, and lower for Business & Law, Health, and ICT & Engineering graduates.

Having had a **project- and problem-based learning environment** in the reference programme makes unemployment slightly less likely compared to lecture-focussed learning. Neither having worked during the reference programme nor having had an **internship abroad** has significant effects on graduates' unemployment risk.

With regards to **graduates' personal background**, an **academic family background** (parents' education) is not related to the risk of unemployment in a significant way. Higher age is associated with a lower unemployment risk. For **gender**, despite controlling for **having children and being in a partnership** (which both come with a lower unemployment risk) and educational background, women still have higher risk of unemployment than men. Holding a **highest degree** above the bachelor level/ISCED-6 comes with a lower risk of unemployment. **Immigration background** (with regards to the survey country) is related to a higher unemployment risk.

4.6. Work time: Full-time is the norm, additional jobs come with extended hours

This chapter analyses the working conditions of graduates in terms of agreed working hours (i.e. full-time or part-time contract) and actual working hours. In addition, the average working hours per week of those graduates who have more than one job are considered.

Part-time employment occurs more often among bachelor level graduates, especially in the younger cohort. However, it concerns a clear minority: 10% of the employed 2020/21 bachelor level graduates are in part-time employment in the EG average. In the 2016/17 cohort, with 7% it is the same as for master level graduates of the same year. Generally, part-time employment is the exception among master level graduates. Only in Austria, Germany, and the 2020/21 cohort in Estonia, 10% or more of them are in part-time employment.

More pronounced differences are found when differentiating graduates by field of study, gender and parenthood (Figure 4.6.1). Regarding **study fields,** part-time employment is most frequent among graduates of Education & Teachers Training and Arts & Humanities. Especially in Business & Law (with the exception of 2020/21 bachelor level graduates) and ICT & Engineering, part-time contracts are rare (<5 %).

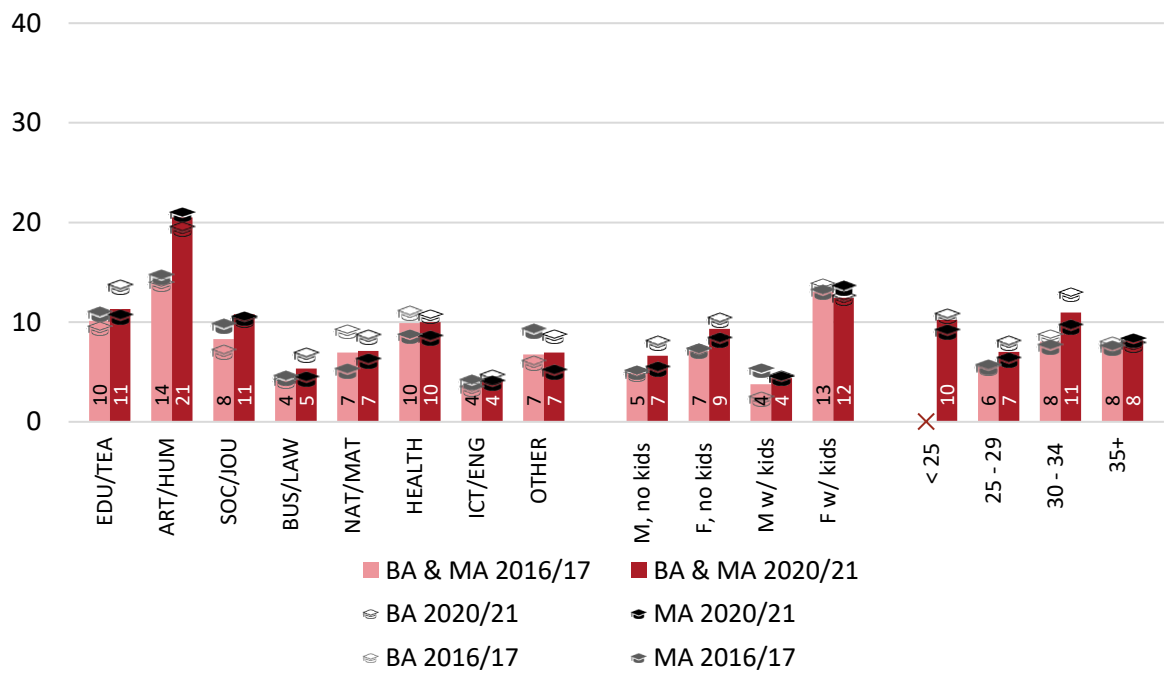
When it comes to **gender** and **parenthood**, two patterns can be observed when looking at the combination of these variables: For graduates without children, gender differences are comparatively small. Taking children into account, graduated fathers are most often in full-time employment compared to all other groups, while graduated mothers are roughly three times as often in part-time jobs. These differences support existing findings that even families with higher educated mothers often opt for a "modernized male breadwinner" arrangement with full-time working fathers and part-time working mothers (Berghammer 2014). Lastly, **age** appears to not have a uniform link to part-time employment, as the share of part-time employed graduates shows contrary variations between adjacent age groups.

Figure 4.6.1: Part-time employment among working graduates, EUROGRADUATE averages

Definition: Shares of graduates that reported of part-time employment in main job (b2.7), as opposed to full-time employment

Graduates in employment and currently not enrolled by:

Cohort (twin bars), degree level (top/bottom chart area), field of study, gender x parenthood, age (X-Axis)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.
Notes: Age group <25 (16/17) too few cases (<30). GR, RO: not included in gender by parenthood.

In addition to the information on the agreed level of employment, graduates were asked about the hours they work in their current employment. In Figure 4.6.2, only the hours from their main job are considered. The figures concern actual hours that graduates usually work during a working week, and thus include possible overtime. Although full-time contracts are not necessarily 40 hours/week, the average working hours are 41 hours/week for the 2016/17 cohort and 40 hours/week for the 2020/21 cohort (Figure 4.6.2).

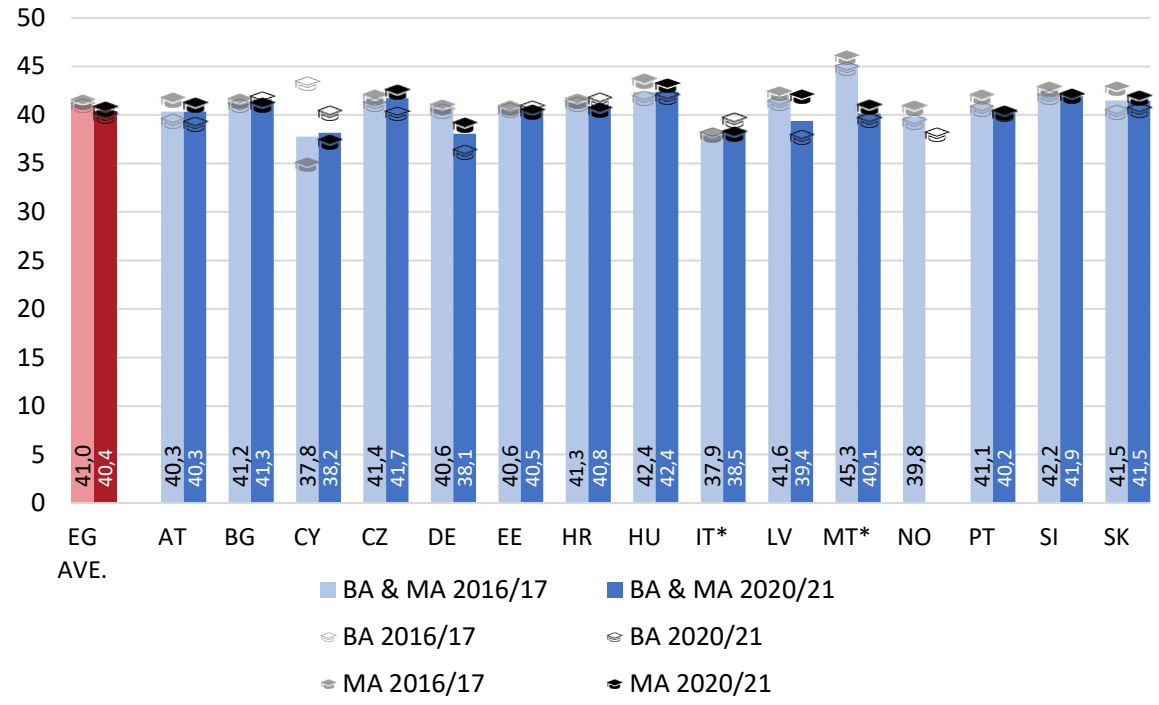
While Germany and Austria for both cohorts have the lowest full-time employment, the average hours worked by the graduates of Cyprus and Italy (both 38h/week) are lower in the 2016/17 cohort than for Austria and Germany (both 40h/week). For the 2020/21 cohort, however, the lowest working hours per week can be observed in Germany and Cyprus (38h/week). Graduates of cohort 2016/17 from Malta (45h/week), Hungary, Slovenia, and Slovakia (all 42h/week) work the most hours per week on average. It should be noted that the countries do not differ greatly in terms of actual hours worked despite the different proportions of full-time employment per country.

Figure 4.6.2: Average hours actually worked weekly in main (self-)employment, international comparison

Definition: Self-reported number of hours usually worked per week, including overtime (b2.8b).

Graduates in employment and currently not enrolled by:

Survey country (X-Axis), cohort (twin bars), degree level (icons)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.

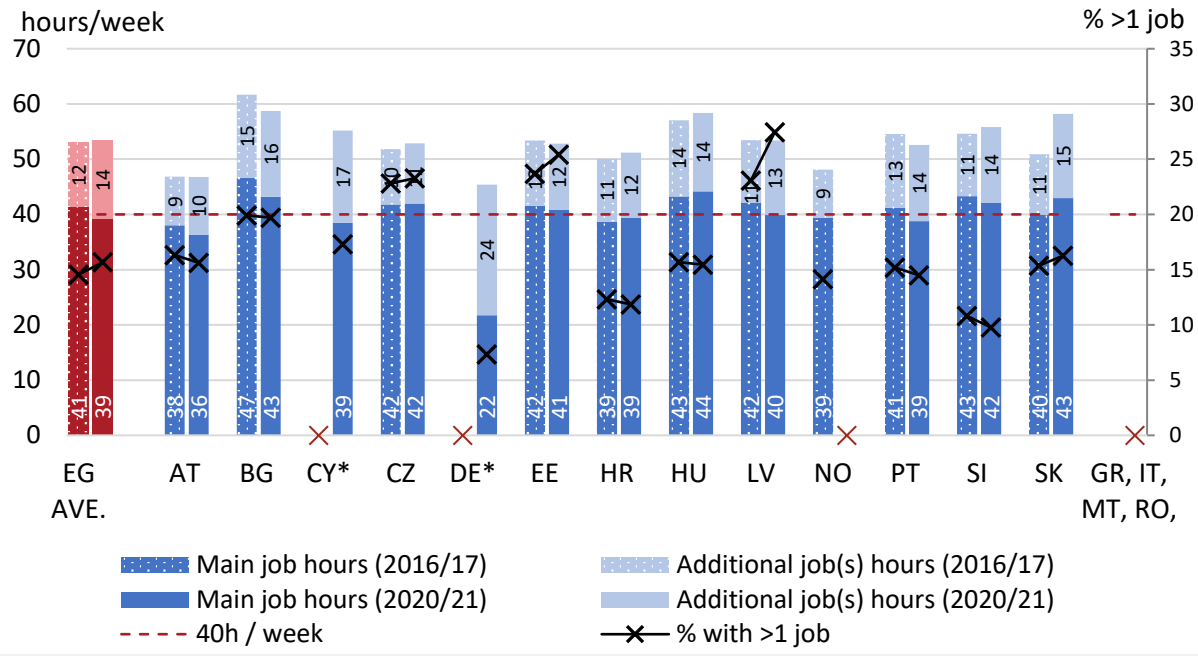
Notes: IT: Questionnaire deviation: weekly hours reported in 5-hour-wide categories, mean values estimated based on category centre; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO cohort 2020/21 MA level: no data.

Figure 4.6.3 shows the proportion of graduates with more than one job and how additional jobs add to the total weekly time spent working. Multiple jobs are most common among graduates in Latvia (23%$_{16/17}$; 28%$_{20/21}$), the Czech Republic (23% both cohorts), Estonia (24%$_{16/17}$; 25%$_{20/21}$) and Bulgaria (20% both cohorts). In most countries, even those with multiple jobs work around 40 hours per week on average solely in their main job. Consequently, the additional jobs that – depending on country - amount from 9 up to 24 weekly hours on average often push those graduates far above 40 hours of weekly time spent working. This is most clearly seen in graduates with multiple jobs from institutions in Bulgaria, Cyprus, Hungary and Slovakia who work above 55 hours per week on average. Graduates with additional jobs of the 2016/17 cohort work a bit more in their main and a little less in their additional job(s) compared to the 2020/21 cohort.

Figure 4.6.3: Multiple jobs: Prevalence and split of hours worked in all jobs, international comparison

Definition prevalence of multiple jobs: Shares of employed graduates reporting multiple jobs (b1.1); Definition split of hours worked: Self-reported number of hours usually worked per week in main job (b2.8b) and additional job(s) (b5b) at time of survey, including overtime.

Graduates currently not enrolled in employment (% with >1 job) and with more than one job (split of hours worked):
Survey country (X-Axis), cohort (twin bars)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.
Notes: CY 16/17, DE 16/17, MT excluded due to insufficient case numbers. GR, IT, RO: no data on working hours in additional job(s).

One assumption for explaining the high workload of graduates with multiple jobs might be that the earnings from their main job are not sufficient even when working full time in it. Hence, they may have taken up additional jobs in order to compensate for low income in their first job. However, in the broad picture this seems not to be the common explanation: In most countries, the median **main** job income of graduates with multiple jobs is lower than the median main job income of graduates with only one job. Particularly in Austria, Germany, Estonia, Hungary, Latvia and Malta, they are more than 10% lower compared to median main job income of graduates with one job. One explanation for this could be that graduates tend more to seek additional jobs if their main job does not fulfil their income demands. However, it is also possible that graduates willingly invest less time or hold a more routinely main job to have resources available for a secondary employment resulting in a lower income from the main job.

4.7. Type of contract: Limited time contracts more common in some countries

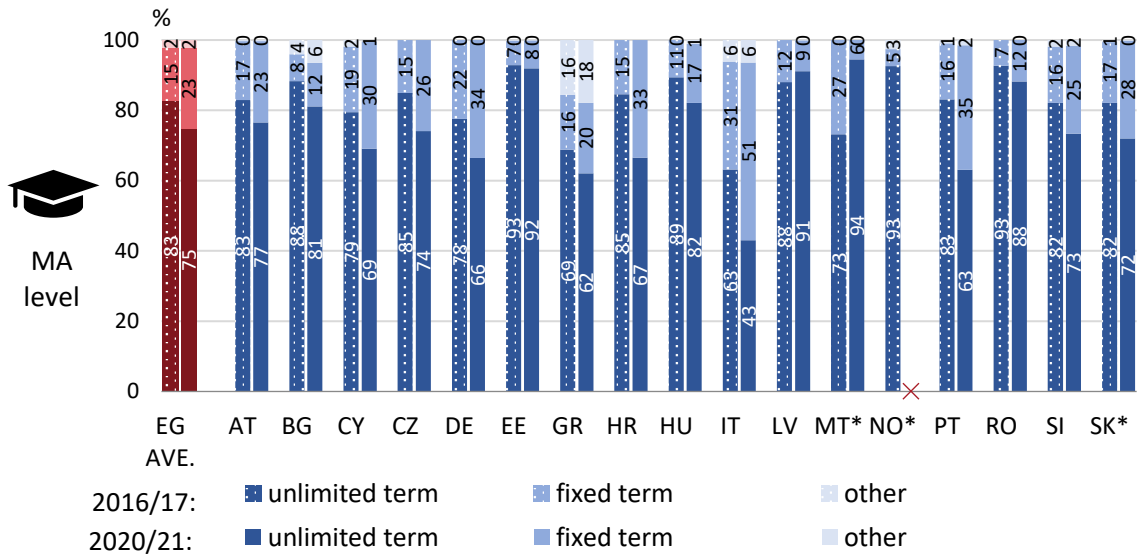
Employment under a work contract that is not limited in terms of time can be regarded as an indication of job security. Yet, the general prevalence of fixed-term contracts can vary by national and regional context as well as business sectors, and the engagement of graduates in such contracts can occur rather voluntarily, when flexibility or a follow-up occupation is aimed at, or rather involuntary in lack of a more stable employment opportunity. This section will focus on master level graduates to level these preconditions, but differences between sub-groups are similar among bachelor level graduates. Figure 4.7.1 shows that international differences are considerable for job security:

Figure 4.7.1: Job security of current job, international comparison

Definition: Shares of employed graduates in unlimited term, fixed-term, and other contract types (b2.5).

Master level (ISCED-7) graduates in employment (excluding self-employment) and currently not enrolled by:

Survey country (X-Axis), cohort (twin bars)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.
Notes: MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 2020/21 MA level: no data, questionnaire deviation: Different wording (permanent/temporary instead of unlimited/fixed term); SK: BA level 20/21: low number of cases (<100).

Comparing the survey countries, unlimited contracts among master level graduates are most common Estonia, Latvia, Norway and Romania (>85% in both cohorts). The highest shares of limited term contract can be observed in Cyprus (30%$_{20/21}$), the Czech Republic (26%$_{20/21}$), Germany (34%$_{20/21}$), Croatia (33%$_{20/21}$), Italy (51%$_{20/21}$), and Portugal (35%$_{20/21}$). In **Greece, other contract forms make up 16%$_{16/17}$ to 18%$_{20/21}$** of employment arrangements. These may entail service contracts, freelancing, or employment forms without guaranteed hours and pay.

Figure 4.7.2 shows the contract type for the main break groups. As seen in the country comparison, unlimited term contracts tend to be more common 5 than 1 year after graduation. However, patterns differ among sub-groups:

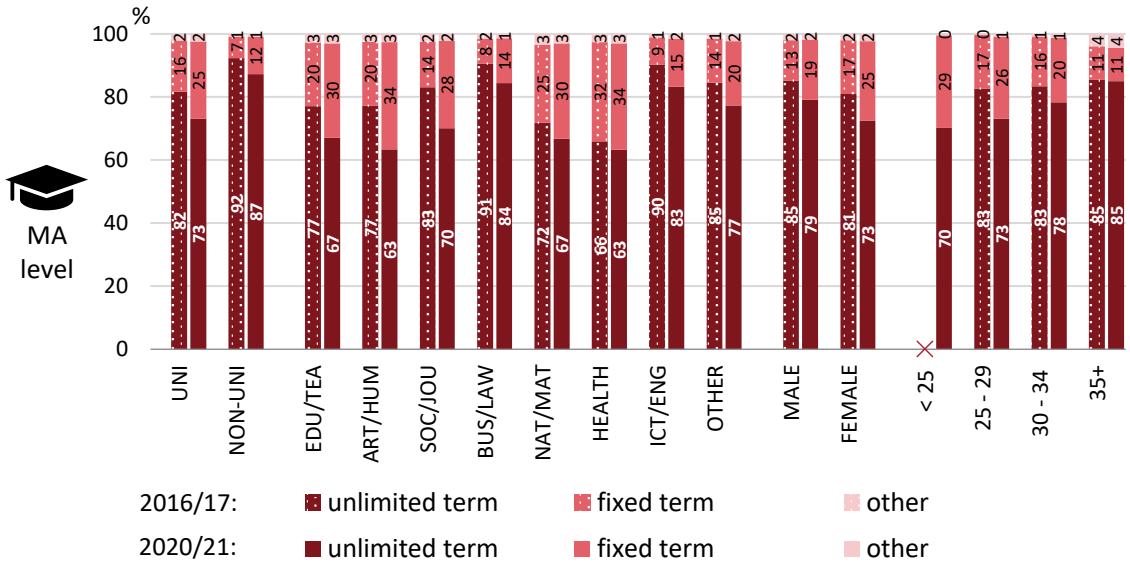
Regarding institution types, non-university master level graduates report unlimited term jobs more often than university graduates. With respect to **study fields**, Business & Law and ICT & Engineering graduates, who have the highest employment rates, are also most often in unlimited term contracts. In contrast, graduates of Health, who also showed high employment rates in chapter 4.4, have the lowest share of unlimited term contracts in the 2016/17 cohort, and also the lowest in the 2020/21 cohort (graduates in Arts & Humanities for the cohort 2020/21 are equally represented in unlimited contracts). **Male** master level graduates have an above-average share of unlimited term contracts in both cohorts. **For graduates aged 35 and older,** there is no cohort difference in the share of contract types, as opposed to the younger age groups. This may hint to age effect or to an interaction of age with the way studies and employment coincide.

Figure 4.7.2: Job security of current job, EUROGRADUATE averages

Definition: Shares of employed graduates in unlimited term, fixed-term, and other contract types (b2.5).

Master level (ISCED-7) graduates in employment (excluding self-employment) and currently not enrolled by:

Cohort (twin bars); type of institution, field of study, gender, age (X-Axis)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.
Notes: IT: not included in age groups; NO: cohort 2020/21, MA level, no data; SI: not included in type of institution.

4.8. Occupations: Most graduates considered professionals

From a graduate (and student) perspective, but also for higher education and labour market policy, the link between study programmes and particular occupations is a crucial factor for decision-making. A key challenge when examining occupation from an aggregate perspective is that it is among the most stratified employment characteristics: there are several thousands of occupations, and their categorization varies between countries and branches. To provide a general overview, we will focus on the most condensed level of the international standard classification of occupations ISCO, which entails 10 categories.

Table 4.8.1 lists the distribution of the most general ISCO occupation categories for 2020/21 graduates by various characteristics. In nearly all groups, the majority of graduates in employment hold an occupation classified as *professionals*. Differences are, however, visible regarding how many graduates in particular fall under that category and how the remaining graduates are distributed among the other groups. First, it is visible that 2020/21 **master level graduates are clearly more often in professional occupations** (on average 63%$_{20/21}$) than those with a bachelor from the same cohort (47%$_{20/21}$), who in turn are more often occupied as *technicians and associate professionals, clerical support workers,* and *service and sales workers*.

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Table 4.8.1: Occupation categories, EUROGRADUATE averages

Definition: International Standard Classification of Occupations (ISCO), 1-digit (Question b2.1a)

2020/21 graduates in employment and currently not enrolled:

Degree level (top/bottom table), type of institution, study field, gender, age (Rows)

Type	Managers	Professionals	Technicians and Associate	Clerical Support Workers	Service and Sales Workers	Skilled Agricultural, Forestry and	Craft and Related Trades	Plant and Machine Operators,	Elementary Occupations	Armed Forces Occupations
ISCO-Code	1	2	3	4	5	6	7	8	9	0
Bachelor level										
University	8,5%	50,1%	20,3%	9,9%	6,6%	0,5%	1,6%	0,6%	1,3%	0,6%
Non-Univ.	12,1%	37,8%	22,6%	15,9%	6,6%	0,5%	2,3%	0,4%	0,5%	1,3%
EDU & TT	1,8%	76,7%	7,7%	2,3%	6,9%	0,0%	1,2%	0,3%	1,0%	2,0%
ARTS & HUM	7,2%	48,4%	14,7%	14,3%	9,9%	0,3%	2,9%	0,7%	1,6%	0,2%
SOC & JOU	9,1%	41,3%	19,7%	18,0%	8,3%	0,0%	1,1%	0,4%	1,7%	0,3%
BUS & LAW	17,7%	35,4%	19,2%	19,4%	5,7%	0,1%	0,7%	0,3%	1,0%	0,6%
NAT & MAT	4,1%	55,1%	19,7%	8,0%	7,8%	0,3%	2,5%	0,3%	2,3%	0,0%
HEALTH	3,3%	52,3%	36,1%	2,2%	4,8%	0,0%	0,2%	0,2%	0,3%	0,8%
ICT & ENG*	6,8%	60,0%	19,0%	4,6%	2,7%	0,3%	4,2%	1,2%	1,0%	0,3%
OTHER	17,5%	17,2%	24,0%	14,0%	17,1%	4,1%	0,7%	1,3%	2,0%	2,2%
male	10,9%	47,1%	20,4%	7,7%	6,3%	0,8%	3,1%	1,1%	1,5%	1,1%
female	8,7%	48,7%	20,4%	12,8%	6,9%	0,2%	0,7%	0,2%	0,9%	0,6%
25 to 29	7,2%	50,8%	21,7%	9,4%	6,9%	0,5%	1,3%	0,4%	1,1%	0,7%
30 to 24	13,7%	42,7%	17,0%	11,8%	7,6%	0,4%	4,4%	0,5%	0,7%	1,2%
35 +	15,0%	43,6%	18,9%	11,0%	6,1%	0,3%	2,4%	1,1%	0,6%	1,0%
Master level										
University	9,6%	63,3%	15,7%	6,4%	2,5%	0,4%	0,9%	0,3%	0,7%	0,3%
Non-Univ.	16,3%	54,6%	17,8%	5,4%	3,0%	0,1%	0,9%	0,5%	1,1%	0,4%
EDU & TT	3,4%	84,8%	4,8%	3,0%	1,8%	0,2%	0,1%	0,4%	1,1%	0,6%
ARTS & HUM	7,6%	65,3%	12,0%	7,7%	4,1%	0,1%	2,4%	0,3%	0,5%	0,0%
SOC & JOU	12,9%	53,2%	19,3%	9,7%	2,7%	0,0%	0,8%	0,2%	0,6%	0,5%
BUS & LAW	20,7%	47,7%	16,5%	10,6%	2,7%	0,2%	0,2%	0,1%	0,9%	0,5%
NAT & MAT	4,8%	71,6%	14,8%	3,9%	2,5%	0,3%	1,4%	0,3%	0,5%	0,1%
HEALTH	2,5%	75,1%	18,9%	1,7%	1,4%	0,0%	0,0%	0,0%	0,1%	0,1%
ICT & ENG*	8,2%	68,0%	16,6%	2,6%	0,9%	0,1%	2,2%	0,7%	0,5%	0,2%
OTHER	16,3%	42,3%	20,7%	7,6%	7,1%	2,9%	1,2%	0,8%	1,0%	0,1%
male	13,1%	61,6%	14,9%	4,0%	2,7%	0,4%	1,1%	0,7%	0,8%	0,6%
female	9,4%	63,6%	15,8%	7,4%	2,2%	0,2%	0,6%	0,1%	0,6%	0,1%
25 to 29	6,9%	65,1%	16,4%	6,3%	2,4%	0,4%	1,1%	0,4%	0,8%	0,2%
30 to 24	11,7%	64,1%	14,6%	4,6%	3,0%	0,1%	0,5%	0,3%	0,6%	0,5%
35 +	19,1%	57,3%	13,3%	5,9%	2,3%	0,3%	0,6%	0,1%	0,5%	0,5%

Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); IT not included in age groups; NO: cohort 2020/21, MA level, no data; SI not included in type of institution.

Graduates of **non-university institutions** are less often in *professional* occupations than those of **universities**, but more often in *management* positions – among master level

graduates, the combined share of *management* and *professional* positions adds up to almost the same for university and non-university graduates. Regarding **study fields**, Education & Teacher Training have the largest shares of *professionals,* as most occupations involving teaching are classified as such. The highest share of *management* positions is found among Business & Law, Other and Social Sciences & Journalism graduates. While graduates of Arts & Humanities and Other fields (which involve Services and Agriculture, Forestry, Fisheries and Veterinary) show a more dispersed distribution between *professional/management* and other occupations, ICT & Engineering and, for master level graduates, Natural Sciences & Maths as well as Health graduates are most concentrated around the categories *management*, *professional*, and *technicians and associate professionals*.

Regarding **gender***,* women are a little less frequently found in management occupations and more often in occupations classified as *professional* and *technicians and associate professionals*. When it comes to **age**, a shift from the *professional* towards the *management* occupations can be observed with increasing age.

4.9. Self-employment: Most common in Arts & Humanities

Self-employment is considered to differ from (dependent) employment in terms of working conditions. Indeed, in the EUROGRADUATE 2022 data, self-employed graduates are found to have on average significantly **more actual weekly working hours** (46,7) than (mainly) employed graduates (41,6). Nonetheless, they report a slightly, but still **significantly higher satisfaction rating regarding reconciling their work and private lives** (3,9 vs. 3,8 out of 5). Regarding yearly income (incl. supplementary payments), the differences between self-employed and employed graduates are rather small and statistically insignificant.[20]

Figure 4.9.1 examines the shares of working graduates in self-employment, differentiating if a parallel (dependent) employment was reported and which of both was considered the main employment in that case. In all displayed subgroups, most graduates in self-employment did not report an additional (dependent) employment. Among those who reported both, more often the (dependent) employment was reported as the main occupation. The share of self-employed graduates is a few percentage-points higher for master level graduates in most groups. Differences between university and non-university graduates are minimal. Most dynamics are visible regarding study fields: **Arts & Humanities** graduates are more often self-employed than those of any other field, regardless of cohort and degree level. For the other fields, differences vary vastly in interaction with cohort and degree level. For instance, Education & Teachers training graduates show almost the same shares of self-employment (forms) on master level, while on bachelor level, the 2020/21 graduates in this field are almost twice as frequently in self-employment compared to the 2016/17 cohort. In 2016/17 master level graduates, **Health**, **ICT & Engineering** and **Other field's** graduates follow up with the next-largest self-employment rates, while this cohort doesn't stick out as much among the bachelor level graduates of the same fields. Business & Law graduates, for whom a high self-employment rate might be assumed based on the management focus (business) and running attorney's offices (law) remarkably don't stand out here. Male graduates and older graduates are more often in self-employment than female and younger graduates.

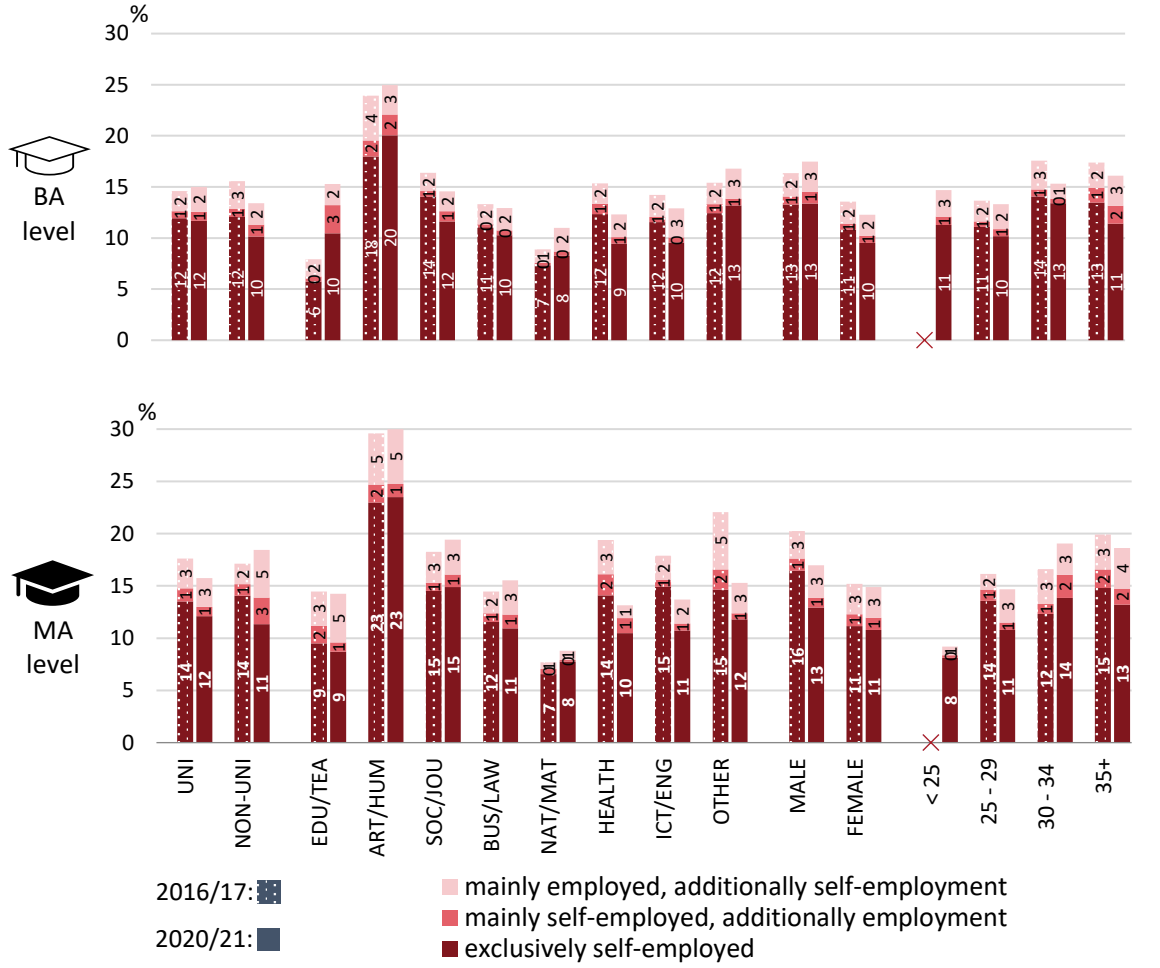
[20] Significant differences tested for the average of (a) total weekly working hours, (b) satisfaction with the possibility to reconcile work with private life and family, and (c) yearly income (internationally harmonized as purchasing power parities) assessed based on independent-sample t-tests, p<0,01. Average values are EUROGRADUATE averages with uniform impact of each survey country.

Figure 4.9.1: Graduates in (different forms of) self-employment, EUROGRADUATE averages

Definition: Shares of graduates in self-employment exclusively, mainly (with additional employment), and additionally (besides main employment) (b2.3, b5a).

Graduates in employment and currently not enrolled by:

Cohort (twin bars); type of institution, study field, gender, age (X-Axis), degree level (top/bottom chart)



Source: EUROGRADUATE Survey 2022, dataset version 3.2.0.
Notes: Age group <25 too few cases (<30); IT not included in age groups; NO: cohort 2020/21, MA level, no data; SI not included in type of institution.

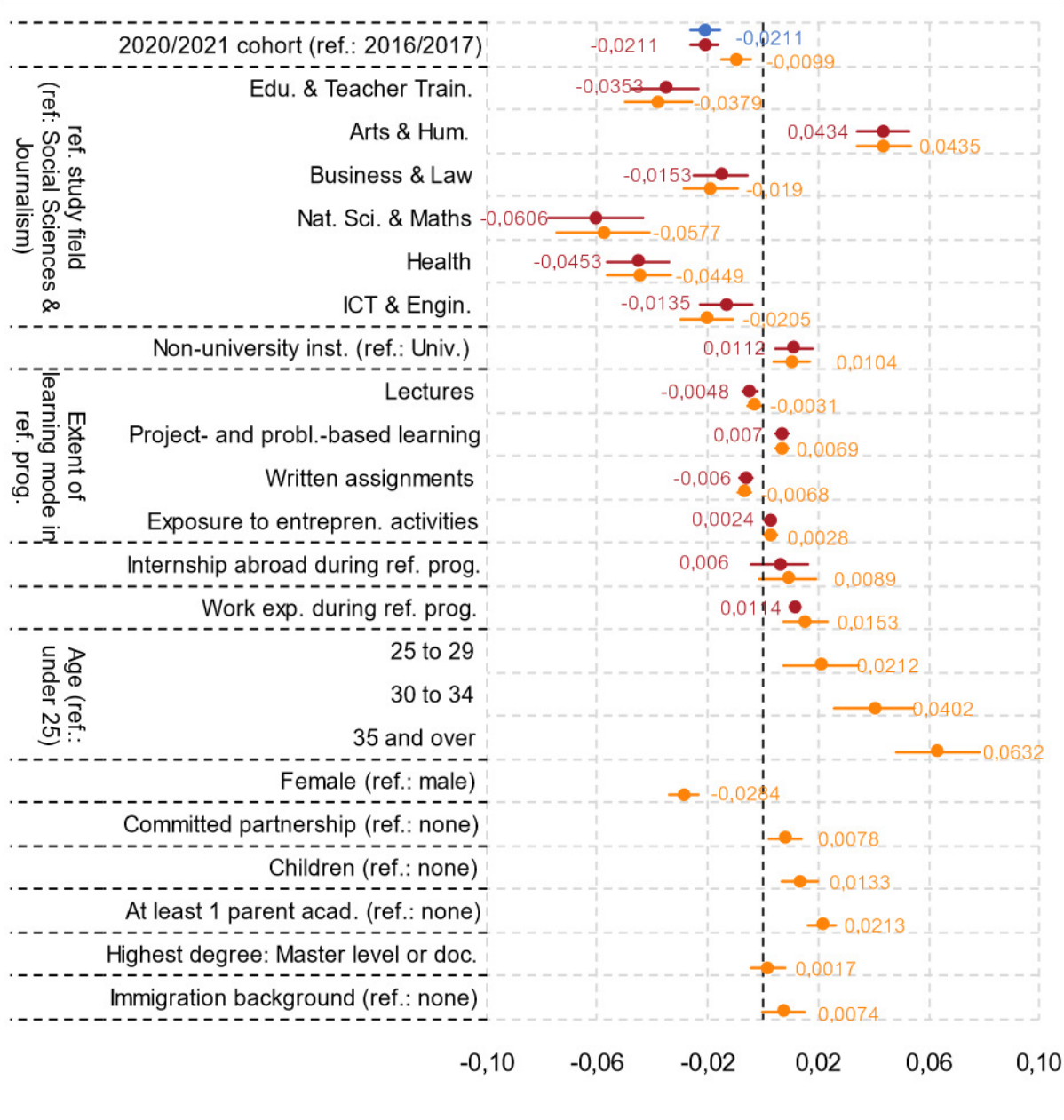
4.10. Specific policy issue: What can foster entrepreneurship?

Figure 4.10.1 examines factors that possibly relate to entrepreneurship, that is, graduates starting an own business. As in the models seen before, three steps (blue for country and cohort, red including study experience factors and yellow including individual factors) have been applied. In all models, belonging to the **2020/21 cohort has a negative effect**, indicating that founding a business is more likely when more time has passed since graduation. The effect, however, is clearly smaller in the third model, so the different cohort composition regarding graduate background characteristics explains a part of the cohort effect. Concerning **study fields**, Arts & Humanities graduates are found to be the most likely to start an own business, which is in line with the previous observations on their self-employment rate. All other fields, on the contrary, do negatively impact entrepreneurship compared to the reference field, Social Sciences & Journalism. Graduates from a **non-university institution** are a little bit more likely to start an own business.

Figure 4.10.1: Explanatory factors for entrepreneurship (average marginal effects)

Definition: Given when graduates reported being self-employed (b2.3) and having started an own business (b5.1).

Graduates in employment and currently not enrolled



Source: EUROGRADUATE Survey 2022, dataset version 3.1.0.

Notes: Average marginal effects based on stepwise logistic regression models: Blue (Country, cohort as independent variables) Nagelkerke R^2= 0,050; Red (adding reference programme characteristics as ind. var.): Nagelkerke R^2= 0,083; Yellow (country, cohort, reference programme and individual characteristics): Nagelkerke R^2=0,109. N = 42.707. Notes: GR, IT, RO, SI: not included (not all independent variable(s) surveyed); NO: cohort 2020/21, MA level, no data.

Regarding **learning modes and extracurricular experiences**, programmes that include more project- and problem-based learning, or even contact with entrepreneurial activities, contribute positively to entrepreneurship. A high extent of lectures and written work on the other hand is negatively linked to it. While the nominal effects appear small, contrary to most other factors, the extent of these learning modes was measured on 5-point scales, so a very high extent of any of these modes in the reference programme would indicate a fivefold larger (positive or negative) link to the likelihood of entrepreneurship compared to the learning mode not being part of the reference programme at all. **Internships abroad** during the reference programme do not significantly correlate with entrepreneurship, while **work experiences during studying**

have a small positive relation with entrepreneurship. **Age** appears as a **relatively strong explanatory factor**, as the positive effect on having an own business is larger the higher the age group (compared to graduates under 25) is. This may explain the cohort difference, which is smaller in the third model, as the 2016/17 cohort is expectably older on average. **Female graduates are less likely** than male graduates to start a business. The third model also controlled for **parenthood** and **being in a partnership**, which are found to be positively related to entrepreneurship. The **education of graduates' parents** is also linked to entrepreneurship: an academic family background makes entrepreneurship more likely. All in all, this could imply that familial integration and support could be beneficial for fostering entrepreneurship. Holding a master level or doctoral degree has no significant effect compared to a bachelor level degree.

5. Labour Market Outcomes

5.1. Main findings

Vertical match

Most graduates have a **job in line with the level of their degree** but there is a considerable proportion of graduates **requiring a lower degree**, more frequently for master level graduates (41-46%) than for bachelor level graduates (25-28%).

Graduates longer in the labour market report lower levels of overeducation.

About 70% of the graduates are (very) satisfied with their job.

Most satisfied are graduates of ICT & Engineering

Match & Learning

Internships and international study mobility are means to reduce the risk for overeducation.

Horizontal match

2/3 of the graduates have job matching their field of study.

3/4 and more of Health graduates and Education & Teacher Training graduates report a match of field and job.

Job satisfaction

The highest level of satisfaction if reported for the contents of the job.

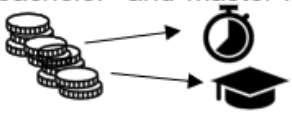
The lowest level for salaries.

Monetary returns

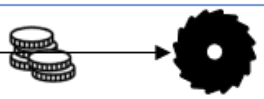
Earnings of employed graduates **differ** between the two cohorts suggesting that **labour market experience** plays a role in monetary returns as well as the **degree level.**

Austria & Germany exhibit a larger gap in earnings between bachelor- and master-level graduates compared to Croatia, Hungary or Czech Republic.

Graduates of ICT & Engineering report highest salaries.



ICT & Engineering



Gender pay gap

Considerable **earnings differences** between **female and male graduates** exist in all survey countries. **Germany**, **Austria**, **Hungary**, or **Latvia** report relatively **large** gender pay gaps whereas **Norway**, **Croatia**, or **Portugal** show relatively **small** differences.

COVID-19

Comparing earnings of graduates from 2018 and 2022 does not indicate any earnings losses for students graduating in realm of the COVID-19 pandemic. This result cannot yet be clearly classified as pandemic related. This will only be possible with future data.

5.2. Introduction: Overview and key issues

In the previous chapter, we have looked at whether and to what extent graduates access the labour market. In this chapter we turn to the outcomes graduates achieve on the labour market, in the economics literature often referred to as “returns to education” (e.g. Harmon et al., 2003). While economists usually focus on income as a labour market outcome, we apply a somewhat broader view, and additionally investigate the match between education and the job as well as job satisfaction.

To start with, chapter 5.3 treats the match between education and the job and how graduates of different countries and with different higher education characteristics vary in this regard. The congruence between the educational qualifications of graduates and the current occupation are typically assessed through two dimensions: vertical and horizontal match. Vertical match refers to an alignment in terms of the level of education and job. Is the *level* of the higher education degree the one required for the job? In the case of mismatch, the level of the degree may be either too high or too low, which is referred to in the literature as overeducation (i.e. the level of education is higher than the job would usually require) and undereducation (i.e. the level of education is lower than the job would usually require) (e.g. Flisi et al., 2016; Leuven & Oosterbeek, 2011). Note that this concept of overeducation relates to the degree primarily and not to the actual skills of the person (even though skills and degree are interrelated obviously). A person may be formally overeducated (or undereducated) but still have the right skills to perform the job or vice versa. Therefore, skills mismatch is distinguished from mismatch regarding the degree (see chapter 6 of this report).

Match and mismatch are important issues as a close alignment between the study programme and subsequent employment is relevant from an individual as well as from a societal perspective. Individually, a match between education and job has been shown to result in higher income, whereas a mismatch is associated with an income ‘penalty’ (e.g. Allen & van der Velden, 2001; Bol et al., 2019; Diem, 2015). It is important to note that the size of the income effect is not necessarily the same across countries but varies e.g. depending on the strength of the link between education and job in the economy (Bol et al., 2019). Given the possible drawbacks of mismatch it seems likely to result in lower job satisfaction. However, this association has been found to not be very strong and the influence of skills mismatch seems to have a stronger impact on job satisfaction than a mismatch between degree and job (Allen & van der Velden, 2001; Badillo-Amador & Vila, 2013).

In higher education research but as well among policy makers and in the public debate, possible overeducation of higher education graduates receives much more attention than undereducation. This is the case for at least three reasons: Firstly, higher education graduates are much more often affected by overeducation than by undereducation because they already are at the upper end of the educational hierarchy. Secondly, from an individual perspective, overeducation is suspected to have more severe consequences than undereducation, e.g. income losses. Thirdly, overeducation raises the question of whether unnecessarily high public or private investments in education have taken place (Leuven & Oosterbeek, 2011). It would be too simple, however, to diagnose such an overinvestment from the existence of overeducation only. Overeducation may be temporary and possibly is a necessary first step of a career. Thus, a certain degree of overeducation seems to be natural especially in early phases of the career. In addition, a formal mismatch of degree and job does not necessarily mean that the skills achieved in the study programme are not matching the job. From a societal point of view higher education has many other advantages like fostering innovation and potential for growth. In sum, while overeducation is worrisome its mere existence does not mean that there is too much higher education.

Horizontal match refers to the alignment in terms of the *contents* of education and job. Is the *field of study* in line with the kind of tasks and topics of the job?

Given the importance of a match between education and job, we analyse which factors could help to achieve a vertically matching job in chapter 5.4.

In chapter 5.5, we look at income as the most tangible labour market outcome of (higher) education. Income is usually analysed by comparing different levels of education to identify the economic return of a specific investment in education (Becker, 1983 [1975]; Mincer, 1974 [2004]). Accordingly, the chapter provides insights into the income differences of graduates with different degrees. Additionally, it features qualitative differences of study programmes, such as the type of institution and fields of study, background characteristics of graduates as possible sources of income differences. Qualitative differences of study programmes and income differences between social groups can be interlinked. E.g. gender-specific preferences for fields of study have been found to be among the main reasons for the gender-wage gap of higher education graduates (Leuze & Strauß, 2014). Therefore, the chapter analyses how characteristics of higher education are interrelated with income and whether the wage-gap between female and male graduates is connected to such characteristics.

The COVID-19 pandemic has hit European societies in March 2020 leading to job losses and economic downturn. The graduate cohort 2020/21 accessed labour markets under these unfavourable circumstances. EUROGRADUATE 2022 provides an opportunity to analyse the impact of the pandemic and chapter 5.6 investigates whether earnings have been affected by the pandemic in the view of the graduates.

Chapter 5.7. deals with job satisfaction as a crucial subjective labour market outcome. Different dimensions of job satisfaction are looked at and the connection between overeducation and job satisfaction is described.

5.3. Match of education and job

In this chapter, we will investigate how well higher education degrees and fields of study are aligned with employment considering two dimensions: vertical and horizontal matching. We will compare the match of graduates across countries, cohorts, regarding key higher education characteristics. These indicators provide crucial insights into the extent to which graduates can effectively use their education in the labour market which is relevant for prospective students and graduates, policymakers, educators, and employers alike.

It should be kept in mind that (mis-)match is a dynamic feature and subjected to change as graduates progress in the labour market or acquire further higher education. Undereducated persons may gain further education and overeducated persons may advance to a better matching job. This is especially true for persons having accessed the labour market only recently or at least not for a very long time, like it is the case for the cohorts of graduates investigated in this report.

5.3.1. Match of the level of education and the job

A first crucial labour market outcome of higher education is whether it leads to a job in line with the *level of education*, i.e. *vertical match*. This is a proxy for whether the investment in higher education pays off in terms of the level of the occupation. The job can either match the level of education or it can require a higher or a lower level of education, i.e. undereducation and overeducation (e.g. Leuven & Oosterbeek, 2011).[21] While undereducation may come along with a feeling of being unable to cope with tasks and distress, overeducation is associated with economic disadvantages. Overeducation means that a graduate has a job usually with lower

[21] Overeducation usually refers primarily to formal education. In contrast, the term overqualification has a broader meaning and is understood as "a situation where the individual has surplus skills, knowledge, abilities, education, experience, and other qualifications that are not required by or utilized on the job" (Erdogan et al., 2011). The measure discussed above is over*education* (or under*education*), i.e. overeducation and undereducation does not necessarily imply that the person does not have the right *skills* to perform a job.

earnings than a matching job. For higher education graduates, overeducation is much more likely to occur than undereducation as they already are at the upper end of formal education.

Info box 5.3.1: Definition and Terminology of Vertical (Mis-)Match

The terms most widely used for a vertical mismatch are *overeducation* and *undereducation*. Alternative terms would be *overqualification* and *underqualification* (e.g. Frei & Sousa-Poza, 2011) but these are neither as widespread, nor do they capture better the meaning and measurement of vertical mismatch applied in this report. In a labour market perspective, researchers rather speak of *underemployment* instead of overeducation (Green & Henseke, 2021). There is no generally accepted definition or uniform use of overeducation and undereducation (Groot & Maassen van den Brink, 2000). There is clearly a distinction between subjective and objective measures of vertical mismatch. Objective measures would e.g. compare a respondents' job in terms of ISCO classifications and the educational level associated with it against the level of education the respondent has. Subjective measures, in contrast, are based on assessments of respondents who are asked about the educational level required for their job (Groot & Maassen van den Brink, 2000). This level of education is then compared against the actual level of education of the respondent.

In EUROGRADUATE 2022 respondents are asked (referring to the main job):

"What level of education is usually required to perform this job?"
o lower than higher education
o short-cycle higher education
o Bachelor or equivalent degree
o Master or equivalent degree
o Doctorate/PhD

Respondents indicate the level by picking one of the five options. This level of education is compared against the **highest degree** of the respondent including degrees successfully completed before or after the reference study programme. From this comparison we derive a variable with four categories for descriptive results, distinguishing between:

(1) no HE required
(2) lower HE required
(3) match
(4) higher HE required

Categories (1) and (2) both measure **overeducation** in the sense that a lower degree would usually have been required to perform the job (in the view of the respondent). Differentiating between these categories allows us to see whether higher education (HE) would have been required at all for performing the job, which seems a stronger form of overeducation. Category (4) measures **undereducation**. Category (3) is the **match**.

In analytical models we analyse which factors are associated with higher or lower risk for overeducation. For these analyses we reduce the four categories to a **binary variable of overeducation**. Categories (1) and (2) are integrated into one category (overeducated) and compared to non-overeducated respondents (i.e. categories (3) and (4)).

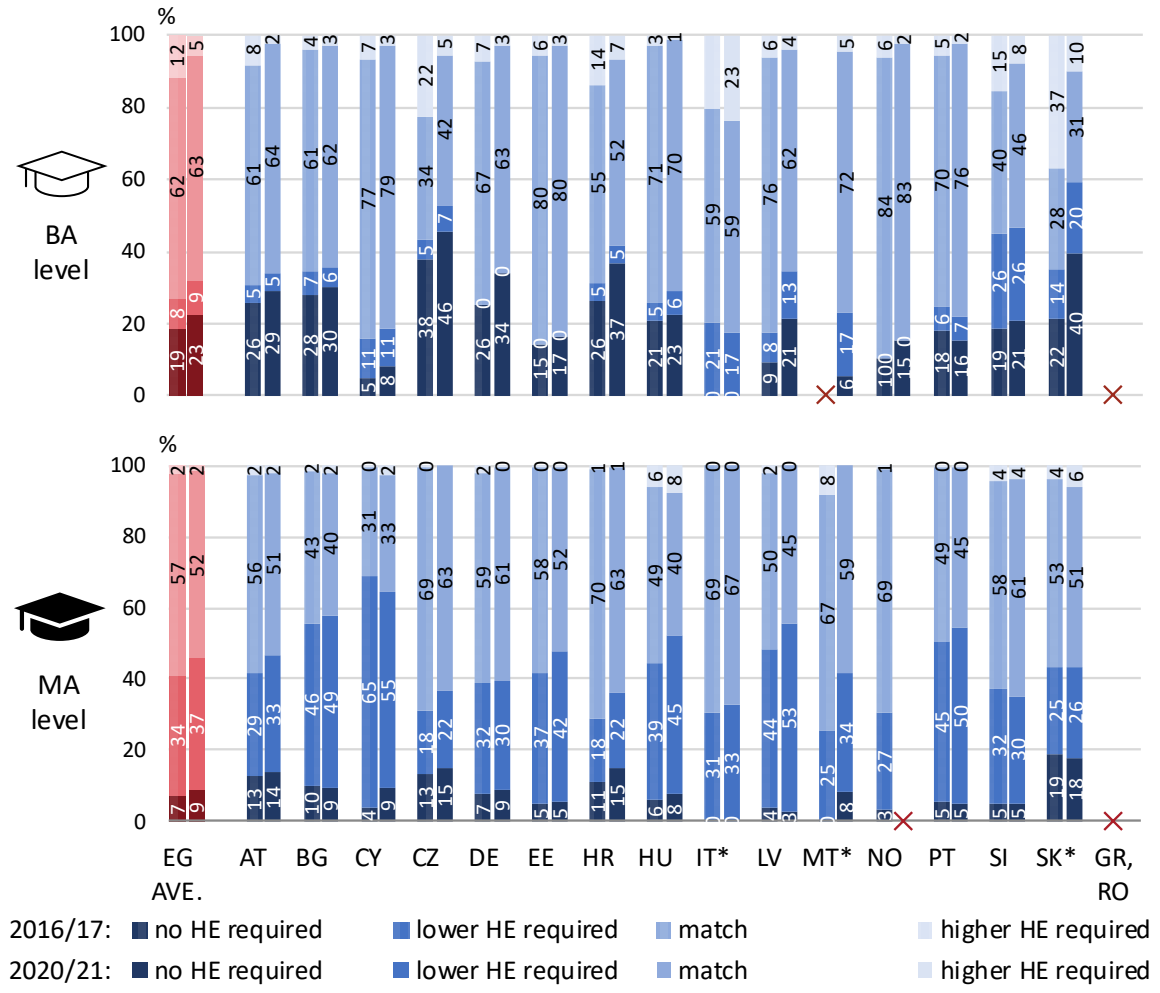
Note that the EUROGRADUATE survey offers further measures on vertical mismatch which refer to the dimensions of job tasks and job position. These measurements should be strongly associated with each other but are not the same, e.g. the degree of the respondent may be required to perform the job, but the position may be lower (or vice versa). For reasons of parsimony, we focus on the measure described above in this report.

Figure 5.3.1: Match of job and highest degree, international comparison

*Definition: Percentages of graduates with match of highest level of education and level of education respondents identified as usually required to perform current job. "Lower HE required"/"Higher HE required": the respondent identified a higher education degree below/above his*her highest degree as required (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1).*

Graduates currently not enrolled by:

Country (X-Axis), cohort (twin bars), degree level (top/bottom chart)



Data source: EUROGRADUATE 2022, data version 3.2.0.

Notes: IT: limited comparability; MT: BA level, cohort 2016/17, too few cases (<30), cohort 2020/21, low number of cases (<100), MA level, cohort 2016/17, low number of cases (<100); NO: cohort 2020/21, MA level, no data; SK: BA level, both cohorts, low number of cases (<100); GR, RO: no data.

Figure 5.3.1 shows the match between the highest level of education achieved by the graduates and the level of education usually required to perform their current job. The two panels separate graduates with a bachelor level degree and graduates with either a master level or a doctoral degree (the latter is a minor proportion only). Note that the comparability of the results for Italy, Malta, and Slovakia is limited due to methodological reasons or low numbers of cases. Therefore, results of these countries will not be discussed comparatively.

We distinguish four categories: (1) "No HE required" means that the level of education usually required to perform the current job is below higher education. In other words, for the *current* job no higher education would have been required at all. This is a stronger level of overeducation, and a much smaller proportion of graduates faces this kind of overeducation. (2) "Lower HE required" means that the job requires higher education but that usually a lower degree would have been sufficient, e.g. a bachelor's degree from the point of view of a master's graduate. (3) "Match" means that the degree held by the respondent is usually required for the

current job. (4) “Higher HE required”, finally, means that an even higher level of higher education would be required. This is the case of undereducation which is relatively rare among higher education graduates but, as visible in Figure 5.3.1, may occur especially for bachelor level graduates.

Degree and country. On average across countries, nearly two thirds of the bachelor level graduates report a vertical match. Countries with a relatively high proportion of matching bachelor level graduates are Cyprus, Estonia, Hungary, Norway, and Portugal. For master level graduates, only slightly more than half report a full vertical match. Countries with a relatively high share of matching master level graduates are the Czech Republic, Germany, Croatia, and Norway.

Further main observations for bachelor level graduates are: On average across countries, $19\%_{16/17}$ to $23\%_{20/21}$ voice they would not require a higher education degree for their job. This indicates that bachelor level graduates still have problems in acquiring jobs for academics in some countries. Countries with relatively large proportion of this kind of mismatch are Austria, Bulgaria, the Czech Republic, Germany, Croatia, and Hungary. Other forms of mismatch are less frequent overall. In countries where short-cycle degrees are more established, a certain proportion of bachelor level graduates say that their job would require a lower higher education degree (Cyprus, Latvia, Slovenia). Note that Portugal is among the countries with short-cycle higher education as well, but bachelor level graduates are not strongly affected by overeducation.

Further main observations for master level graduates are: On average across countries, the proportion of graduates which could perform their job without higher education is clearly lower than for bachelor level graduates and only about $7\%_{16/17}$ to $9\%_{20/21}$. A considerable share of $34\%_{16/17}$-$37\%_{20/21}$ report that their job would require a lower higher education degree. This seems quite high. Reconsidering that $19\%_{16/17}$ to $23\%_{20/21}$ of bachelor level graduates reported to work in jobs that would not require any higher education this may indicate that master level graduates compete against bachelor level graduates for jobs at a similar level and cast out the latter. This form of mismatch is relatively prevalent in Bulgaria, Cyprus, Hungary, Latvia, and Portugal.

Cohorts. In the cohort 2016/17, the proportion of overeducated graduates is smaller than in the cohort 2020/21. This difference can be observed for nearly all countries and is presumably due to graduates’ career progression (Rubb, 2003). Accordingly, among master level graduates, the proportion of matching jobs is higher in the cohort 2016/17 than in the cohort 2020/21. For bachelor level graduates, the proportion of “match” is not higher in the older cohort, as the proportion of *under*education increases as well. Apparently, a certain share of bachelor level graduates attains jobs usually requiring a master level degree in the course of time. Results suggest such dynamics for several countries.

Figure 5.3.2 shows the four categories of vertical match and mismatch on average for all EUROGRADUATE countries and with some more further breakdowns. Note that respondents are weighted in a way that each country contributes to the average with the same weight.

Type of institution. Based on the descriptive results of figure 5.3.2, it is not possible to say that either university graduates or non-university graduates have a better vertical match. For bachelor level graduates the match for non-university graduates is larger. For master level graduates the match for university graduates is larger.

Degrees. While the proportion of matching graduates with a master level degree is somewhat smaller compared to bachelor level graduates, the share of matching master graduates increases more strongly between both cohorts. Apparently, bachelor level graduates find their matching job earlier, while master level graduates have more potential to progress.

Fields of study. Regarding fields of study, specifically large shares of matching graduates can be observed for Health. This is not surprising, as the link between education and job is especially close in this field. For Arts & Humanities or Social sciences & Journalism, relatively

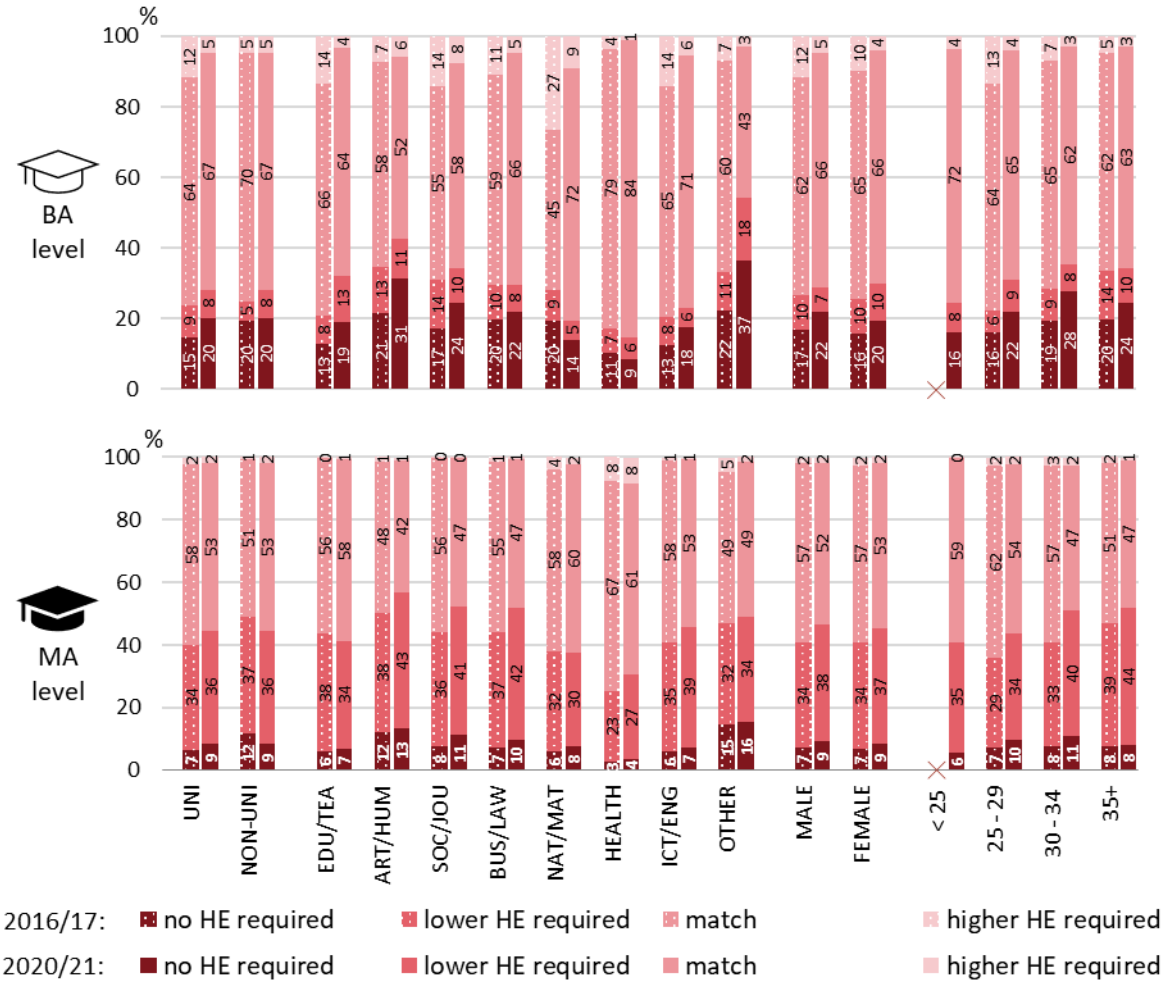
low shares of vertical match are to be observed. Differences between cohorts are specifically large for master level graduates of these fields. This may either reflect recent problems of these graduates in the labour market or it may simply take more time for these graduates to find a job in line with the level of their education.

Figure 5.3.2: Match of job and highest degree, EUROGRADUATE averages

*Definition: Percentages of graduates with match of highest level of education of respondent and level of education respondents identified as usually required to perform current job. "Lower HE required"/"Higher HE required": the respondent identified a higher education degree below/above his*her highest degree as required (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1).*

Graduates currently not enrolled by:

Cohort (twin bars); type of institution, study field, gender, age (X-Axis), degree level (top/bottom chart area)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: Age group <25 too few cases (<30); IT not included in age groups; SI not included in type of institution; GR, RO: no data.

Gender. There are remarkably little gender differences in the vertical match between degrees and jobs.

5.3.2. Match of the field of study and the job

Horizontal (mis-)match receives less attention in the literature than vertical (mis-)match. Even though, a strong alignment between the contents of the study programme and the job seems intuitively advantageous, this form of mismatch is less clearly associated with disadvantages such as a lower income (De Santis et al., 2022). In addition, the strength of the link between field of study and job differs strongly between fields. Fields such as Health or Teacher Training

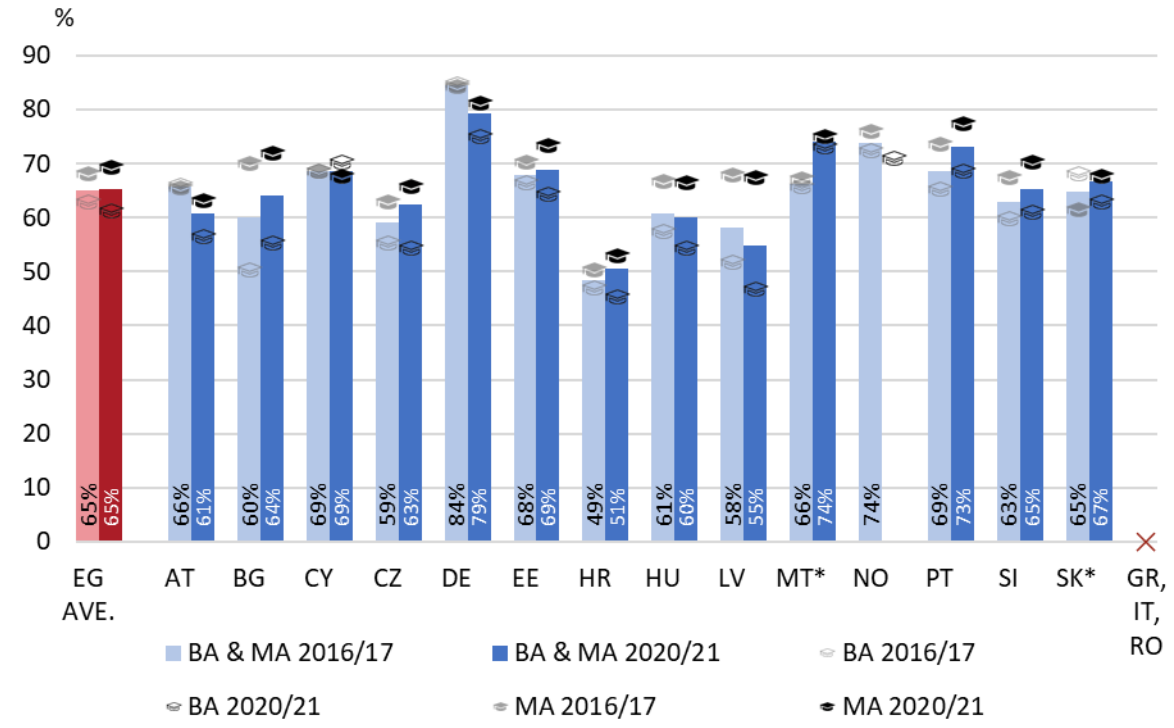
often lead directly to a specific job and in fact, usually these jobs are only accessible for graduates having studied the field in question. In contrast, fields like Arts & Humanities or Social Sciences have a less clear job profile and graduates of such fields can be found in a wider range of jobs. The skills such graduates achieved can be used in many different jobs. Even though, we may observe horizontal mismatch in terms of the field of study, this does not necessarily mean that we observe mismatch in terms of skills.

Figure 5.3.3: Match of job and field of study, international comparison

Definition: Percentages of graduates voicing that their current employment is (absolutely) in line with their field of study (b3.2a).

Graduates currently not enrolled by:

Country (X-Axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: NO: cohort 2020/21, MA level, no data; MT: except BA & MA 2020/21 all categories low number of cases (<100); SK: BA level, cohort 2020/21, low number of cases (<100); GR, IT, RO: no data.

Figure 5.3.3 shows the extent of horizontal match as proportion of graduates who see their current employment as (absolutely) in line with their field of study. Proportions are broken down by countries, degrees, and cohorts.

On average across countries, about two-thirds of the graduates report a horizontal match between their job and their field of study. This extent of horizontal match seems moderate and within the range one would expect. The share of matching graduates is at a very similar level for both cohorts. For master level graduates we observe a larger share of horizontal match ($68\%_{16/17}$-$69\%_{20/21}$) than for bachelor level graduates ($61\%_{20/21}$-$63\%_{16/17}$).

Overall country differences are moderately high. Countries with a relatively high level of horizontal match are Germany, Norway, and Portugal. Countries with a relatively low level of horizontal match are Bulgaria, the Czech Republic, Croatia, Hungary, and Latvia. Recall that Germany and Norway were as well among the countries with a relatively high vertical match.

There is no clear pattern visible for differences between cohorts when comparing countries, resembling that horizontal match did not differ between cohorts on average across countries.

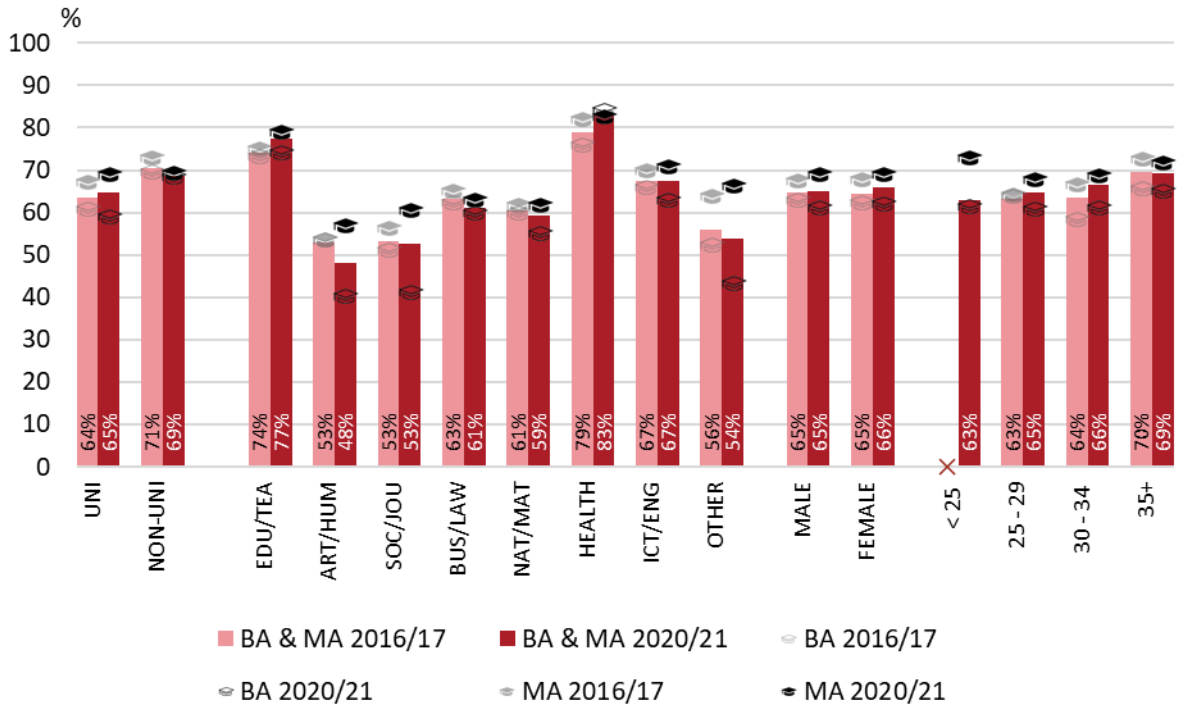
Regarding the degrees, the pattern we observed for the EUROGRADUATE average is by and large repeated across countries: master level graduates have a larger share of horizontal match than bachelor level graduates. However, the range of this difference clearly varies between countries. Five countries show a relatively large difference with a relatively low share of horizontal match for bachelor level graduates: Bulgaria, the Czech Republic, Hungary, Latvia, and Slovenia. Note that for Bulgaria, the Czech Republic, and Slovenia we observed a relatively low vertical match among bachelor level graduates too. In these countries bachelor level graduates are affected by double mismatch to a relatively high level. It could be considered to investigate this finding in more depth at country level to find out more about the reasons for this or to possibly prepare measures for improving the alignment of bachelor qualifications and labour market needs.

Figure 5.3.4: Match of job and field of study, EUROGRADUATE averages

Definition: Percentages of graduates voicing that their current employment is (absolutely) in line with their field of study (b3.2a).

Graduates currently not enrolled by:

Type of institution, study field, gender, age (X-Axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO: no data.

Figure 5.3.4 takes a closer look at the EUROGRADUATE average broken down by type of institution, fields of study, gender, and age.

Type of institution & degree. The horizontal match of graduates of non-universities (69%$_{20/21}$-71%$_{16/17}$) is stronger than for universities (64%$_{16/17}$-65%$_{20/21}$). Higher education programmes of non-universities have a more applied character and are often more clearly directed towards a certain occupation. In contrast, subjects like Arts & Humanities with a less clear link towards certain jobs are more frequently taught at universities. Another interesting finding is that the disadvantage in the horizontal match for bachelor level graduates is only observed among university graduates. In chapter 4, we have seen already that bachelor level programmes at non-universities more often directly lead to employment, while at universities they frequently are an intermediate step towards a master's degree. Bachelor level programmes of non-

universities seem to address labour market needs somewhat better than bachelor level programmes of universities.

Fields of study and degree. As expected, we observe marked differences in horizontal match between fields of study, ranging from about 50% in Arts & Humanities to about 80% in Health. Social Sciences & Journalism (53%) is another field with relatively low horizontal match, whereas Education & Teacher Training ($74\%_{16/17}$-$77\%_{20/21}$) is a field with a strong match. However, a relatively low horizontal match should not be seen as a shortcoming of the respective fields or a high match as a merit of the respective fields. It rather primarily expresses the strength of the field-occupation link which is to some extent in the nature of the fields of study and to another extent results from regulations regarding the access to specific jobs. Becoming a teacher or a physician usually requires having graduated from specific fields and/or specific exams. This is an important quality assurance measure. The knowledge and expertise provided in Arts & Humanities is of a more general nature and can be useful in wider range of occupations in less segmented parts of the labour market. They offer a less clear job perspective but more flexibility.

Again, we observe an interesting difference by degree level. For several fields of study (Arts & Humanities, Social Sciences & Journalism, National Sciences & Mathematics, ICT & Engineering) the drawback of bachelor level graduates is more pronounced in the cohort 2020/21 and seems to vanish in the cohort 2016/17. This might depict a dynamic process in which bachelor level graduates access the labour market in positions not matching their field very well but find jobs which are better aligned to their study programme later in their career.

Gender and age. Like for the vertical match, we find remarkably little gender differences in the horizontal match as well as no clear pattern by age groups.

5.4. *Specific policy issue:* What helps higher education graduates to achieve a matching job?

In the previous chapters we looked at the extent and distribution of match and mismatch and have seen that while most graduates report a good alignment between studies and employment there is a considerable amount of mismatch. As a matching job is usually associated with important advantages such as higher income or higher job satisfaction, we analyse in this chapter more in depth which graduates achieve a matching job and what leads to a matching job.

For this, we apply statistical regression models rendering measures for the connection between explanatory factors and the outcome analysed. Figure 5.4.1 shows the results of such analyses. We analyse vertical mismatch as a binary variable for “overeducation”. Respondents are categorized as overeducated if the level of education they see as usually required to perform their current job is lower than the highest level of education they hold. E.g. she may hold a master’s degree and would see a bachelor’s degree as sufficient, or he may hold a bachelor’s degree and a degree below higher education would be sufficient. Respondents are categorized as not overeducated if their level of education is in line with the required level or if their level of education is lower than required (i.e. they are undereducated – which is relatively rarely the case for our respondents as seen above).

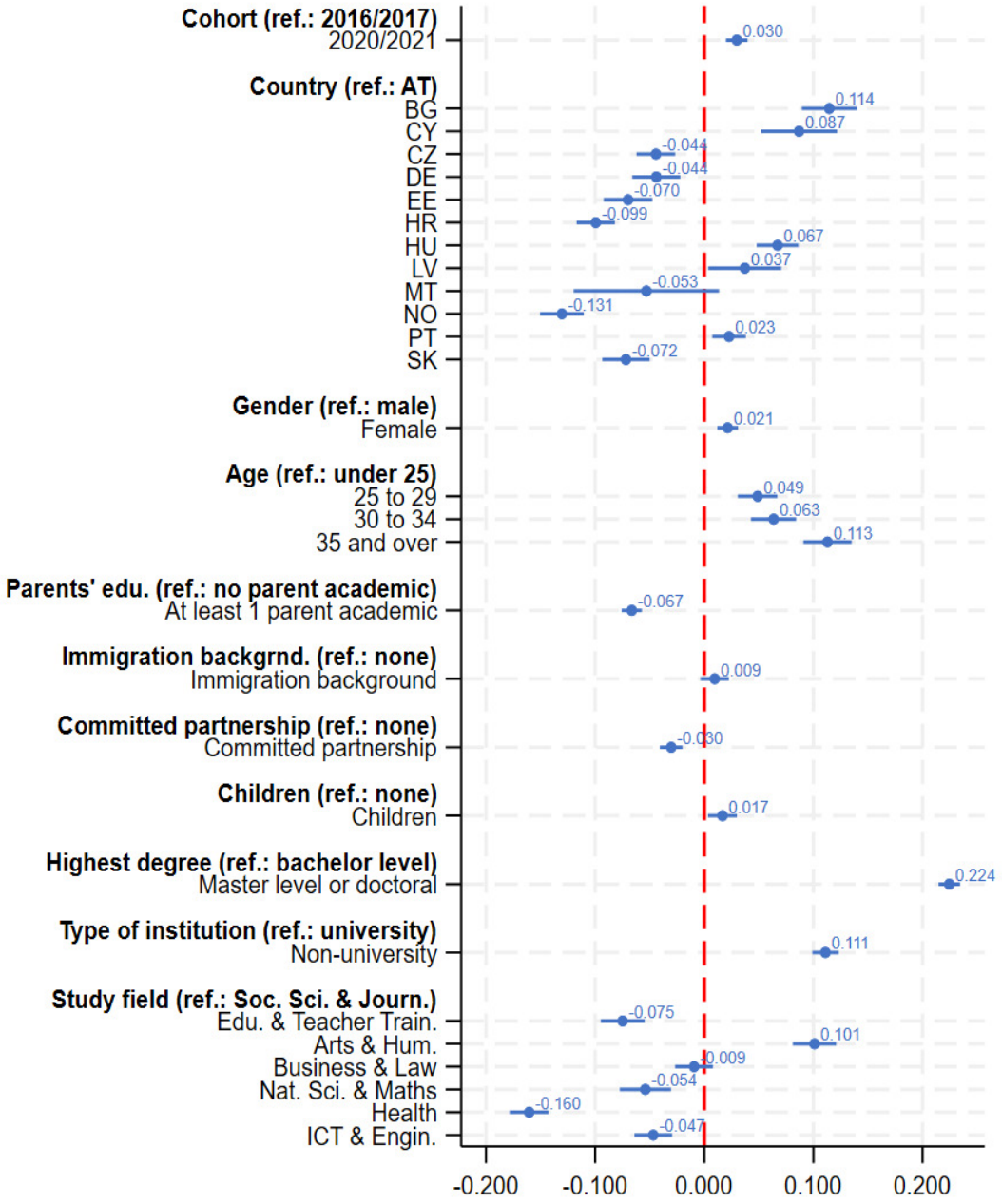
Figure 5.4.1 depicts so-called *average marginal effects* (AME) of two multivariate regression analyses on overeducation (turquoise dots) and categorical overeducation (purple dots). AME are relatively intuitive to interpret. Values above zero (right to the scattered line) indicate a positive relationship in the sense of *more* overeducation. Values below zero (left to the scattered line) indicate a negative relationship in the sense of *less* overeducation. If the spike crosses the scattered line, the effect does not differ statistically significant from zero. The value of the AME can be interpreted as a %-point change in the outcome variable if the factor variable changes by one unit. E.g. AMEs for the cohort 2020/21 are at about 0.04, i.e. the risk for being overeducated is about 4 %-points higher than for graduates of the cohort 2016/17. This is no

major but yet a substantial difference, suggesting that graduates achieve better matching jobs in the course of time.

Figure 5.4.1: Explaining the risk for overeducation: differences by countries, social groups & HE characteristics

Definition: Average marginal effects (AME) for risk of being overeducated (current job usually requires a lower degree vs. current job usually requires same level or higher-level degree as respondent holds) (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1)

Graduates currently not enrolled



Data source: EUROGRADUATE 2022, data version 3.1.0.
Countries not covered: IT, GR, RO, SI.
Method: Logistic regression analyses; independent models for "overeducation" and "no HE required"; coefficients are average marginal effects (AME).

Note that in such multivariate regression analyses, we do control for all the variables in the model. Thus, we are able to more clearly identify the effect of a single characteristic, as we are keeping the other characteristics in the model equal statistically.

Besides the difference between cohorts some further group differences should be mentioned.

Country. In about half of the countries, graduates have a somewhat higher risk for overeducation as graduates in the reference country Austria, notably: Bulgaria, Cyprus, Hungary, Latvia, and Portugal. In contrast, graduates in the Czech Republic, Germany, Estonia, Croatia, Norway, and Slovakia have a lower risk for overeducation. For, Malta, the difference is not statistically significant as can be seen by the spike crossing the zero line.

Sociodemographic and family characteristics. Male and female graduates do not differ strongly in their risk for overeducation, though females have a slightly higher risk. Graduates of higher age have a higher risk, which may mirror advantages of graduates who have studied quickly and have a straight CV without any detours. An immigration background has no statistically significant effect on overeducation. A larger effect is visible regarding educational background; graduates with an academic background have a clearly lower risk for overeducation (about 7%-points).

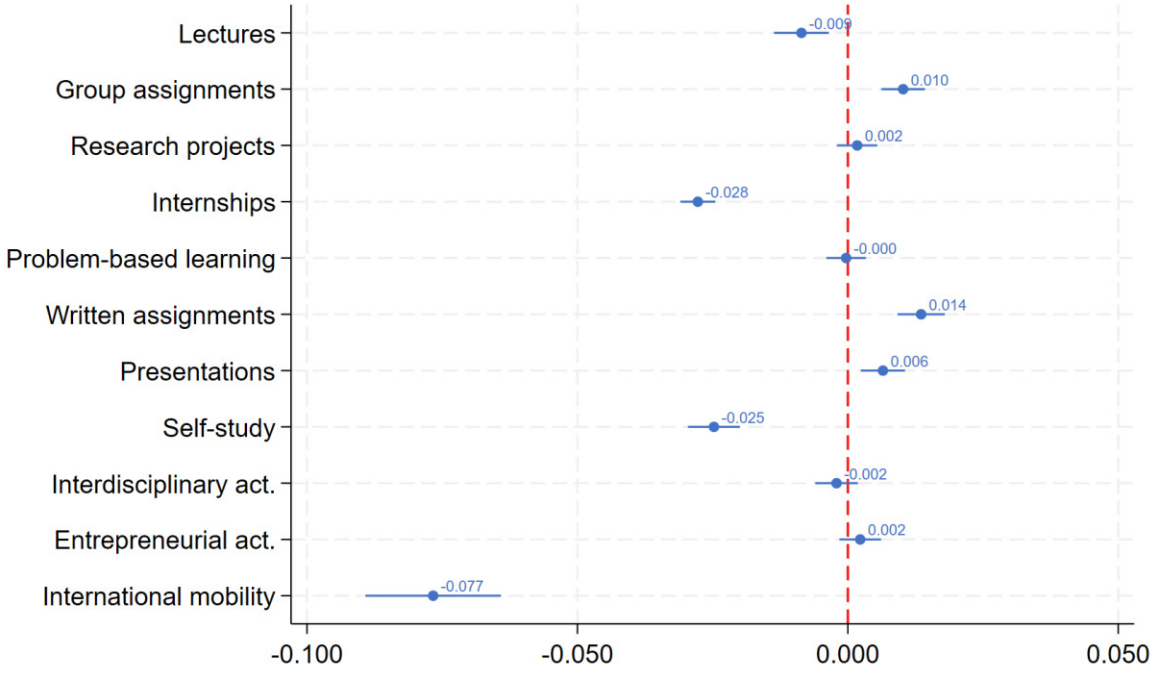
Main higher education characteristics. The risk for vertical mismatch depends strongly on the degree. The risk for overeducation is about 21%-points larger for master level graduates than for bachelor level graduates. This means that master level graduates have a clearly higher risk to be employed in jobs where they can presumably not make use of their full potential. Graduates from non-universities are at a considerably higher risk for overeducation (about 11%-points). This was not as clearly visible in the graphs discussed in chapter 5.3. Recall that in the multivariate regression model, we do control for all factors in the model, i.e. we can more clearly identify the effect of a single characteristic (keeping other characteristics equal). Finally, we observer similar differences by fields of studies as before. Graduates of Social Sciences & Journalism are at relatively high risk for overeducation, only superseded by graduates from Arts & Humanities. The comparisons between cohorts as shown above suggest that graduates can arrive at better matching jobs in course of time, however prospective students of these fields should be aware that they have a somewhat higher risk to not achieve adequate employment, at least not in the first place. In contrast, the fields of Education & Teacher Training as well as Health offer safer and more direct pathways to jobs in line with the level of education. For these fields the link to specific occupations is quite strong often due to legal and occupational requirements (e.g. for teachers, medical doctors, or nurses).

Learning activities. Are there specific actions that could help graduates in achieving matching employment? Figure 5.4.2 shows the possible impact of different learning activities. Graduates have been asked to what extent a certain mode of teaching & learning has been part of the study programme. A first observation is that differences in the teaching & learning modes mostly have no strong impact on overeducation. At the same time, some important effects can be identified.

Internships are associated with a lower risk for overeducation. This is plausible as internships lead to an improved understanding of what a specific job actually means, they signal to employers that graduates already have some experience, and they may help building connections with future employers. All this could help to achieve a job matching the level of higher education. For internships, the AME is -0.028. This seems small but we measured the extent of internships as part of the study programme on a five-point-scale, i.e. for each step on the scale the risk for being overeducated is, on average, reduced by 2.8%-points. In other words, if internships were part of the study programme “to a very high extent” (5) the risk for being overeducated is about 11%-points smaller than if internships were “not at all” (1) part of the study programme (4 times 2.8 to go from 1 to 5). Note, that this effect is not to be interpreted in a strict causal sense. Graduates having had more internships may differ from graduates with less internships in other characteristics relevant for attaining a matching job (e.g. motivation, diligence, openness, etc.). Still, results suggest that fostering internships has a potential for

reducing overeducation. It should be noted however, that simply prescribing internships does not necessarily solve the problem. Positive effects require that many high-quality internships are available. Further, compulsory internships are often unpaid, which has been condemned as exploitation by the European Parliament in a resolution for quality traineeships in the EU (European Parliament, 2023).

Figure 5.4.2: Explaining the risk for overeducation: possible impact of learning activities
Definition: Average marginal effects (AME) for risk of being overeducated (current job usually requires a lower degree vs. current job usually requires same level or higher level degree as respondent holds) (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1)
Graduates currently not enrolled



Data source: EUROGRADUATE 2022, data version 3.1.0.
Countries not covered: IT, GR, RO, SI.
Method: Logistic regression analyses; independent model for each respective learning activity; omitted control variables: cohort, country, gender, age, parents' education, immigration background, partnership, children, degree, type of institution, field of study; coefficients are average marginal effects (AME).

Self-study is as well associated with a lower risk for overeducation to at about the same degree as internships. This relationship was not expected, and the reason for it is not immediately clear. It could be that graduates using self-study to a high degree have learned very well how to acquire new knowledge and insights and have an independent working-style. A high level of self-study could as well be a proxy for self-discipline and diligence. Such characteristics could well prove advantageous for success in the labour market and finding a matching job.

Last but not least, we observe a positive effect of international mobility. This finding is in line with empirical research. International mobility during studying is supposed to have a number of positive repercussions such as foreign language abilities, intercultural competencies, self-reliance, or an international network. Employers may use international mobility as a signal of such positive characteristics. Graduates who gained any experience abroad as part of their study programme are nearly 8%-points less likely to be overeducated. Again, it should be noted, that this effect is not to be interpreted in a strict causal sense. Persons that went abroad during studying may have differed from non-mobile graduates even before their stay in characteristics which are important for their success in the labour market. Regression analyses help to control such differences to some extent but with the data at hand we cannot fully exclude such differences. Still, results suggest that fostering international mobility has some

potential to reduce overeducation. Recalling that some social groups are at a higher risk for overeducation, helping such groups to become mobile could reduce this risk. E.g. students without an academic background are at a higher risk for overeducation and at the same time less likely to engage in study-related international mobility. Programmes targeting such students could be helpful, even though increasing mobility of disadvantaged groups is far from trivial.

5.5. Hourly income and income differences among higher education graduates

Monetary returns from higher education are an important measure of individuals' educational investment. They are also a valid measure to capture differences in these educational investments within a country, but also between countries. Therefore, this chapter compares graduates' gross monthly and hourly income in the labour markets of the EUROGRADUATE 2022 countries one and five years after graduation. Two indicators are presented at the beginning of this chapter: (a) gross monthly income and (b) gross hourly income. The latter indicator depicts the earnings potential of graduates, whereas the former provides a better picture of graduates' financial independence. It is essential to understand that both indicators may provide different pictures since graduates work different weekly hours. Gross hourly income is used by dividing monthly earnings by actual monthly working hours (see Info box 5.5.1) to account for variations in the prevalence of part-time employment in different countries, but also in fields of study, as well as between female and male graduates.

Info box 5.5.2: Definitions of income measures

Monthly income: In the EUROGRADUATE 2022 survey, employed graduates were asked:

What are your gross monthly earnings (i.e., before taxes and levies/contributions), including regular extra payments (e.g., paid overtime, performance, or shift bonuses)?
For self-employed, this is after deducting business expenses but before deducting taxes.
Please round to full numbers.

[...] [CURRENCY] per month

Given that the monthly income question asked graduates to provide their respective currency, the gross monthly income used in this report is converted to ***purchasing power parity (ppp)*** and the ***euro currency*** to have comparable monetary returns to higher education for all EUROGRADUATE 2022 countries. Purchasing power parity (PPP) accounts for the differences in living costs. Although a PPP transformation cannot wholly account for different costs of living, as it is challenging to identify the same basket of goods and services of consumption across countries, this harmonisation of income is the closest we can get to providing a descriptive picture of income differences between graduates in the participating countries. This chapter excludes Italy from any international comparison since the country-specific survey asked graduates to report *net* rather than *gross* monthly income.

Hourly income: Hourly income is calculated by dividing monthly income by actual hours worked per week (formula: monthly income/(actual hours worked per week*4,3)).

The descriptive statistics in this chapter use the ***median income*** of graduates and not the mean income to adjust for differences in the country-specific distribution of incomes. The median is the middle value of a distribution sorted by size, i.e. it divides the income set into two equal parts so that one half is below the median and the other half is above the median. In the case of right-skewed distributions due to individually (very) high values, as is typical for income, the median provides a more accurate picture than the mean.

Figure 5.5.1 shows the median gross monthly income in € (PPP) per country and cohort. The median gross monthly income of EUROGRADUATE 2022 graduates from the cohort 2016/17 is equal to €2,648$_{16/17}$ per month. This group of employed graduates report earnings five years after graduation, whereas graduates from the cohort 2020/21 report earnings per month one year after graduation. Here, the median gross monthly income of EUROGRADUATE 2022 graduates equals €2,189$_{20/21}$ per month.

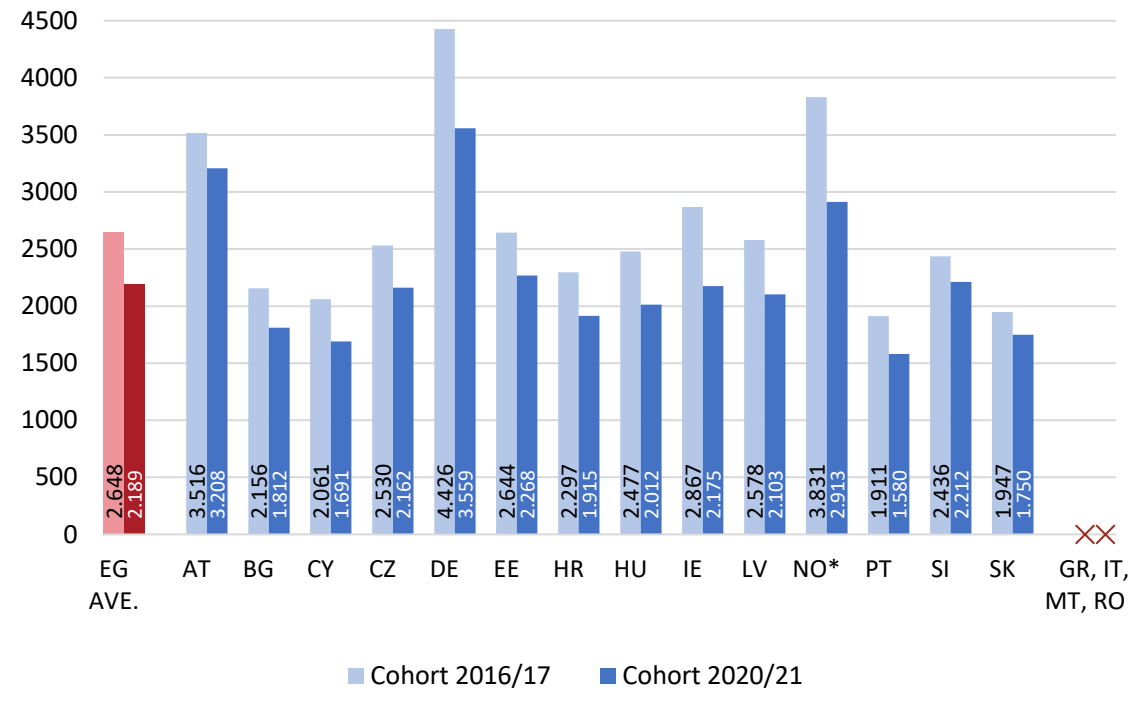
Country. Comparing the median gross monthly earnings between countries provides a relatively homogeneous picture, except for Austria, Germany, and Norway. These three countries have the highest median earnings for employed graduates currently not enrolled in higher education one or five years after graduation. The median gross monthly income of German graduates from the cohort 2016/17 is the highest overall (€4,426$_{16/17}$).[22] Across all countries, students who graduated in 2016/17 report higher median gross monthly earnings than students who graduated in 2020/21. The lowest median gross monthly earnings are found for graduates of the cohort 2020/21 from Cyprus (€1,691$_{20/21}$), Croatia (€1,915$_{20/21}$) and Portugal (€1,580$_{20/21}$).

Figure 5.5.1: Gross monthly earnings in € (PPP), international comparison

Definition: Median of gross monthly income in € adjusted with purchasing power parities (PPP) (b2.9a, b2.9b, b5c, b5d).

Graduates currently not enrolled by:

Country (X-axis), cohort (twin bars)



Data source: EUROGRADUATE 2022, data version 3.2.0; IE: Central Statistics Office of Ireland.
Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.

The comparison between employed graduates who are currently not enrolled in higher education by cohorts and between countries gives a first picture of the monetary returns of graduates to higher education with different labour market experiences. Apart from differences

[22] Please note that graduates of cohort 2020/21 in Norway are only those graduates that left higher education with a bachelor level degree compared to graduates in Austria and Germany, which have either a bachelor level or a master level degree.

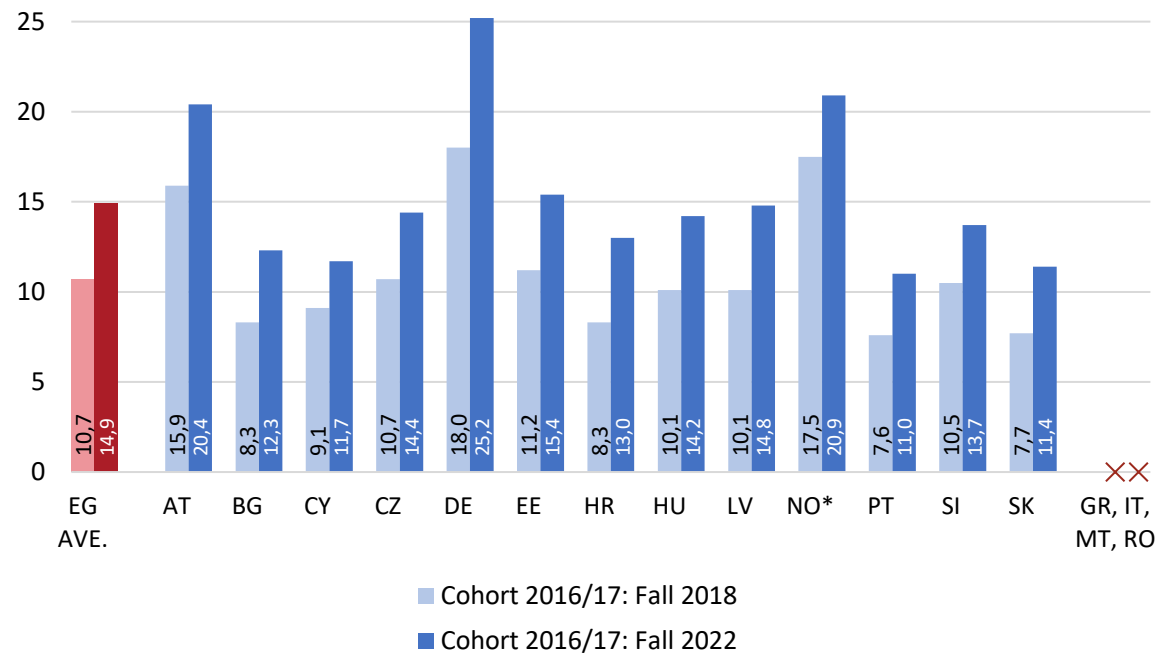
in length of employment or labour market attachment, the variation found in median gross monthly income for graduates working one year after graduation (cohort 2020/21) and five years after graduation (cohort 2016/17) is likely related to further aspects such as type of occupation, fields of study, or match between level of degree and level of job. Furthermore, given that monthly income is strongly influenced by the actual number of weekly hours worked and that the share of part-time employment varies between countries, it is essential to consider gross *hourly* income.

As a first step to assess income differences by labour market experience, Figure 5.5.2. shows gross hourly income only for graduates of the cohort 2016/17, comparing their current income in fall 2022 with their income at labour market entry in fall 2018. The overall median gross hourly income for students who graduated in 2016/17 currently equals €15$_{16/17}$ (red bar) compared to previous gross hourly income of €11$_{16/17}$ (light red bar) reported for fall 2018.

Figure 5.5.2: Gross hourly earnings in € (PPP), cohort 2016/17, international comparison

Definition: Median of gross hourly income based on gross monthly income adjusted to euro currency and purchasing power parity (ppp) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d, b6.13b, b6.13c, b6.13d).

Graduates of cohort 2016/17 currently not enrolled:
Country (X-axis), cohort (twin bars)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.

Country. Remarkably, the comparison of median gross hourly income between countries shows a similar picture as the median gross monthly income above in Figure 5.5.1, i.e. differences in working hours do not account for country differences in monthly income to a large extent. Graduates of the cohort 2016/17 in Germany, Norway, and Austria exhibit the highest median gross hourly income at both points (fall 2018 and 2022), whereby the income currently earned in these countries is higher compared to the labour market entry level in fall 2018. Looking at Germany, graduates of the cohort 2016/17 earn a median gross hourly income of €25$_{16/17}$ in fall 2022 (blue bar) and have a median gross hourly income of €18$_{16/17}$ in fall 2018 (grey bar). In comparison, the lowest median hourly income was found for graduates in Cyprus, Croatia, and Portugal in fall 2018 (€9.1$_{16/17}$, €8.3$_{16/17}$ and €7.6$_{16/17}$ respectively (grey bars)) and also in fall 2022 (€12$_{16/17}$, €13$_{16/17}$, and €11$_{16/17}$ (blue bars)). Compared to differences in the earned monthly income in fall 2022 between graduate cohorts (Figure 5.5.1), the gross

hourly income within a cohort increases after four years in the labour market. For Germany, for example, graduates of the cohort 2016/17 earned, on average, €7 more per hour five years after graduation.

Figure 5.5.3 compares the current gross hourly income between the two cohorts and depicts the differences in monetary returns according to the degree level. Generally, and expectedly, master level graduates have a higher income than bachelor level graduates. The gap size varies between countries; for example, we observe a relatively large gap in Cyprus, Germany, and Norway. Further, the length of the labour market experience matters since the gross median hourly income of students who graduated in 2020/21 is smaller than those who graduated in 2016/17 and have a more extended labour market history.

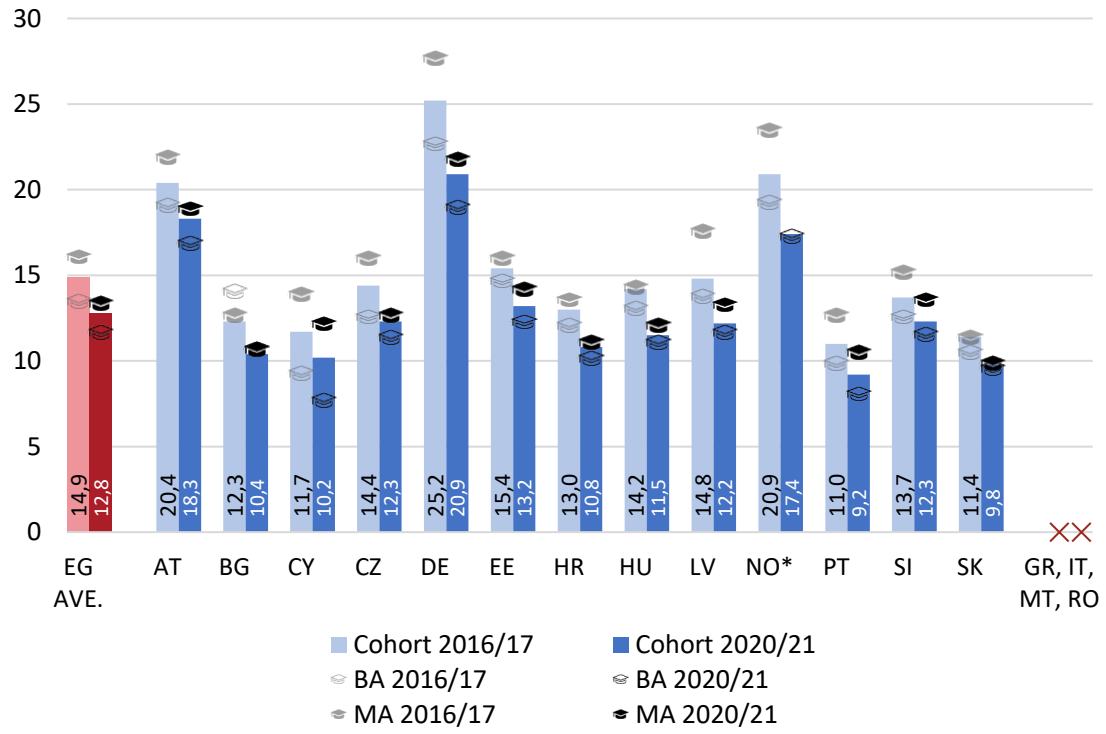
By using Figures 5.5.2. and 5.5.3, we can compare income levels in fall 2022 and fall 2018 one year after graduation. This difference depicts, amongst others, the price level changes that occur over time due to inflation. However, looking at the difference between gross hourly income one year after graduation in fall 2018 compared to one year after graduation in fall 2022 suggests marginal changes of on average €2 only (EG AVE: €11$_{16/17}$ and €13$_{20/21}$ respectively in Figures 5.5.2. (light red bar) and 5.5.3 (red bar)).

Figure 5.5.3: Gross hourly earnings € (PPP), international comparison

Definition: Median of gross hourly income based on gross monthly income in € and adjusted with purchasing power parity (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Country (X-axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.

Country. The comparison of median gross hourly income between the participating countries for the two cohorts and by the level of educational qualification again supports the observation that graduates in Austria, Germany, and Norway report the highest median gross hourly income. For German graduates of cohort 2020/21 who enter the labour market with a bachelor level degree, the median gross hourly income equals €19$_{20/21}$ compared to €17$_{20/21}$ in Austria (Figure 5.5.3: grey hats). With a master level degree, graduates earn a median gross hourly

income of €22$_{20/21}$ in Germany or €19$_{20/21}$ in Austria (Figure 5.5.3: black hats). The three lowest median gross hourly earnings are found in Portugal, Slovakia, and Hungary. Here, employed graduates with a bachelor level degree earn €9$_{20/21}$, €10$_{20/21}$, and €12$_{20/21}$, respectively, one year after graduation (cohort 2020/21).

Degree and cohort level. In the three countries, Portugal, Hungary, and Slovakia, the earnings differences between master level graduates and bachelor level graduates one year after graduation are tiny. In Slovakia, for example, the difference is, in fact, zero. This contrasts with the monetary return of obtaining a higher degree level in Austria or Germany, for that matter. Here, graduates with a master level earn between €2 and €5 per hour more than those who enter the labour market with a bachelor level degree. Figure 5.5.3 additionally depicts a difference in the degree-level gap between cohorts. For cohort 2016/17 graduates, the bachelor-master gap in gross hourly income is much more pronounced than for students who graduated in 2020/21. On average across the EUROGRADUATE countries, the difference between graduates with a bachelor level degree and with a master level degree is equal to €6 for the cohort 2016/17 compared to €3 for the cohort 2020/21. The bachelor-master gap is twice the size of the gap between the cohorts.

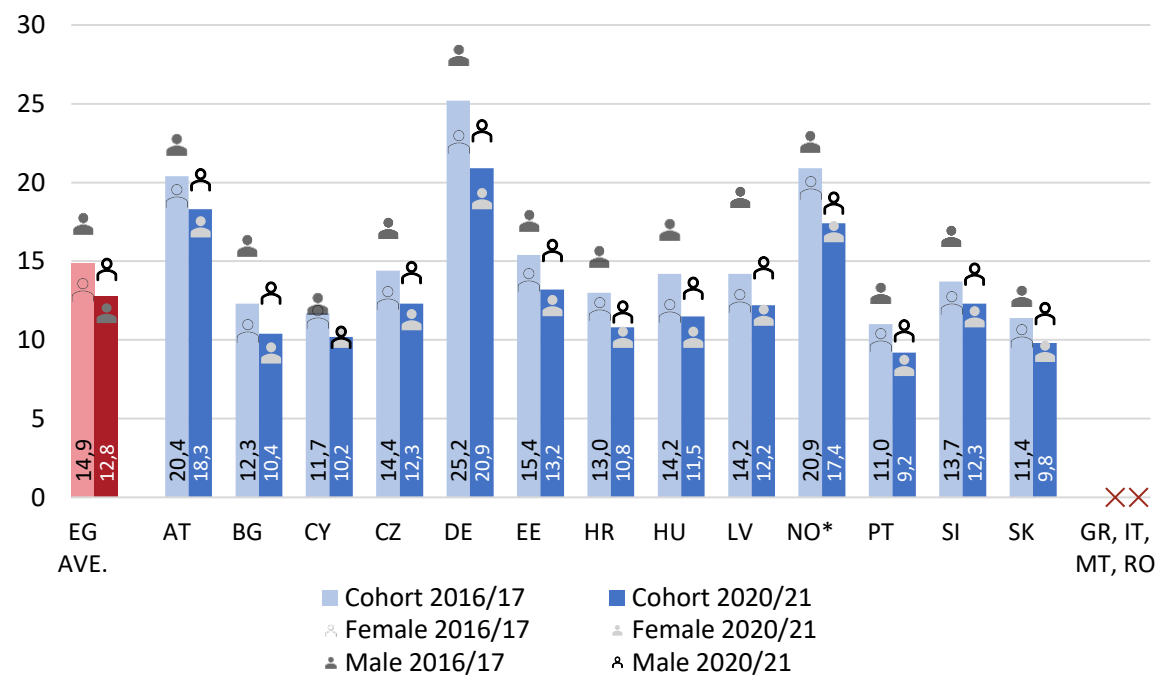
Another important gap in gross hourly earnings is between female and male graduates. The so-called gender pay gap is well documented and is particularly pronounced for highly skilled workers and those at the top of the wage distribution (OECD 2024). Figure 5.5.4. depicts the gender gap in median gross hourly earnings by countries and cohorts. On average, the gender pay gap for the cohort 2020/21 is equal to €3 per hour compared to €4 per hour for graduates of the cohort 2016/17 (emptied and filled person icons). The latter gap represents a difference of 25% of all graduates' median gross hourly income.

Figure 5.5.4: Gender gap in gross hourly earnings € (PPP), international comparison

Definition: Median of gross hourly income based on gross monthly income in € adjusted with purchasing power parities (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Country (X-axis), cohort (twin bars), gender (emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.

Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.

Country and cohort. Figure 5.5.4 shows a similar ranking of countries according to the size of the gender pay gap as other data sources. Germany, Austria, Hungary, and Latvia have comparatively large gender pay gaps in gross hourly earnings, whereas Norway, Croatia, and Portugal have relatively small gaps. Female graduates in Germany earn a median gross hourly income of €19$_{20/21}$ or €23$_{16/17}$ depending on the graduation cohort, in contrast to €23$_{20/21}$ or €28$_{16/17}$ depicted for male graduates by cohort. In Norway, the gaps are somewhat smaller, with women earning a median gross hourly income of €17$_{20/21}$ or €20$_{16/17}$ compared to men with €19$_{20/21}$ or €23$_{16/17}$. An even smaller gap in median gross hourly earnings can be found in Portugal, where female graduates earn €8$_{20/21}$ or €10$_{16/17}$ and males €11$_{20/21}$ or €13$_{16/17}$. However, it is important to mention that Figure 5.5.4 does not control for any drivers of the gender pay gap, such as the field of study or family formation. Below, the results of a multivariate analysis explaining income differences across EUROGRADUATE 2022 countries are presented, which account for additional factors associated with graduates' earnings. Before turning to possible factors explaining income differences, Figure 5.5.5. completes the description of income differences for EUROGRADUATE 2022 by depicting median gross hourly earnings for all graduates differentiated by the type of institution and field of study, two important determinants of wages.

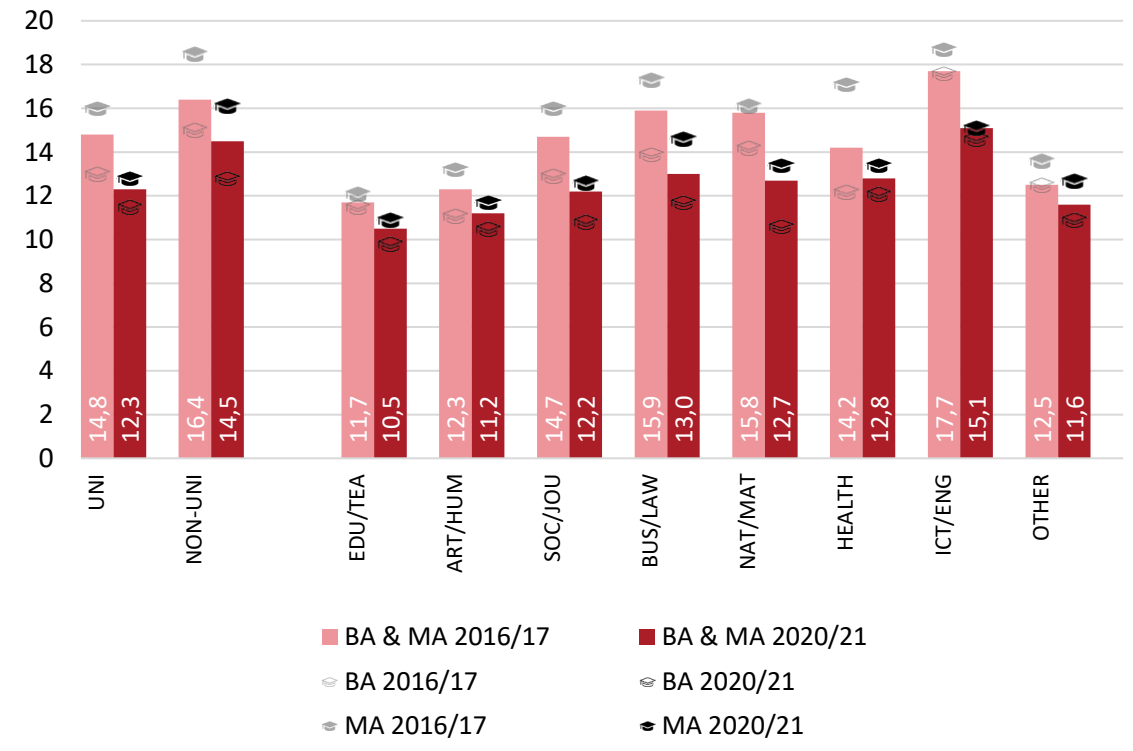
Figure 5.5.5. shows all countries' median gross hourly earnings by (1) type of institution and (2) field of study. In addition, the level of qualification is differentiated.

Figure 5.5.5: Gross hourly earnings € (PPP) by type of institution and field of study

Definition: Median of gross hourly income based on gross monthly income in € adjusted with purchasing power parities (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.

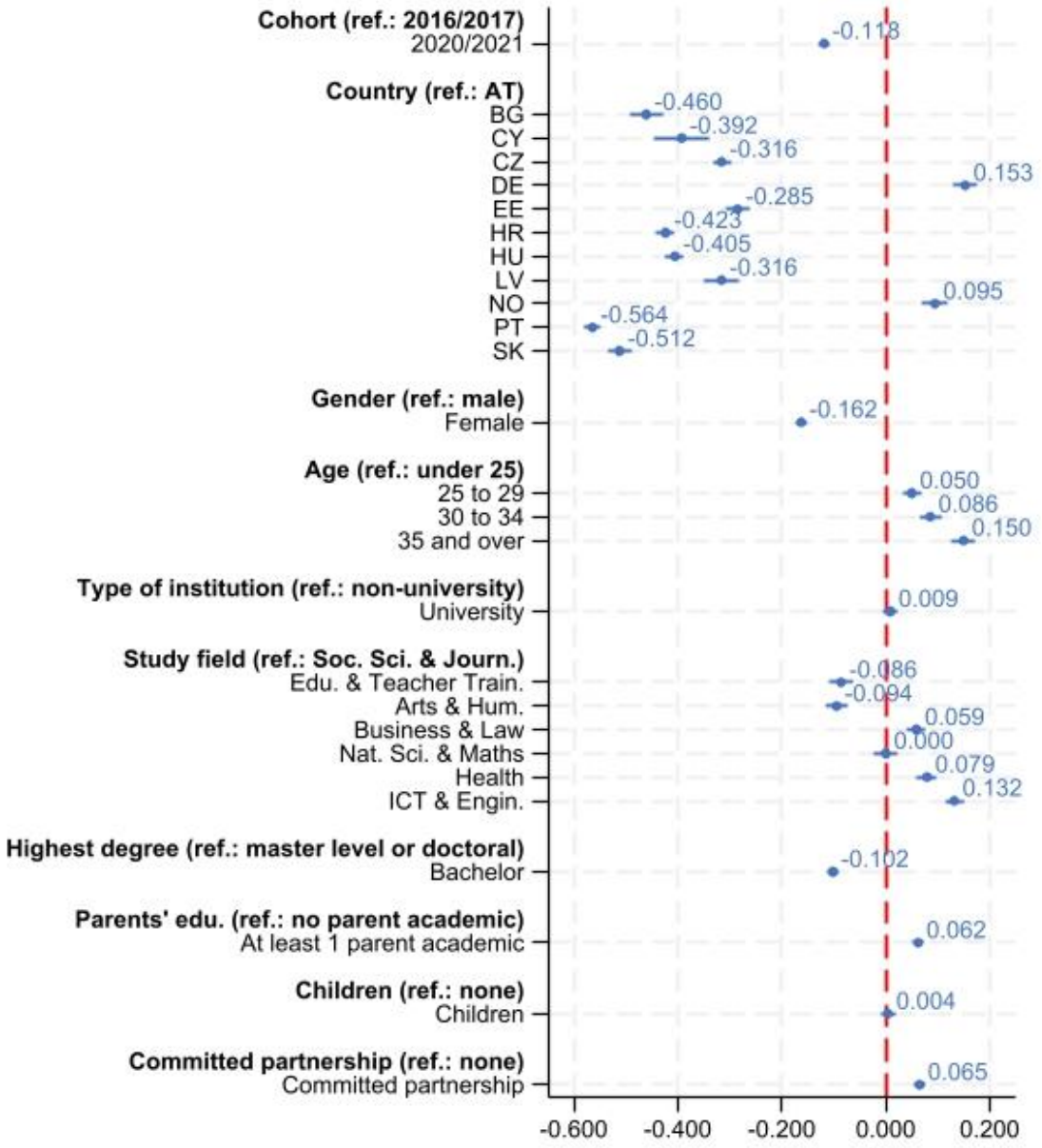
Notes: SI is not included in the type of institution; GR, IT, MT, RO: no data; NO: cohort 2020/21 bachelor level graduates only.

Figure 5.5.6: Explanatory factors for income differences

Definition: Logarithmic transformation of gross hourly income based on gross monthly income in € adjusted with purchasing power parities (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Variables (X-axis), regression coefficients (Y-axis)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: GR, IT, MT, RO: no data; NO: cohort 2020/21 bachelor level graduates only.
Method: Linear regression analyses, coefficients are logarithmic points which can be converted to a percentage change.

Type of institution and field of study. On average, across the EUROGRADUATE countries, graduates from both cohorts earn a higher median gross hourly income if they graduate from a non-university. This difference is likely driven by master level graduates, since they earn on average €3 per hour more from a non-university. Differences by type of institution between bachelor level graduates, on the other hand, are nearly zero between cohorts. On average, graduates of cohort 2020/21 across the EUROGRADUATE countries earn a median gross hourly income of €$15_{20/21}$ if they graduated from a non-university compared to €$12_{20/21}$ euros if

they graduated at a university, without taking into account differences by degree level. Looking at differences by field of study shows that on average across the EUROGRADUATE countries, graduates with a degree in ICT & Engineering have the highest monetary return with a median gross hourly income of either €$15_{20/21}$ or €$18_{16/17}$, followed by graduates from the fields Natural Sciences & Mathematics (€$13_{20/21}$ or €$16_{16/17}$) as well as Business & Law (€$13_{20/21}$ or €$16_{16/17}$ respectively).

Degree level and cohort. Also, on average, across EUROGRADUATE countries, cohort 2016/17 graduates earn more than cohort 2020/21 graduates independently of the type of institution or field of study, given the difference in length of labour market participation. For example, master level graduates earn more than bachelor level graduates across the board for both types of institutions and nearly all fields of studies from the cohort 2016/17 (light red bars). The median gross hourly income of graduates of the current cohort varies from €$10_{20/21}$ for bachelor level in Education & Teacher Training to €$15_{20/21}$ for master level in ICT & Engineering.

To understand the differences in gross hourly earnings of graduates, Figure 5.5.6 illustrates the correlations for three types of determinants associated with graduates' gross hourly earnings: country-level factors, higher education factors, and sociodemographic factors. As discussed, the model corroborates that earnings differences between graduates arise due to the choice of different fields of study, graduating with a different degree or from a different type of higher education institution, as shown in Figures 5.5.3, 5.5.4, and 5.5.5 above. Female graduates earn 0.16 log points less than male graduates across EUROGRADUATE countries, which can be converted to a percentage change of 25%.

Furthermore, income differences across countries are also visible when controlling for higher education or sociodemographic factors. Compared to the country of reference (Austria), graduates in Germany earn 0.15 log points more, whereas graduates in the Czech Republic earn 0.32 log points less than Austrian graduates. The model shown in Figure 5.5.6 also shows that older graduates earn more than graduates under age 25 (reference category) even when degree levels or family formation are included in the model. Figure 5.5.6 further illustrates that the earnings difference between graduates with an academic background is more considerable than those without this background. Graduates whose parents also hold a higher education degree earn 0.06 log points more than graduates with parents without this qualification level. Overall, it can be concluded that country-level, higher education and sociodemographic factors are essential drivers of the earnings differences among EUROGRADUATE 2022 graduates.

5.1. *Specific* policy *issue*: The COVID-19 pandemic as possible reason for earnings losses

The previous chapter focused on the monetary return to higher education by looking at income differences between two cohorts of graduates and comparing income between countries. An important difference between the two cohorts of graduates included in the EUROGRADUATE 2022 data is graduation timing. The 2020/21 cohort graduated during the COVID-19 pandemic and entered the labour market under circumstances different from the 2016/17 cohort. The hourly incomes shown in the preceding chapter vary in terms of length of employment but may also differ in labour market conditions before and after the COVID-19 pandemic. From a methodological point of view, more than two time periods are needed to identify any trends arising from the pandemic, including assessing potential earnings differences due to the COVID-19 pandemic. To nonetheless cautiously infer if any earnings differences for the two cohorts might stem from the COVID-19 pandemic, a comparison of both cohorts at labour market entry could be informative.

For this exercise of an objective assessment of differences in income, five countries that participated in EUROGRADUATE 2022 and EUROGRADUATE 2018 are compared in Figure 5.6.1. Austria, the Czech Republic, Ireland, Croatia, and Norway participated in both surveys. In EUROGRADUATE 2018, cohort 2016/17 graduates reported gross monthly earnings one

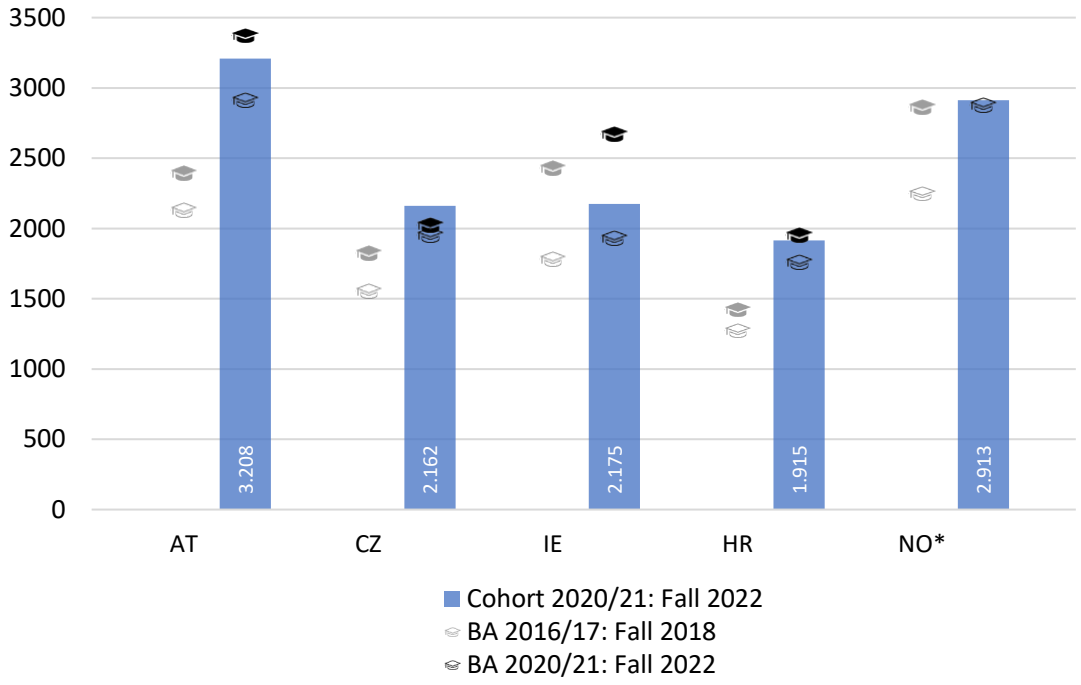
year after graduation in the same manner as graduates of the cohort 2020/21 reported earnings in the EUROGRADUATE 2022 data. Figure 5.6.1 shows that the median gross monthly income of bachelor level graduates of cohort 2016/17 one year after graduation (grey icons) is lower than those of cohort 2020/21 *one year after graduation* (black icons). The income of the current cohort, albeit under presumably less favourable conditions of the COVID-19 pandemic, has increased, suggesting that graduates experience no major income losses due to the pandemic on average. However, it should be noted that we do not know how much incomes would have increased between fall 2018 and 2022 *without* the COVID-19 pandemic.

Figure 5.6.1: Gross monthly earnings € (PPP), country comparison using EUROGRADUATE 2018 and 2022

Definition: Median of gross monthly income in € adjusted with purchasing power parities (PPP) (b2.9a, b2.9b, b5c, b5d).

Graduates currently not enrolled by:

Country (X-axis), cohort (blue bars), level of qualification (graduation head icons)



Data source: EUROGRADUATE 2022, data version 3.2.0., IE: Central Statistics Office of Ireland, EUROGRADUATE 2018 pilot survey report Table A6.18.

Notes: NO: cohort 2020/21 bachelor level graduates only; for comparison, the median gross monthly earnings of cohort 2016/17 are taken from the EUROGRADUATE 2018 pilot survey report.

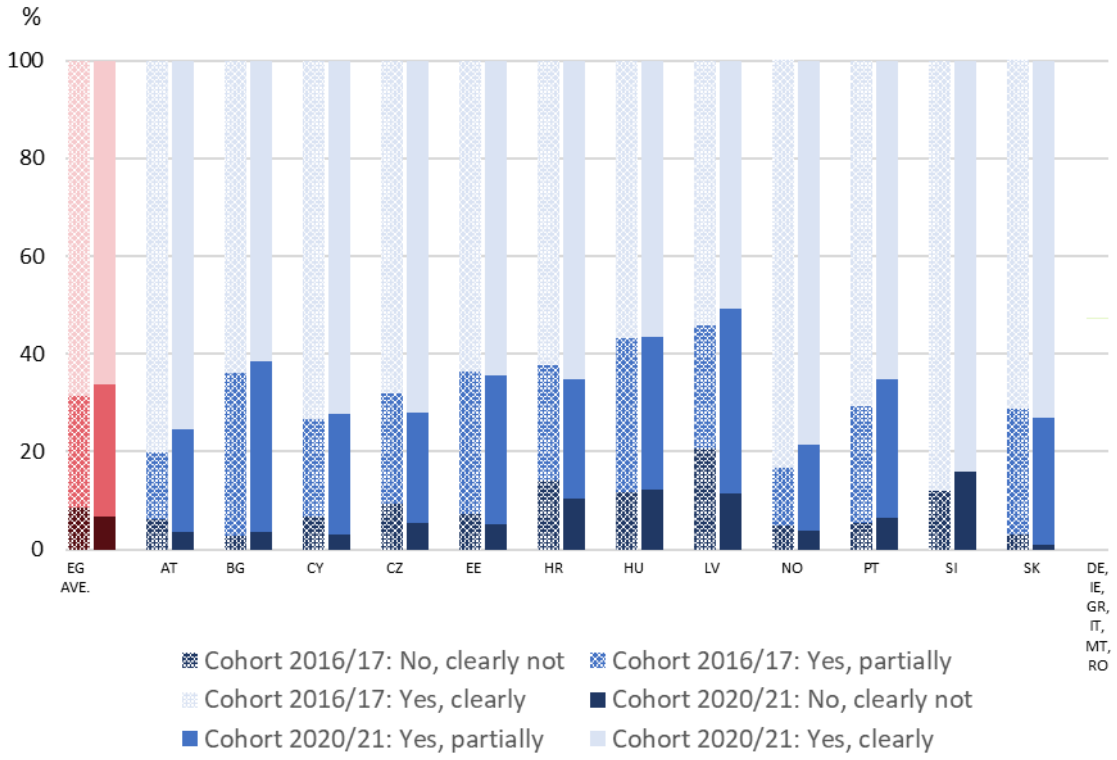
The above analysis compares income between countries at two-time points, pre- and post-COVID-19 pandemic and is completed by an illustration of the perceived earnings loss of graduates across the EUROGRADUATE 2022 countries. Figure 5.6.2 shows how graduates of both cohorts perceived the potential earnings loss during the COVID-19 pandemic in fall 2022. The vast majority of graduates reports to *not* have had earnings losses during the pandemic. Those with earnings losses were asked whether these losses were due to the pandemic. The majority in both cohorts and across all countries attribute earnings losses *clearly* to the pandemic. All in all, the perception of graduates deviates somewhat from the more objective comparison shown in Figure 5.6.1. However, Figure 5.6.2 illustrates the perception of fewer graduates. About 9,000 graduates were considered for the analysis of perceived earnings loss. These represent only about 10% of the graduates for whom earnings information was considered in the previous chapter, because most graduates do not report earnings losses in the first place.

Figure 5.6.2: Perceived cause of earnings loss during COVID-19 pandemic, international comparison

Definition: Percentages attributing earnings loss to the COVID-19 pandemic (b8.4).

Graduates currently not enrolled by:

Survey country (X-axis), cohort (blue bars)



Data source: EUROGRADUATE 2022, data version 3.2.0.

Notes: DE, GR, IE, IT, MT, RO: no data. NO: cohort 2020/21 bachelor level graduates only.

5.2. Job satisfaction

Job satisfaction is an important dimension of the returns to education, and it has been shown that higher levels of education go together with higher levels of job satisfaction (e.g. Vila & García-Mora, 2005). Higher education can pave the way to jobs with higher salaries, more self-determination, more prestige, better working conditions, and other favourable aspects. At the same time, high job positions may have their downsides like long working hours, less time for private life or problems in reconciling work with family commitments.

In the following we will look at overall job satisfaction comparing the graduates of different countries as well as comparing by cohorts and degrees. We will consider more breakdown group when investigating the country average overall job satisfaction. Finally, we will have view on the levels of satisfaction with different aspects of the job, comparing overeducated with non-overeducated graduates.

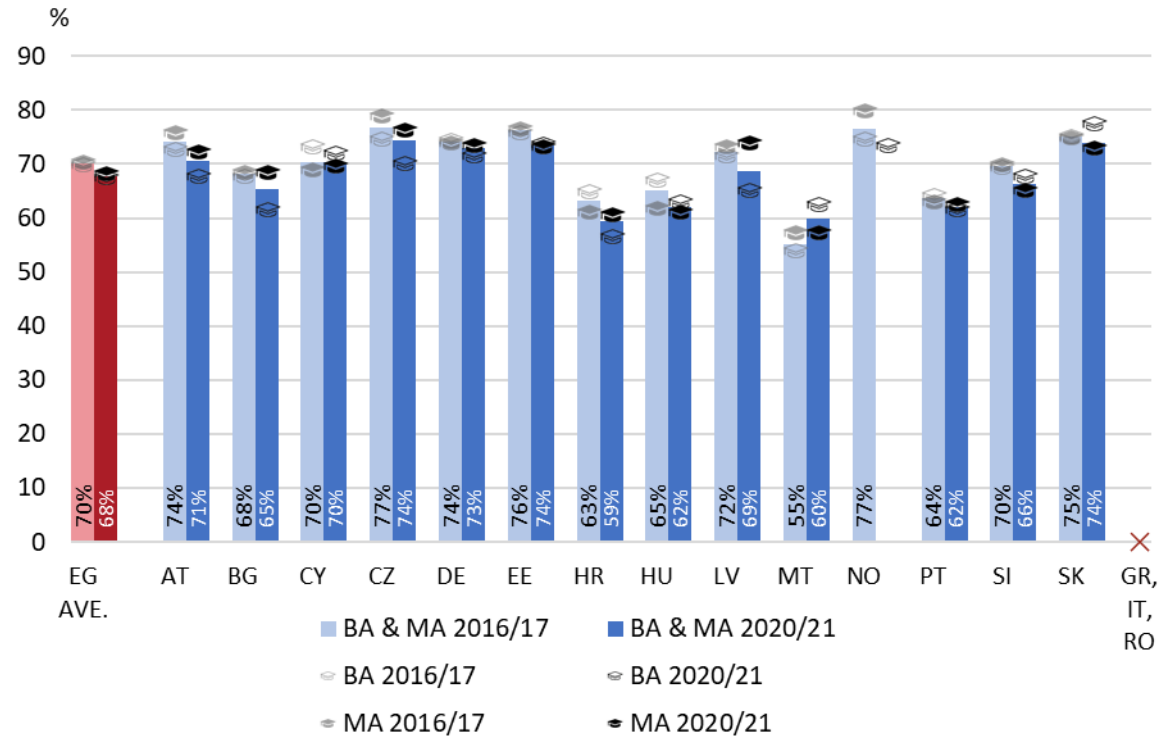
Figure 5.7.1 shows the overall job satisfaction on average, by countries as well as by cohorts and degrees. The level of satisfaction seems relatively high with about 68%$_{20/21}$-70%$_{16/17}$ of the graduates being (very) satisfied. On average, cohorts differ only slightly in the level of satisfaction. On average, satisfaction levels of bachelor level graduates and master level graduates are nearly identical.

Figure 5.7.1: Job satisfaction, international comparison

Definition: Percentages of graduates voicing that they are all in all (very) satisfied with their current work situation (two highest values on a five-point scale) (b4.2).

Graduates currently not enrolled by:

Survey country (X-Axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: NO: cohort 2020/21, MA level, no data; MT*: except BA & MA 2020/21 all categories low number of cases (<100); SK*: BA level, cohort 2020/21, low number of cases (<100); GR, IT, RO: no data.

Countries. Satisfaction levels differ by countries with about three quarters of the graduates being satisfied in the Czech Republic, Germany, Estonia, Norway, and Slovakia. Lower levels of satisfaction are reported for Croatia, Hungary, Malta, and Portugal. Note that results for Malta and for the cohort 2020/21 in Slovakia should be interpreted with care only due to low numbers of cases.

Cohorts. On average there is only a small difference between cohorts, but this difference can be observed throughout all countries except for Malta. This may reflect that graduates at the very start of their career are somewhat less satisfied due to not yet having reached the jobs aimed for. It may as well reflect the relatively challenging conditions the cohort 2020/21 had to face when accessing the labour market.

Degrees. For most countries, master level graduates report equal or higher levels of satisfaction as bachelor level graduates in both cohorts. Exceptions are especially Cyprus and Hungary where bachelor level graduates in both cohorts report higher overall job satisfaction. Recall that in these countries bachelor level graduates had a stronger vertical match of education and job than master level graduates.

Figure 5.7.2 provides further insights on how higher education characteristics and sociodemographic variables are related to job satisfaction.

Figure 5.7.2: Job satisfaction, EUROGRADUATE averages

Definition: Percentages of graduates voicing that they are all in all (very) satisfied with their current work situation (two highest values on a five-point scale) (b4.2).

Graduates currently not enrolled by:

Type of institution, study field, gender, age (X-Axis), cohort (twin bars), degree level per cohort (grey/black, emptied/filled icons)

Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO: no data.

Type of institution. Satisfaction levels of graduates of both types of institutions are pretty much at the same level. For the cohort 2020/21 we detect an interesting difference by degree. While masters are more satisfied among the university graduates, bachelors are more satisfied among the non-university graduates. This may reflect that bachelor level graduates of non-universities still have a higher acceptance in the labour market than bachelor level graduates of universities who are more often expected to continue with a master programme.

Field of study. Graduates of ICT & Engineering are most satisfied with their job ($72\%_{20/21}$-$75\%_{16/17}$). In comparison, the proportion of satisfied graduates is about 10%-points lower for Arts & Humanities ($61\%_{20/21}$-$68\%_{16/17}$). Health is the only field where the younger cohort has a (clearly) higher job satisfaction than the older cohort. A connection to the COVID-19 pandemic seems intuitive even though the reason is unclear. Working conditions during the pandemic have been highly challenging and staff in the health sector was at a specifically high risk to contract COVID-19. At the same time, the health sector received a lot of appreciation; such sense of importance may have boosted job satisfaction.

Gender and age. Job satisfaction varies only moderately between genders, with less satisfaction among female graduates especially in the older cohort. Differences by age do not yield a systematic pattern.

Finally, different aspects of job satisfaction are considered in Figure 5.7.3 with a view towards the impact of overeducation. It seems very straightforward that overeducation reduces job satisfaction and this is as well in line with findings of previous research (Allen & van der Velden, 2001; Badillo-Amador & Vila, 2013). At the same time, it has been suspected that the impact of overeducation might vary across aspects of job satisfaction and probably even have positive

effects due to lower working hours and better opportunities to reconcile job and private life (Erdogan et al., 2011).

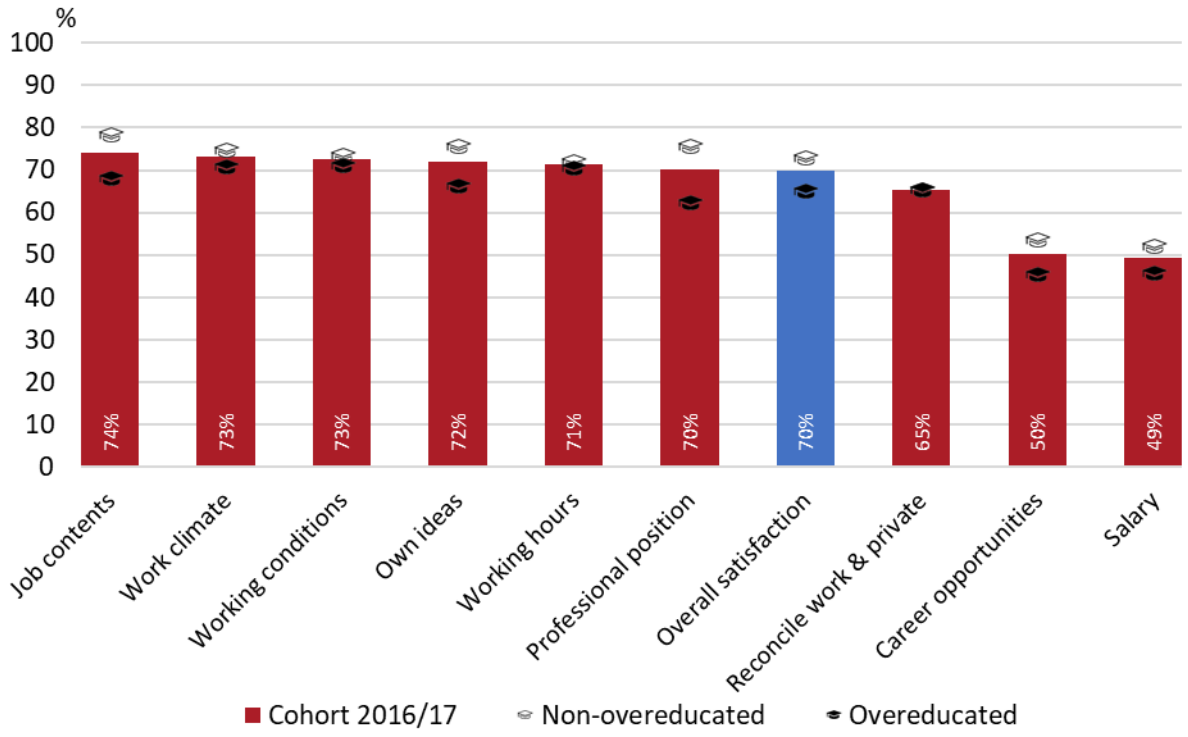
For this analysis we only considered the cohort 2016/17 to reduce complexity and as these graduates have had more time to established themselves in the labour market.

Figure 5.7.3: Job satisfaction, EUROGRADUATE averages by overeducation

Definition: Percentages of graduates voicing that they are (very) satisfied with nine different aspects of their job and overall satisfaction (two highest values on a five-point scale) (b4.1, b4.2).

Graduates of cohort 2016/17, currently not enrolled by:

Job aspects (bars), overeducation (emptied/filled icons)



All differences between overeducated and non-overeducated are statistically significant except for the job aspect “possibility to reconcile work with private life and family”.

Data source: EUROGRADUATE 2022, data version 3.2.0.

Notes: GR, IT, RO: no data.

We consider overall satisfaction (dark red bar) and nine different job aspects for which graduates could express their level of satisfaction (light red bars; ordered by level of satisfaction):

1. Job contents
2. Work climate
3. Working conditions
4. Possibility to contribute own ideas
5. Working hours
6. Professional position
7. Possibility to reconcile work with private life and family
8. Advancement opportunities
9. Salary/revenues

For the first seven aspects the level of satisfaction seems relatively high and ranges between two thirds and three quarters of the graduates being (very) satisfied. In contrast, only about half of the graduates are satisfied with advancement opportunities and salary/revenues.

Overeducated graduates (filled hats) are visibly less satisfied in nearly all aspects than non-overeducated graduates (emptied hats). Except for the aspect “Possibility to reconcile work

with private life and family" the differences between both groups are all statistically significant. The significant differences vary strongly between aspects and range from about 2%-points (working hours) to about 13%-points (professional position). It is interesting to see that the level of satisfaction for overeducated and non-overeducated graduates is relatively close to each other in aspects not strongly related to the job position, e.g. work climate, working conditions, working hours, and the possibility to reconcile work with private life and family. For some of these aspects one could have expected overeducated graduates to be even more satisfied, if some graduates accept jobs below the level of their education to have better possibilities to reconcile work with private life and family. However, this is not the case.

Stronger differences are observed for all aspects closely connected to the professional position and for which overeducated graduates are indeed likely to be worse off than their non-overeducated peers, namely job contents, possibility to contribute own ideas, advancement opportunities, and salary/revenues. While clear drawbacks are observed, the level of job satisfaction among overeducated graduates is still at a moderately high level. Except for advancement opportunities and salaries, the majority of these graduates is (very) satisfied with the different aspects and overall. The percentage of satisfied *overeducated* graduates ranges between 46% (salary and career opportunities) and 71% (working conditions and work climate). The percentage of satisfied *non-overeducated* graduates ranges between 52% (salary) and 78% (job contents). All in all, even among overeducated graduates the clear majority is (very) satisfied with their jobs overall and regarding most aspects considered.

6. Skills Levels and Skills Match

6.1. Main findings

High overall level of own skills

On average, graduates assess the level of their own skills as high for most kinds of skills.

Relatively large shares of graduates assess their skills levels as high for e.g.

- Applied ICT
- Ability to acquire new knowledge
- Cooperation & coordination skills

Skills level required for jobs

On average, skills levels required for graduates' jobs are similar to the possessed skills levels.

ICT skills

There is no evidence for a major deficit in ICT skills among higher education graduates.

Skills match

For most skills, ¾ and more of the graduates see their skills level as matching with job requirements or above job requirements.

Relatively *low shares* of graduates of 20% and less perceive a *skills deficit* for:

- Foreign language skills
- Applied ICT
- Advanced ICT

Relatively *high shares* of graduates of close to or above 30% perceive a *skills deficit* for:

- Mastery of own discipline
- Make meaning clear to others
- Coordinate activities of others

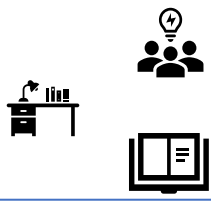
Teaching & learning modes requiring students to seek for own solutions in groups or alone foster innovation skills. Such modes are: problem-based learning (PBL), self-study, group assignments, or interdisciplinary activities.

A variety of teaching & learning forms should be offered to foster the different skills. Focussing on lectures primarily seems not advantageous.

Skills & teaching/learning modes

Some teaching & learning modes have the potential to foster a large bandwidth of skills:

- Problem-based learning (PBL)
- Self-study
- Written assignments



6.2. Introduction: Overview and key issues

European policy makers see the availability of adequate skills as a key requirement for Europe's ability to master the multiple challenges ahead. "Skills and education drive Europe's competitiveness and innovation." (President von der Leyen cited after European Commission, 2020). Therefore, the European Commission has set up a skills agenda in 2020 to foster "a paradigm-shift on skills" (ibid.) which is seen as needed to accomplish the "twin green and digital transitions" (ibid.) of European economies. Skill demands in European economies are changing rapidly and sometimes in unpredictable ways (see European Commission, 2020). There is an ongoing and quick technological change through digitalisation and the development of artificial intelligence. There are long-term trends like the demographic change with new jobs in the care and health sector. There is the need to change to economic activities that are climate-neutral and sustainable. There are unforeseen challenges as exemplified by the COVID-19 pandemic or Russia's attack on Ukraine which ask for flexible responses by European education, economies, and policies.

In fact, the concerns of the Council of the European Union about an "appropriate supply of relevant knowledge, skills and competences" (Council of the European Union, 2017) were as well among the main reasons for the Council to recommend developing a European graduate survey in tertiary education.

This chapter investigates the level of skills of higher education graduates regarding a set of competencies asked for in the EUROGRADUATE survey. Further, it will look at the level of skills required in current jobs in the view of graduates and, by means of comparison, shed some light on the match of available skills with labour market requirements. We hope to provide helpful insights by this, but it must be emphasised that it is only a specific facet of the overarching topic of skills supply.

Firstly, we are focussing on higher education. While higher education clearly has a crucial role in providing highly skilled labour and boosting innovation capacities, the European labour force consists of further groups with non-higher education degrees. A full picture of the skills supply and skills match in European economies would need to consider these groups as well. Secondly, we are focussing on the view of the graduates and in this sense on the supply side of skills only. Employers, i.e. the demand side of skills, might have a different view and probably perceive skills-shortages not perceived by employees. Thirdly, we are measuring skills by self-assessments of respondents. Within a survey there are little alternatives, but it needs to be kept in mind, that such self-assessments are subjective assessments of the skills levels and no objective tests of the skills levels.

For measuring skills and the skills match, we use an instrument developed for the REFLEX survey (Allen & van der Velden, 2007). In this instrument, respondents are *first* asked about the level of a specific skill required for their job and *secondly* about their own current level of this skill. Thus, respondents' skills assessments are 'anchored' in the required level of their job (Allen & van der Velden, 2005). This is one way of ensuring that respondents have a clearer understanding of the scale they should use for assessing their skills and that researchers know better which anchor or reference respondents presumably have in mind when assessing their skills. This allows assessing acquired levels against required levels. By comparing both levels with each other, we receive a direct measure for the skills match, the skills surplus, or the skills deficit. These are desirable features. At the same time, if the skills levels people have in mind are relative to the skills levels of their job, comparing the skills levels of persons in different jobs could be misleading. Due to cognitively 'anchoring' the skills assessment in the job requirements, a person in a more demanding job is expected to assess her or his skills levels more critically than a person in a less demanding job. This is to be considered when comparing skills levels across groups and is one reason why we dispense of cross-country comparisons of skills.

In chapter 6.3 we investigate mean levels of 12 kinds of skills regarding the level acquired by respondents (in their own view) and the level required in their current job (in their own view). Further we look at skills match and mismatch from two angles. Firstly, we look at the mean value of the match between acquired and required skills levels. This gives a first impression of an overall surplus or deficit in skills. However, surplus and deficit at the individual level may cancel each other out. Therefore, we, secondly, show the share of graduates with matching skills levels and the share of graduates feeling overskilled or underskilled.

In chapter 6.4 we turn to the question how skills could be fostered in higher education. We analyse the association of different teaching and learning modes with the level of the various skills.

6.3. Skills levels and skills match

In Figure 6.3.1 current own levels of skills are investigated. The 12 skills are ordered by the level perceived by respondents. The scale, respondents were asked to indicate their level on, ranges from 1 (“very low”) to 7 (“very high”). The middle of the scale is 4, i.e. values above 4 indicate medium to high skills levels and values below 4 low to medium skills levels (in Figure 6.3.1 a red line highlights where levels cross the medium values as an orientation).

Figure 6.3.1: Current own level of skills, EUROGRADUATE averages

Definition: Mean values of current own skills level as self-assessed by respondents on a 7-point scale (1 “very low” to 7 “very high”) (c1B).

All graduates currently employed by:

Cohort (bars), degree level (emptied/filled icons)

Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: DE, GR, IT, RO: no data.

A first observation is that levels for all, but one skill are above the value of 4, i.e. graduates assess their skills levels for nearly all skills to be relatively high. Mean values for 10 skills range from 5 to 6. The highest mean value for these skills is reported for “applied ICT” and “acquire new knowledge” (mean $5.8_{20/21}$-$5.9_{16/17}$), the lowest for “foreign language” (mean 5.1). The differences between the levels for these 10 skills are modest. In contrast, the ability to “present to an audience” (mean $4.7_{20/21}$-$4.8_{16/17}$) is self-assessed somewhat lower and the skills

regarding “advanced ICT” (mean 3.9) clearly lower and even below 4, so slightly on the negative side of the scale.

Note that the latter does not necessarily imply too little supply of advanced ICT skills. Advanced ICT skills, such as programming, are quite specific to jobs and as well to study fields. For some jobs a very high level of advanced ICT skills is needed but for many jobs they are not needed at all. For some study fields advanced ICT skills are crucial but for many they are not. This contributes to a low average level. The level of the skills “foreign language” and “present to audience”, which have relatively low levels too, are job- and field-specific skills to some extent as well.

There are minor differences regarding cohorts (higher levels for cohort 2016/17) and degrees (higher levels master graduates). These differences make sense as the older cohort had more time to acquire further skills either through education or by working experience and as a higher degree should result in higher skills levels. Actually, one might have expected a clearer skills advantage of master level graduates, however, recall that these are self-assessments and that respondents have been asked about the skills level required in their current job first. Assuming that master level graduates have more demanding jobs than bachelor level graduates, they may as well have higher standards in mind as bachelor level graduates when assessing their own skills levels.

Figure 6.3.2: Required level of skills in current work, EUROGRADUATE averages

Definition: Mean values of skills level required in current work as self-assessed by respondents on a 7-point scale (1 “very low” to 7 “very high”) (c1A).

All graduates currently employed by:

Cohort (bars), degree level (emptied/filled icons)

Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: DE, GR, IT, RO: no data.

In Figure 6.3.2 we turn to the level of skills as required in the current job. Skills are displayed in the same order as in Figure 6.3.1 and we see at first sight, that the ranking of levels is similar. Now, the skills “make meaning clear to others” and “work with others” have the highest level (mean 5.8). For nine skills, levels range between 5 and 6. Somewhat lower required levels are observed for “foreign language” (mean $4.4_{20/21}$-$4.6_{16/17}$) and “present to an audience” (mean

$4.3_{20/21}$-$4.5_{16/17}$) and a clearly lower level again for “advanced ICT” (mean $3.6_{20/21}$-$3.7_{16/17}$). Like for the own level, relatively low values are reported for more job specific skills. Again, minor differences can be observed regarding cohort (higher level cohort 2016/17) and degree (higher level master graduates) which is line with expectations.

The average levels of skills which are required for the job are slightly lower than average levels of skills respondents currently have. The crucial question is of course whether the required level and the available level match for the individual respondents. This is assessed in Figures 6.3.3 and 6.3.4.

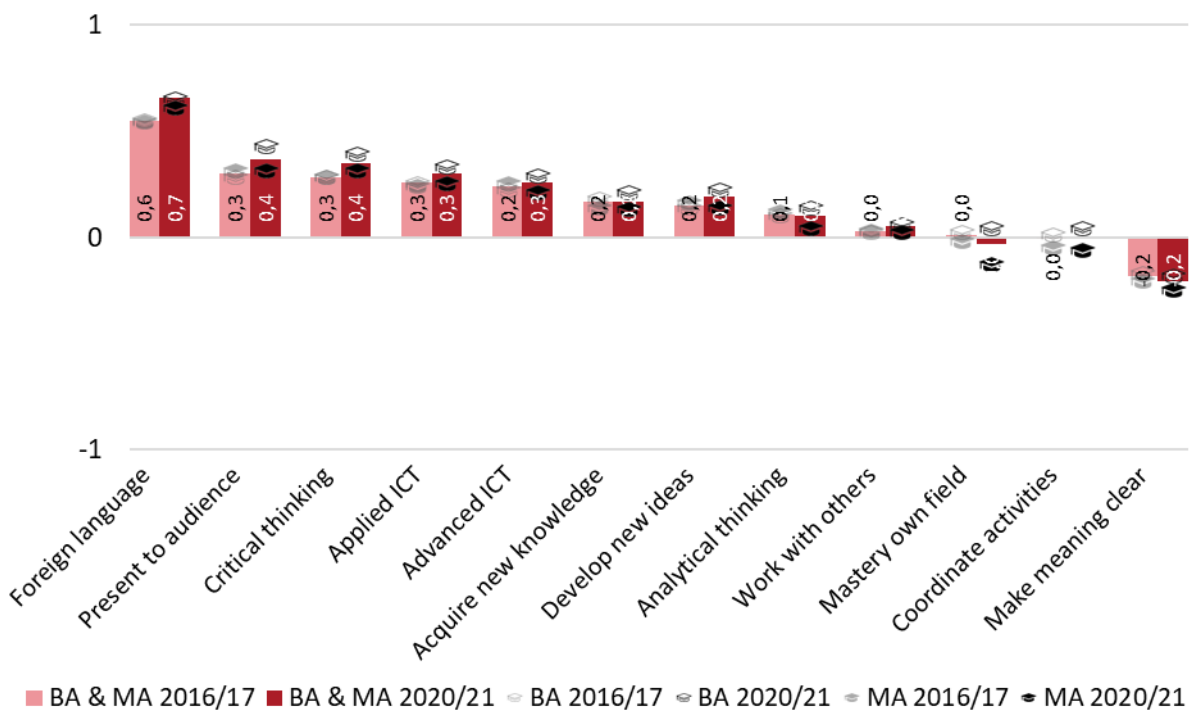
The survey instrument of the job requirement approach offers a straightforward measure for the match between the required level of skills and the available level of skills. By subtracting the required level from the available level, we receive a new scale ranging from -6 (strongly underskilled) to 6 (strongly overskilled) with 0 indicating a perfect match between the acquired and the required level.

Figure 6.3.3 shows the mean values for this matching measurement for the 12 skills investigated. A first observation is that mean values diverge from 0 only mildly. For the bars to be easily recognizable the scale in Figure 6.3.3. has been reduced to range from -1 to 1 (instead of the full range -6 to 6). For eight skills, graduates assess themselves as somewhat overskilled on average. Most clearly this is the case for “foreign language”. On average, graduates assess themselves as underskilled only for “make meaning clear to others”.

Figure 6.3.3: Average match of current own level of skills and skills level required in current work, EUROGRADUATE averages

Definition: Means of current own level of skills minus skills level required in current work as self-assessed by respondents (-6 strongly underskilled to 6 strongly overskilled) (c1A, c1B).

All graduates currently employed by:
Cohort (bars), degree level (emptied/filled icons)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: DE, GR, IT, RO: no data.

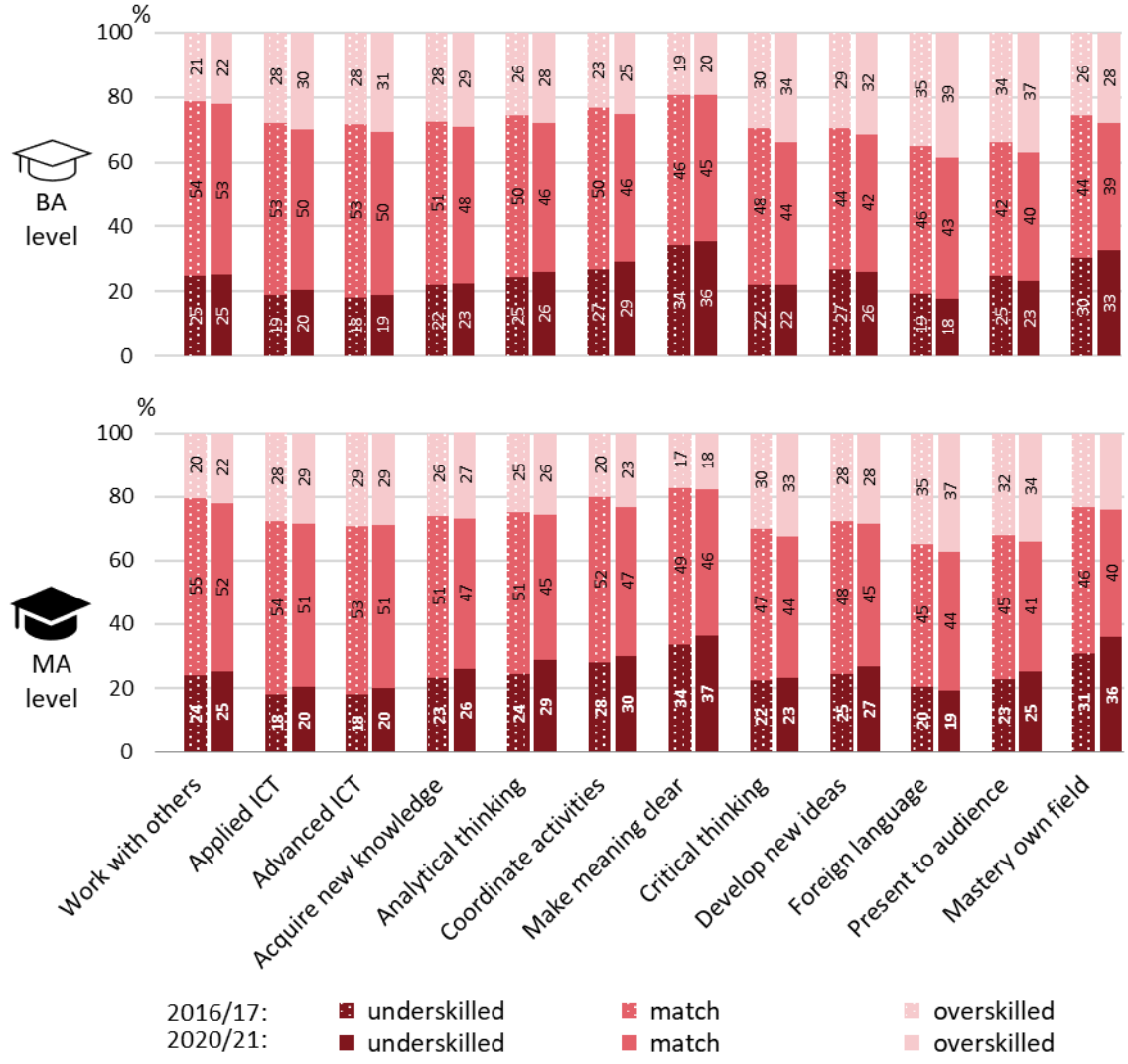
However, these averages do not allow telling how *many* graduates evaluate their skills level as matching and how many perceive themselves as being overskilled or underskilled. Thus, it seems useful to look at these results from another angle in addition.

Figure 6.3.4 shows the share of graduates for which acquired and required skills levels are in line with each other, i.e. a skills match, and the share of graduates for which the acquired skills level is below or above the required skills level, i.e. graduates assessing themselves as underskilled or overskilled.

Figure 6.3.4: Skills match, EUROGRADUATE averages

Definition: Percentages of graduates for which current own level of skills matches level required in current work, for which current own level is below level required (underskilled), and for which current own level is above level required (overskilled) (Questions c1A, c1B)

All graduates currently employed by:
Cohort (twin bars), degree level (top/bottom chart area)



Data source: EUROGRADUATE 2022, data version 3.2.0.
Notes: DE, GR, IT, RO: no data.

Skills in Figure 6.3.4 are sorted by the share of graduates reporting a full match. The results confirm a relatively good match of skills levels for many skills. Half of the graduates or more see a full match of skills levels regarding “work with others” and the two ICT skills. Thus, our results do not hint to a major undersupply of ICT skills among European higher education graduates, at least not in the eyes of graduates themselves. For the digital transition of European economies this is good news. But still, about a fifth of the graduates see their ICT

skills as somewhat insufficient for their jobs. Given the crucial importance of ICT skills and the enormous pace of technological development, there is as well no reason to place less emphasise on ICT skills. Further, the continuous and fast technological developments requires constant renewal of these skills.

Technological progress, new insights, but as well job changes or career progression requires the ability to "acquire new knowledge". About half of the graduates see themselves as equipped with this skill to the right level. Between 26% ($MA_{2016/17}$) and 29% ($BA_{2020/21}$) see themselves as overskilled in this skill. But about a fourth of graduates think they would require more competencies here. Relatively similar shares of matching, overskilled, and underskilled graduates are observed for "analytical thinking".

"Critical thinking" and the ability to "develop new ideas" are crucial for being innovative. For these two skills a fourth to a fifth of the graduates see themselves as somewhat underskilled. This is moderate compared to the other skills. The lowest shares of underskilled graduates are reported for "foreign language" with 20% ($MA_{2016/17}$) to 18% ($BA_{2020/21}$).

Larger shares of graduates feel they would need more skills regarding "coordinate activities" (27% ($BA_{2016/17}$) to 30% ($MA_{2020/21}$)) of others and "make meaning clear" to others (34% (both $degrees_{2016/17}$) to 37% ($MA_{2020/21}$)). Apparently, higher education equips a considerable share of graduates with less than adequate levels of these kind of more directive soft skills, which are especially needed in leading positions.

The lowest share of a full match is reported for "mastery of own discipline" (39% ($BA_{2020/21}$) to 46% ($MA_{2016/17}$)). About a fifth feels overskilled in this regard while about a third feels underskilled. It could be that graduates perceive lack of expertise or underuse of expertise especially strong in their field of expertise. Still, this is a somewhat worrisome result.

All in all, we have seen that graduates evaluate most of their skills as in line with requirements or even exceeding requirements. At individual level, we find a match of skills levels for proportions between about 39% and 55%. At the same time, a considerable proportion of graduates sees themselves as underskilled for some skills. The highest shares of underskilled graduates are reported for mastery of own discipline and for more directive kinds of soft skills as they are required for leadership positions. This is an interesting finding. On the one hand, it hints to the high relevance of discipline-specific expertise in addressing job requirements. While general level skills are important, the mastery of one's own discipline should not be forgotten as crucial goal of higher education. On the other hand, we observe a specific lack in skills which could be acquired in learning formats featuring discussions or group work.

At this background, it seems worth analysing, how skills can be fostered in higher education, which is the topic of the following chapter.

6.4. *Specific policy issue*: Fostering skills in higher education

In Figures 6.4.1 and 6.4.2 we analyse the influence of 10 different teaching and learning modes on the 12 skills covered in EUROGRADUATE in the form of spider web graphs. These graphs allow comparing how strongly the various teaching learning modes are related to each respective skill.

Skills are grouped together as "field & general productivity skills" (mastery of own field, analytical thinking, ability to acquire new knowledge), "cooperation & coordination skills" (cooperate productively with others, coordinate others, make meaning clear to others), "innovation skills" (critical thinking, ability to come up with new ideas and solutions), and specific skills (applied and advanced ICT, foreign language, present to an audience).

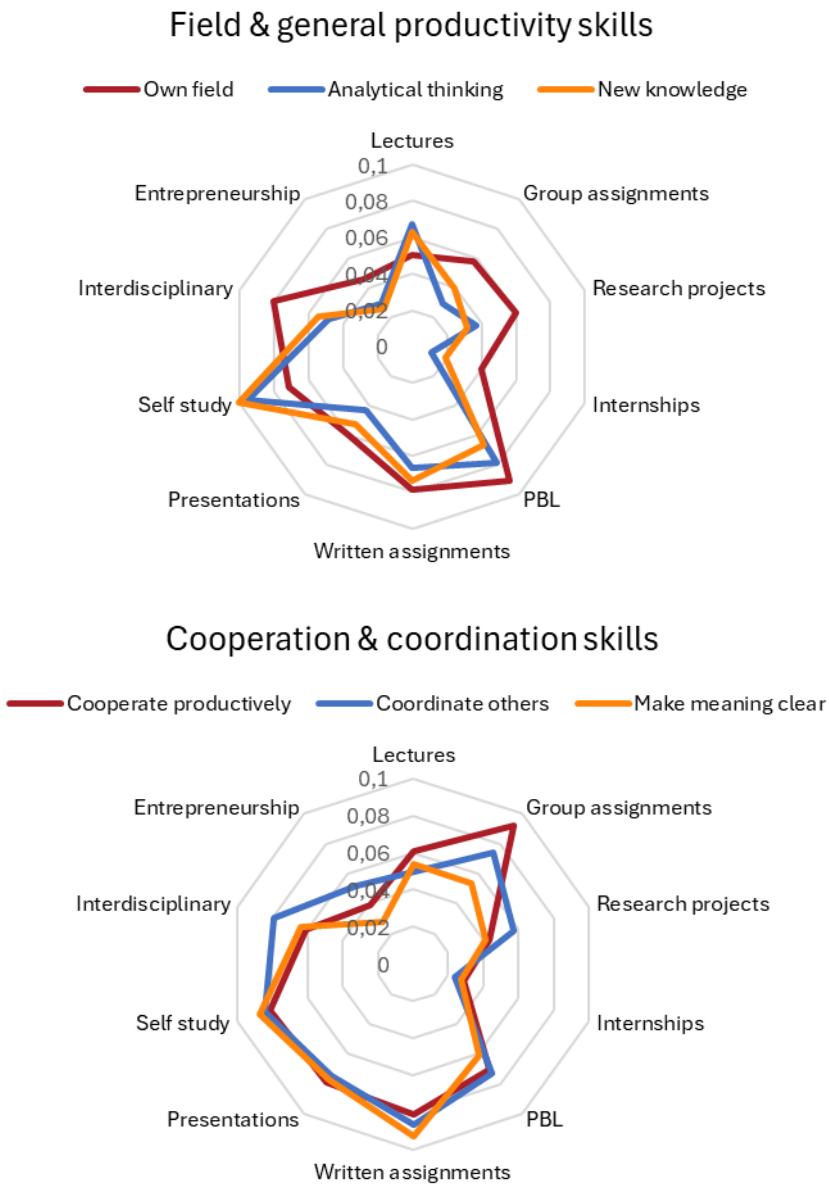
For analysing the possible impact of teaching and learning modes on skills we use statistical regression models. In these models, we control for the influence of many other potential factors for skills differences, such as the context (country, cohort), socio-demographic characteristics (gender, age, parent's education, immigration background), and main higher education

characteristics (type of institution, kind of degree, field of study). This way, we can to some extent isolate the effect of each respective teaching and learning mode.

All coefficients shown in the graphs are statistically different from zero. Insignificant coefficients are depicted as zero (middle of the spider web). Further, it becomes visible that all significant coefficients are positive. A higher extent of nearly all forms of teaching and learning is associated with a higher skills level. This is not surprising, as all teaching and learning should have some positive effect on skills. Comparing the different modes shows the relative strength of the association. This way we can identify those teaching and learning modes which seem especially suitable to foster the respective skill.

Figure 6.4.1: Field & general productivity skills, cooperation & coordination skills – influence of 10 teaching & learning modes on current own levels of skills

Definition: Regression coefficients from OLS regression models for influence of teaching & learning mode on self-assessed own level of skills (Questions a1.3, c1A).



Data source: EUROGRADUATE 2022, data version 3.1.0.
Notes: DE, GR, IT, RO: no data.
Method: Ordinary least squares (OLS) regression analyses; independent model for each respective skill & learning activity; omitted control variables: cohort, country, gender, age, parents' education, immigration background, degree, type of institution, field of study; linear regression coefficients; all coefficients different from zero are statistically significant (p-value <.05).

For mastery of the own field, a skill a considerable share of graduates felt having a level below requirements, strongest associations are to be reported for PBL, interdisciplinary learning, and written assignments. The association with lectures, the predominant teaching form, is relatively low. This could as well be due to lectures being ubiquitous (and thus graduates do not differ very strongly in the extent of lectures received) but it is noteworthy that other forms are driving higher skills levels here.

Analytical thinking and acquiring new knowledge are probably among the most important general level skills, higher education is meant to deliver and prerequisites for working productively in a large bandwidth of academic jobs. For both kinds of skills similar forms of teaching and learning are advantageous: self-study, written assignments, PBL, and lectures. The former two are classical forms of desk work, where students need to dig deep into subjects, find solutions for problems, and describe these solutions in well-structured texts which ideally live-up to the scientific standards of their field of subject.

The patterns in the spider web of the three cooperation & coordination skills look quite similar to each other, i.e. mostly the same modes of teaching and learning are strongly or weakly associated with these skills. Not very surprisingly, group assignments help in growing the ability to cooperate productively with others. The other two skills, coordinating others and make meaning clear to others, benefit from group assignments as well but to a lesser extent. PBL and presentations are learning forms often delivered as a group and are quite strongly associated with all three skills. Interdisciplinary forms help in learning to coordinate others. The positive impact of self-study and written assignments is less intuitive, as these forms are usually delivered alone.

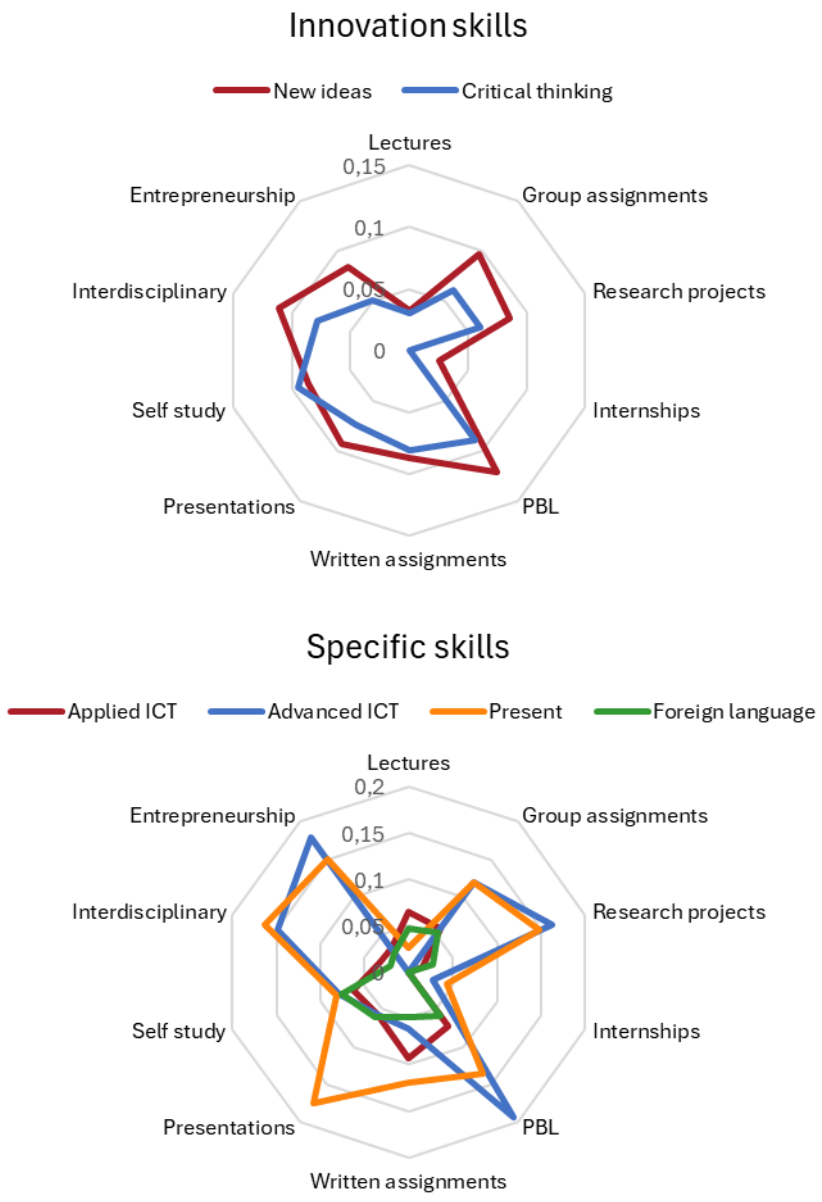
In Figure 6.4.2. we turn to two skills relevant for innovation: the ability to come up with new ideas and solutions and critical thinking. Again, patterns look similar to some extent. PBL is strongly associated with both skills. In problem-based learning settings, students need to apply their knowledge creatively and critically reflect on different possible solutions. Innovative forms as interdisciplinary learning or group assignments seem to contribute to the ability of coming up with new ideas as well. For critical thinking, self-study is another important learning mode.

The last spider web depicts associations with or more diverse set of specific skills. Foreign language abilities are not very strongly connected with any of the teaching and learning modes covered. Not very surprisingly, the learning activity most strongly associated with foreign language abilities is international mobility during studying (not shown). For applied ICT there is connection with written assignments. These go together with a lot of applied ICT work, especially office applications and internet browsers. For advanced ICT we find quite strong connections with PBL, research projects, and exposure to entrepreneurial activities. These learning forms may imply dealing with expert software. Finally, the ability to present is of course associated with presentations but as well with interdisciplinary work and research projects often requiring presenting results in a way understandable to others.

All in all, we do find interesting and often intuitive connections of specific teaching and learning modes with specific skills, e.g. learning forms requiring students to be active and find solutions themselves foster innovative skills. Moreover, there are some learning forms which seem to be generally advantageous, e.g. self-study, written assignments and especially PBL have a potential to foster a large bandwidth of skills. Teaching and learning modes associated with group work have their merits and so do learning modes of individual hard work on a desk. Thus, our results suggest that students should be offered a variety of teaching and learning forms, to ensure mastery of one’s own field, productivity, ability to work in or lead teams, and innovation. In contrast, focussing on lectures primarily, which was identified as predominant teaching mode in chapter 3, does not seem a promising strategy for achieving high levels in a variety of skills

Figure 6.4.2: Innovation skills, specific skills – influence of 10 teaching & learning modes on current own levels of skills

Definition: Regression coefficients from OLS regression models for influence of teaching & learning mode on self-assessed own level of skills (Questions a1.3, c1A).



Data source: EUROGRADUATE 2022, data version 3.1.0.
Notes: DE, GR, IT, RO: no data.
Method: Ordinary least squares (OLS) regression analyses; independent model for each respective skill & learning activity; omitted control variables: cohort, country, gender, age, parents' education, immigration background, degree, type of institution, field of study; linear regression coefficients; all coefficients different from zero are statistically significant (p-value <.05).

7. International Mobility of Graduates after Graduation

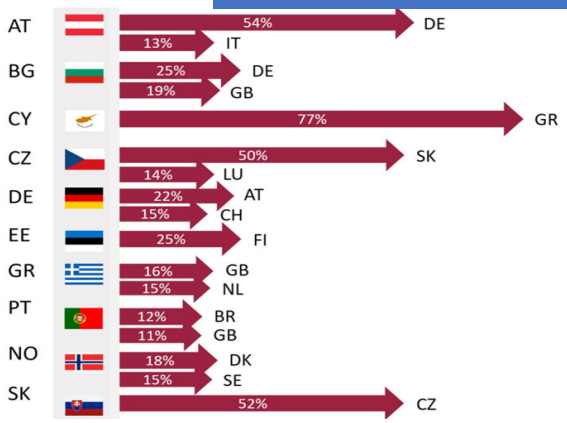
7.1. Main findings

Places of residence

Most graduates stay where they studied. Graduates, who become mobile are much more likely to move within the country than to move abroad. Between 0.5% and 16% live in a country other than their country of graduation.

Primary destinations

Graduates often relocate to or reside in neighbouring countries or they move to countries with a common language (Austrians → Germany). Another group of mobile graduates migrates to larger central European or English-speaking countries or to countries with a strong international presence (Greek → Netherlands)



Causes for international mobility

Main causes for moving on the individual level are prior experiences of unemployment as well as prior experiences abroad (learning mobility during studies). A higher social background and having an immigration background increases international mobility, whereas having children reduces the likelihood of becoming internationally mobile. There are only little differences between men and women in becoming internationally mobile.

Consequences of international mobility

Being mobile is in some countries associated with being in a matched job, yet, this does not seem to make graduates more satisfied with their jobs. It is in particular graduates' life satisfaction that seems to be positively associated with living abroad.

7.2. Introduction: Overview and key issues

As has been discussed in Chapter 3, international learning mobility is widely regognised as meaningful and relevant tool for students to broaden their horizon, increase their intercultural understanding, their skills and labour market prospects. And while mobility across European labour markets aims at achieving a better allocation of highly skilled labour, this sparks – on a more sceptical note – discussions about talent migration for instance from Southern and Eastern Europe to the central and western parts of Europe but also between neighbouring countries.

EUROGRADUATE 2022 captures extensive information on graduates' study experiences as well as their current living and employment situations. Consequently, it provides an excellent basis for describing and analysing the causes and outcomes of mobility patterns of graduates after their studies. This chapter will describe the extent to which graduates become mobile after graduation, provide an overview of primary destinations, discuss their motives for becoming mobile, and will analyse the causes for and consequences of international mobility after graduation. EUROGRADUATE represents one of very few data bases to answer such questions. While administrative register data does not comprise this information because they are typically bound to national contexts, similar challenges hold for most national surveys. Moreover, international surveys that capture international mobility behaviour are not specifically targeted toward higher education graduates.

Concerning the causes of mobility three influencing groups of factors will be differentiated: **individual factors** (sociodemographics, in particular, gender, migration, and social background), **institutional factors** (study programm, higher education type, study experiences), and **country differences.**

As regarding the consequences of mobility the main aim will be to analyse the statistical effect of international postgraduation mobility on **overeducation** versus being employed in a job that matches the individual level of education, on **life** and **job satisfaction** as reported by the graduates.

7.3. Mobility after graduation

The places of residence after graduation by cohort and degree level are displayed in Figure 7.3.1 Hereby a distinction between three options is made: **living at the same place as during studies**, **living at another place in the same country**, or **living abroad**. Overall, master level graduates are more likely to move abroad, whereas bachelor level graduates are more likely to move within the country – often to continue their education at another university within the same country.

Considerable differences between countries are visible. For most of the survey countries, it can be observed that a very small number of graduates lives in a country other than the study country, which indicates a central limitation in the analyses of international post-graduation mobility. A central difficulty is that it is difficult to disentangle if the number of internationally mobile graduates or the number of cases in the sample is small. On the one hand, the small case numbers can be due to missing information for those, who left the graduation country. This is reasonable because internationally mobile graduates, who left their country might be hard to reach or less willing to participate in a survey in their prior country of residence. On the other hand, the share of graduates living in another country might in fact be small. Italy stands out as an example, where less than 1% of graduates regardless of degree level or cohort moved abroad after graduation (see Figure 7.3.1). This problem could be overcome by oversampling and specifically targeting graduates, who moved abroad after graduation.

However, even if the share of mobile graduates is not small, an additional problem for the analyses of small countries such as Malta, Latvia and Slovenia exists. Even a comparatively large share of internationally mobile Maltese graduates, would in absolute numbers still be too

few cases to carry out robust statistical analyses in a comparative survey such as EUROGRADUATE.

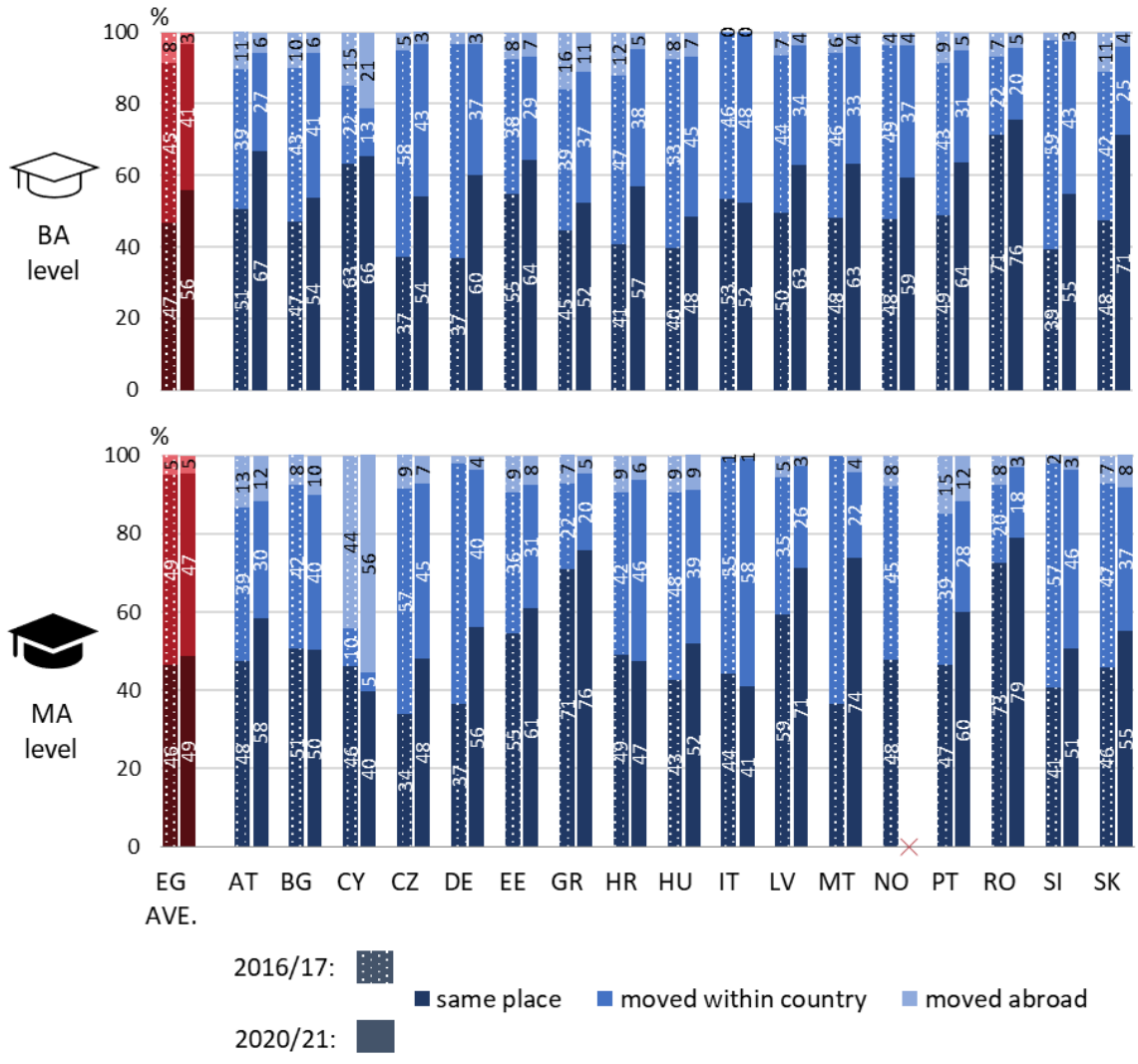
Despite these limitations the data provides new and highly relevant possibilities to gain insights on national and international post-graduate mobility. Figure 7.3.1 displays that the share of internationally mobile graduates in the displayed countries is typically a minority, with very low numbers in Italy (0.5%, bachelor level graduates in both cohorts) and Germany (below 4% across cohorts and degree levels) and higher figures in Portugal (15%, master level graduates$_{16/17}$) and Greece (16% bachelor level graduates$_{16/17}$). Cyprus represents a remarkable exception where up to 56% (MA-level$_{20/21}$) of a graduation cohort can be observed to live in another country than the country of study. The excpetionally large numbers of internationally mobile graduates in Cyprus is explained by the fact that a large number of Greek nationals/residents studies in Cyprus (sometimes also in the form of blended learning courses) without living in Cyprus. The Cypriotic case will be further discussed below (see Figure 7.3.3).

Figure 7.3.1: Place of residence, international comparison

Definition of place of residence at time of interview: same place as during studies, other place in study country, in another country

All graduates by:

Country (X-Axis), cohort (twin bars), degree level (top/bottom chart area)



Data source: EUROGRADUATE 2022, data version 3.2.0.

Notes: DE, IT, MT, LV, RO < 30 cases in the "moved abroad" category

Concerning the overall mobility behaviour, Figure 7.3.1 suggests similar patterns across all EUROGRADUATE survey countries: The majority of graduates lives at the same place at which they lived during their study phase. The shares range between 79% for Romanien master level graduates$_{20/21}$ and 40% for master level graduates$_{20/21}$ from Cyprus. The main form of becoming mobile across all survey countries (except for Cyprus) is nationally, i.e. moving within the country of graduation. Slovenian bachelor level graduates are with 59%$_{16/17}$ display the highest share of moving within the country after graduation, whereas the mobility within the country is lowest in Romania with around 20% across degree levels and cohorts. Mobility within the country might be related to either continuing higher education at another instition within the country or seeking and finding employment at a place other than the study location.

To gain further insights into the international mobility behaviour after graduation, Figure 7.3.2 displays the primary destinations abroad by survey country. A notable number of countries is missing due to the very small shares of graduates that are observed to live in another country. Since there is almost no discrepancy in the main destinations abroad, cohorts and degree levels are presented together in Figure 7.3.2.

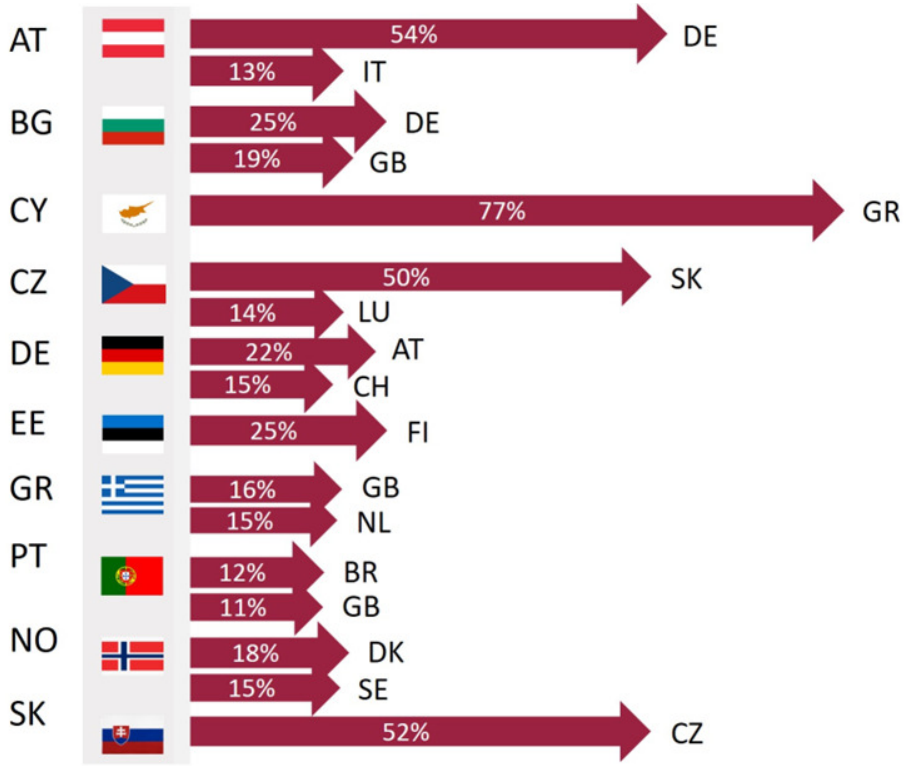
Two patterns of mobility emerge: On the one hand, graduates frequently relocate to neighbouring countries or those sharing a common language – such as Austrian graduates moving to Germany and vice versa, or Cypriot graduates relocating to Greece. On the other hand, graduates often migrate to larger countries, to English-speaking countries, or those with a strong international presence – such as Bulgarian graduates moving to Germany or Great Britain, or Greek graduates choosing Great Britain or the Netherlands as their destination.

Figure 7.3.2: Primary place(s) of residence after graduation

Definition: The first or first and second most named country that respondents live in if they indicate that they live in another country than country of reference study programme.

All graduates by:

Country (Y-Axis), cohort and degree level combined.



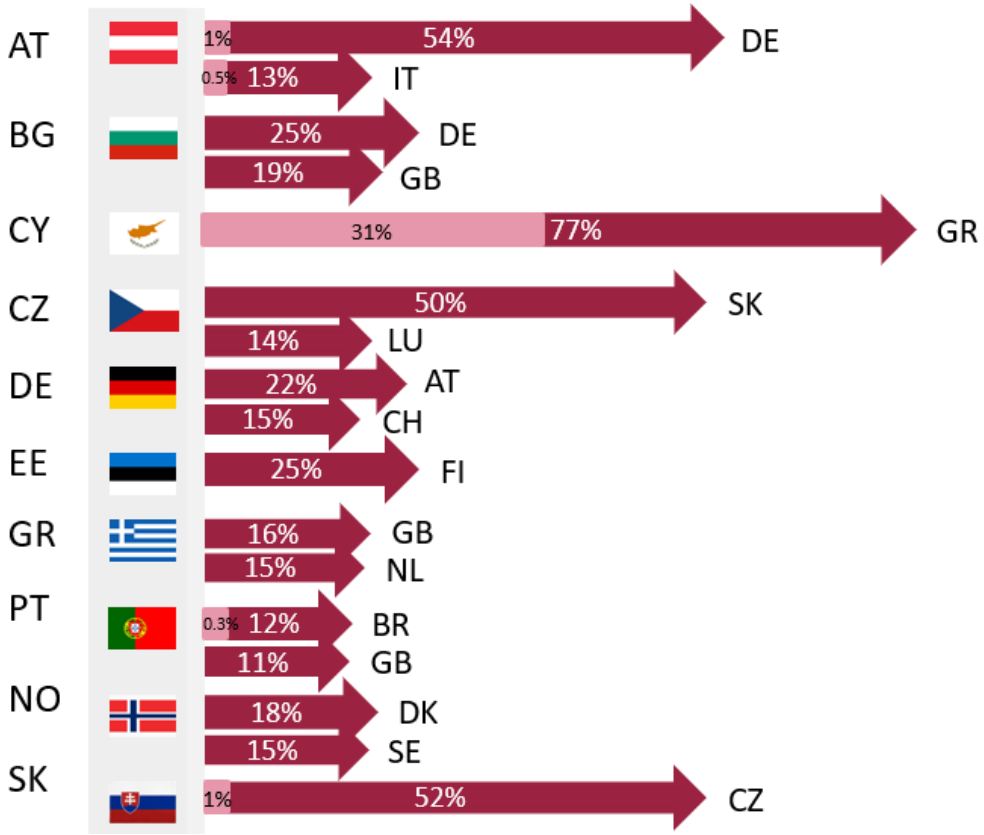
Data source: EUROGRADUATE 2022, data version 3.1.0.
Two prime destinations only mentioned if (>30) in each category.
Countries missing: HR, HU, IT, LV, MT, RO, SI either because too few cases in the category moved abroad (<30) or because countries of destinations not provided.

Considering the nationality of graduates reveals that a considerable share of Austrian and Cypriot graduates, who are observed to frequently relocate to Germany and Greece respectively, holds German and respectively Greek citizenship. Thus, they can be considered repatriats rather than immigrants. For the Cypriotic graduates the pattern becomes even clearer when considering the place of residence during studies: Of those who live in Greece after graduation a large share already lived in Greece during studies, which puts the exceptionally large numbers of mobile graduates from Cyprus into perspective. However, Greece remains the prime destination of Cypriotic graduates and Cyprus remains a country with high numbers of graduates leaving the country after graduation even when excluding the graduates, who lived in Greece while studying in Cyprus. Figure 7.3.3 displays this. In addition to the prime destination, the prime place of residence during studies outside the study country, is depicted in light red.

Figure 7.3.3: Primary place(s) of residence during study (light red) and after graduation (dark red)

Definition place of residence after graduation: The first or first and second most named country that respondents live in if they indicate that they live in another country than country of reference study programme; Definition place of residence during study: If place of residence during study is not the study country.

All graduates by:
Country (Y-Axis), cohort and degree level combined.



Data source: EUROGRADUATE 2022, data version 3.1.0.
Two prime destinations only mentioned if (>30) in each category.
Countries missing: HR, HU, IT, LV, MT, RO, SI either because too few cases in the category moved abroad (<30) or because countries of destinations not provided.

The figure reveals the particular situation of Cypruss by showing that 31% of the respondants from Cyprus already lived in Greece during their study time. Thus, they did not relocate there after graduation but commuted to Greece or attended blended learning programmes.

1% of all Austrian graduates (across cohorts and degree levels) lived in Germany during their study time and stayed there after graduation. Thus, they also did not relocate but already lived

in another country. We observe comparable patterns for small shares of Brasilian residents studying in Portugal and Slovakians in the Czech Republic.

7.4. Drivers of mobility after graduation

To understand the main motives that drive graduates' international mobility behavior, Figures 7.4.1 illustrate the effects of three types of factors influencing the decision to live abroad after graduation: **country-level factors**, characteristics of **higher education insitutions**, as well as **sociodemographic factors and personal circumstances**.

The model confirms that post-graduation international mobility is highest in Cyprus. Yet, from the above it becomes apparent that a large share of graduates from Cyprus does not relocate but already lived in Greece during studies. However, even when excluding these graduates from the data, the share of international mobility from Cypruss to Greece remains comparatively large. Beyond Cyprus, Hungarian and Portugese graduates display high proportions of leaving their countries after graduation. Overall, the younger cohort is more likely to become internationally mobile, which again might have to do with consequences of the pandemic or with the fact that graduates to not immediately after graduation move abroad but chances increase over time.

Concerning study-related factors, master level graduates are more inclined to relocate to another country than bachelor level graduates, suggesting that job-related mobility is more prevalent than pursuing further education in another country. Additionally, graduates from universities are more inclined to move to other countries compared with graduates from universities of applied sciences or other higher education institutions. Differences across fields of studies are relatively modest, except for graduates from education and teacher training. They are less likely to leave their countries, which could be explained by their country-specific credentials, i.e., teacher education and employment trajectories are often tailored to specific national contexts. An interesting result is that prior experiences abroad have a considerable impact on leaving the country after graduation: if graduates participated in a semester, an internship, or a language course abroad during their studies, their likelihood of moving abroad after graduation increases by up to 10%-points compared to those without such experiences. It can be concluded that different forms of mobility – i.e. learning and graduate mobility – are strongly connected. Thus, to enhance skilled mobility across European labour markets it is worthwhile to foster learning mobility during studies. Another factor contributing to moving abroad is the instruction language. With an instruction language other than the native language of the study country, chances increase to become internationally mobile.

The last group of influencing factors are sociodemographics and personal cirumstances. When including sociodemographics, there are no critical changes in country-level and institution effects. Notably, a prior immigration history is the most influential predictor of moving abroad after graduation. Graduates with an immigration background are 18%-points more likely to move abroad compared to native graduates.

This effect – as indicated in Figure 7.3.3 (primary destinations) – is partly driven by repatriates who studied in neighbouring countries and returned to their home country after graduation. Additionally, various individual-level factors impact post-graduation international mobility. A higher socioeconomic background increases the likelihood of living abroad. Thus, like studying abroad, moving abroad after studies is more likely to be reserved to graduates from more privileged social backgrounds, whereas age appears to be irrelevant.

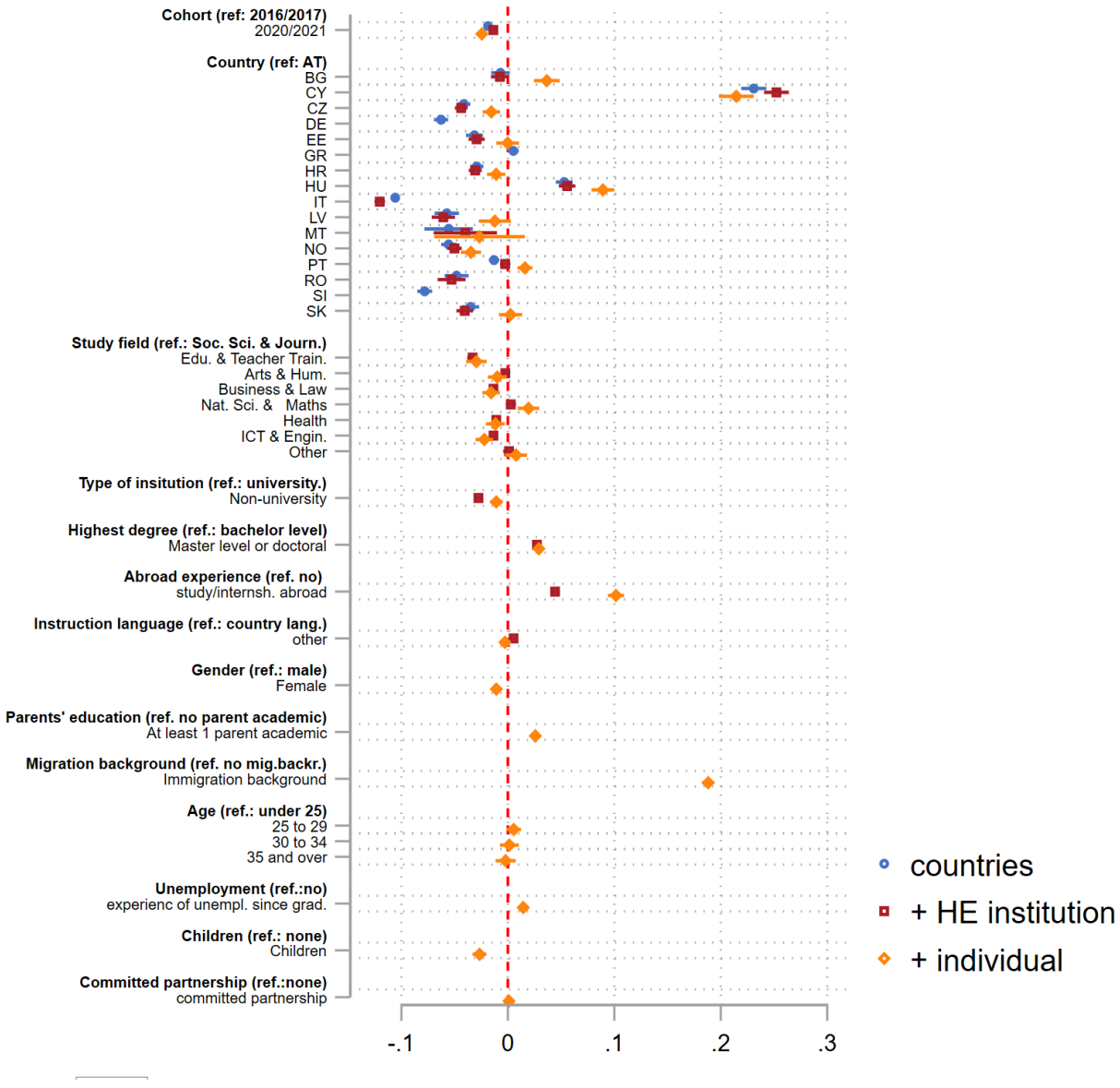
Graduates who have experienced unemployment exhibit greater international mobility, suggesting the relevance of labor market-related factors. Thus, the employment prospects in the country of graduation represent a main driver of leaving versus staying in the country. Regarding personal circumstances, being in a committed partnership does not alter the decision to live abroad, whereas having children considerably decreases the likelihood of

relocating to another country. Overall, it can be concluded that sociodemographic factors and personal circumstances are very important drivers of post-graduation mobility.

Figure 7.4.1: Place of residence after graduation.

Definition: Explanatory factors (country, cohort, degree level, study-related factors, individual-level factors) for the likelihood of living in another country than country of reference programme.

All graduates



Data source: EUROGRADUATE 2022, data version 3.1.0.
Method: Logistic regression analyses; coefficients are average marginal effects (AME).

The EUROGRADUATE dataset offers a unique opportunity not only to evaluate the significance of factors influencing graduates' international mobility behaviour but also to conduct cross-country comparisons in the relevance of the personal and sociodemographic factors. Hence, it is possible to answer the question whether individual factors such as sociodemographics or personal circumstances are equally relevant for post-graduation mobility across countries. Figure 7.4.2 illustrates interaction effects by country.This is useful to understand if the same factors drive post-graduation mobility across countries.

Cohort. The first figure in the upper-left corner presents the impact of the graduation cohort on leaving the study country by country. A negative value (left of the red-dotted zero line)

indicates that the older cohort is more likely to be mobile. While indeed in most countries, the likelihood of moving abroad after graduation is higher for the older cohort – which can be attributed to the COVID-19 pandemic and/or to the fact that the chance of leaving the country increases over time –, Cyprus stands out as an exception. Here, graduates from the younger cohort are more inclined to leave after graduation.

Degree. In the right panel of the first row, the impact of degree level on post-graduation mobility from the study country is illustrated by country. Country differences are overall small. However, master level graduates from Bulgaria, Portugal, Austria, the Czech Republic, and Hungary are more likely to move abroad, suggesting that their motivation is predominantly employment-related rather than pursuit of further education.

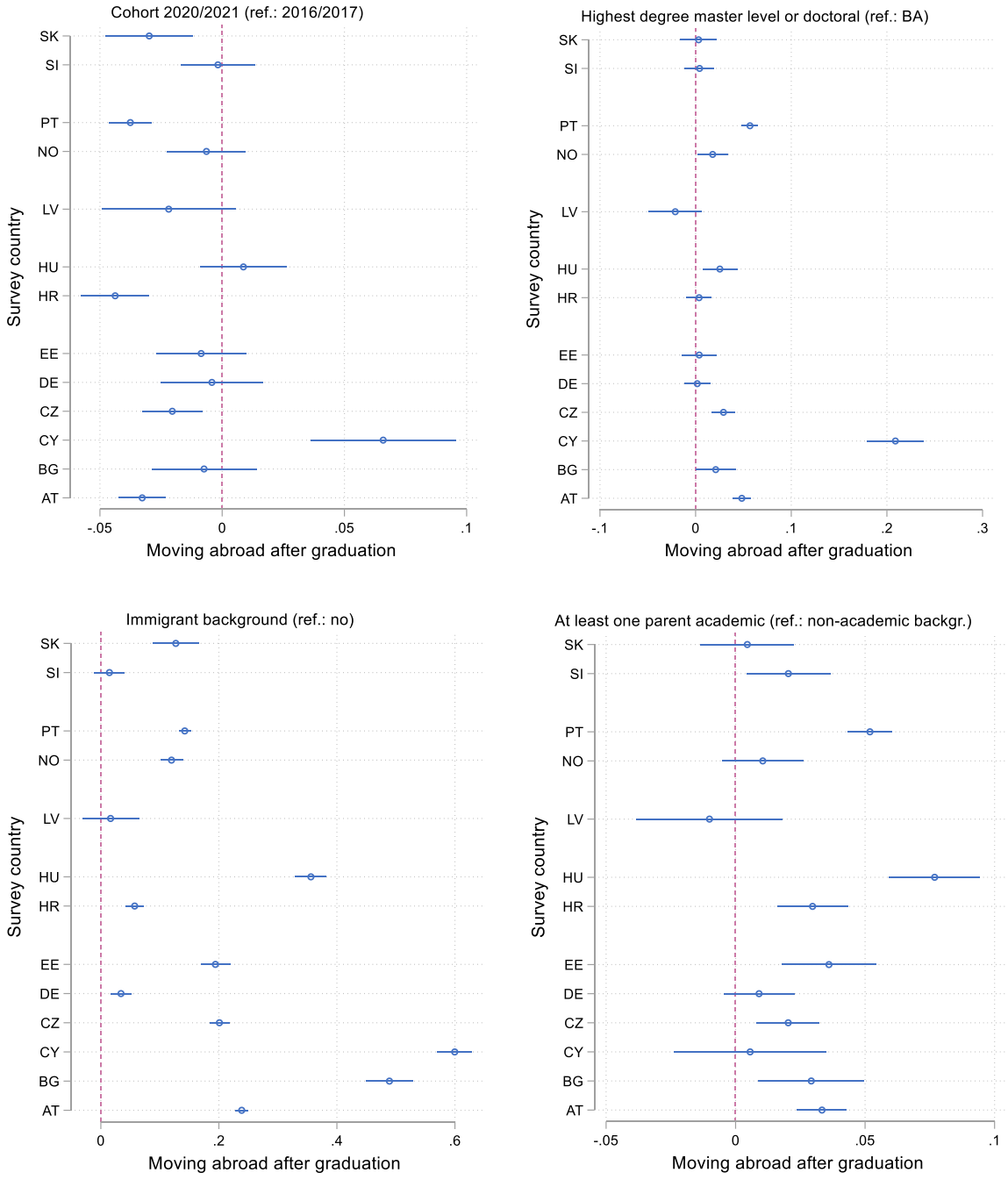
Immigration background. In the second row to the left is the effect of a person's immigration background on leaving the country after graduation by country. In almost all countries, having an immigration background correlates positively with leaving the country after graduation. This effect is particularly pronounced in Cyprus, Bulgaria, Hungary, and Austria, which is in parts explained by repatriats, who did their entire study programme abroad and return to their home country afterwards. Yet, overall the fact that prior mobility experiences in the life course fosters later mobility is prevalent across countries.

Social background. In the left panel of the second row the effect of social background (parents' education) by country is displayed. This is an important depiction since it provides information on social inequality in moving abroad. The overall tendency is that graduates from higher social backgrounds are more likely to move. This is a general observation, which has been shown in previous research when analysing learning moblity during studies. Yet, EUROGRADUATE enables to show that this is comparable for post-graduate mobility and that this social gradient differs across countries. The data suggests the association between higher social background and moving abroad after graduation is particularly pronounced in Portugal, Hungary, Croatia, the Czech Republic, Bulgaria, Austria, and Estonia.

Figure 7.4.2: Place of residence after graduation – country-specific differences

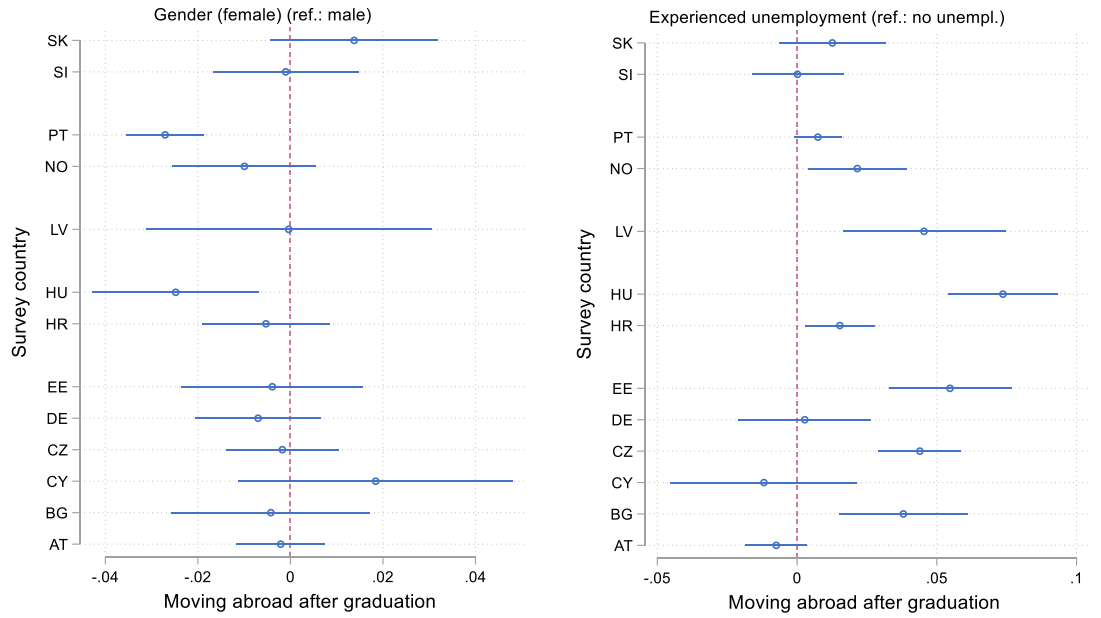
Definition: Explanatory factors (sociodemographics, country, cohort, degree level, study-related factors) for the likelihood of living in another country than country of reference programme.

All graduates by country



Notes: Figure continues on next page.

Figure 7.4.2 continued: Place of residence after graduation – country-specific differences



Data source: EUROGRADUATE 2022, data version 3.1.0.
Notes: MT, IT, GR are excluded due to missing information in control variables or too few cases (<30).
Method: Logistic regression analyses, interaction effects; model with full set of control variables as in Figure 7.4.1; Interaction effects between Country variable and cohort, immigration background, degree level, parents' education, gender, unemployment experiences; coefficients are average marginal effects (AME).

Gender. The lower left panel shows gender inequalities in moving abroad after graduation by country. A negative value (left of the red-dotted zero line) indicates a greater likelihood for men to leave their country of graduation. Little to no gender differences are to be observed. Thus, male and female graduates across most survey countries are equally likely to leave their country after graduation, only in Portugal and Hungary men have an increased probability to live abroad after graduation.

Unemployment experience. In the lower right panel, the impact of experiencing a period of unemployment since graduation on the likelihood of leaving the country of graduation by country is depicted. This is an important illustration as it offers insights into the significance of employment-related factors in the decision to leave the study country. There is an overall positive correlation, indicating that experiencing unemployment increases graduates' cross-border mobility. This association is particularly pronounced in Hungary, Estonia, the Czech Republic, and Bulgaria. It is important to note that this does not imply that graduates in these countries are more (or less) likely to experience unemployment. However, when they do face unemployment, they are more inclined leave their study country.

7.5. *Specific policy issue:* Are mobile graduates better-off in their jobs?

To answer the question whether mobile graduates are better-off in their professional careers and beyond, Figure 7.5.1 presents the influence of moving abroad versus staying in the study country on **skill mismatch** (measured as overeducation), **job satisfaction**, and **life satisfaction** by country.

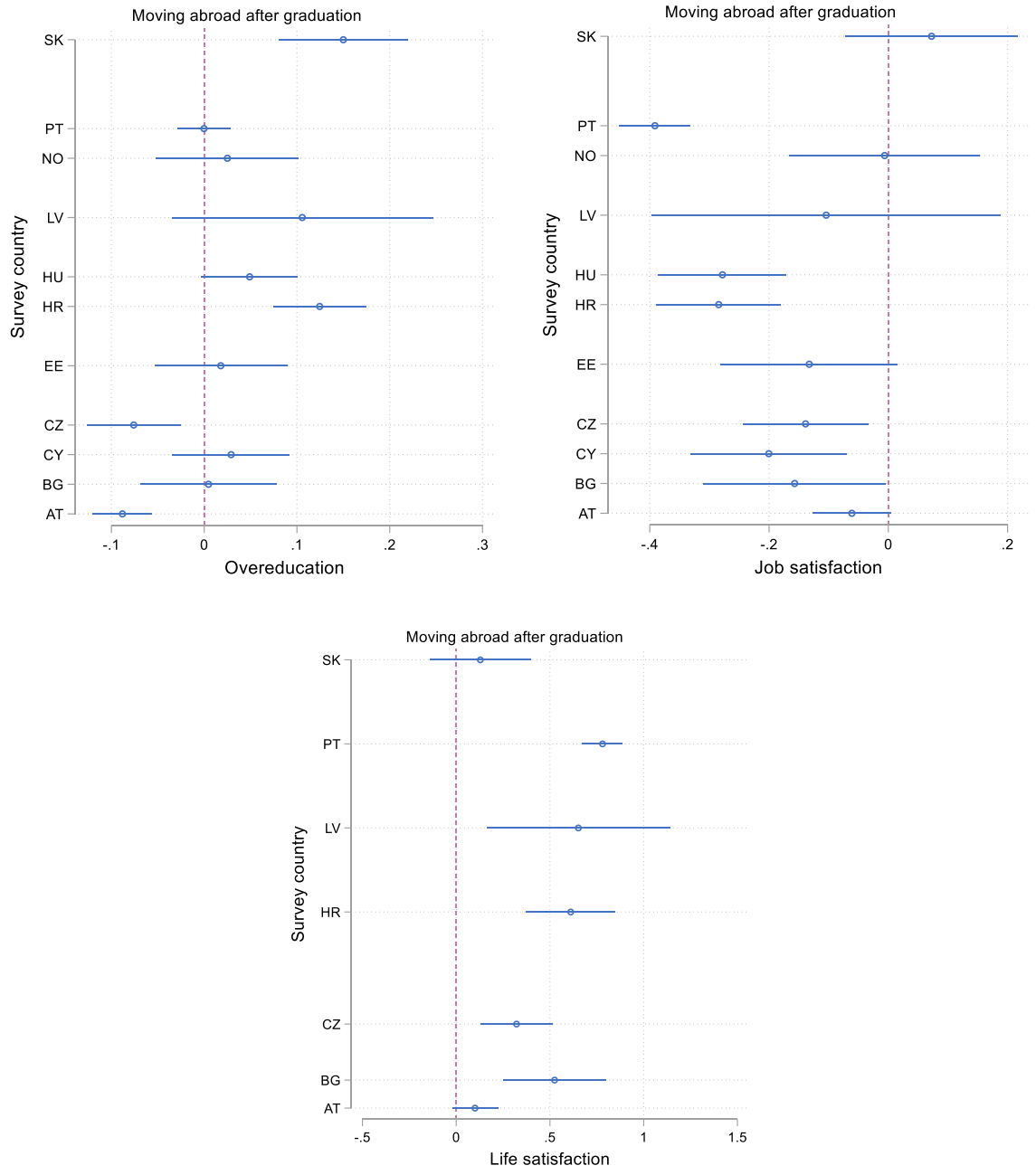
Overeducation. Moving to another country after graduation increases the likelihood of being overeducated when the effects are displayed left of the red zero line in the upper left panel of Figure 7.5.1. The patterns across the survey countries differ considerably. For graduates from Austria and the Czech Republic, moving abroad after graduation reduces the risk of being overeducated and, in turn, increases graduates' chances to work in an occupation that

matches their qualification. On the contrary, Slovakian, Hungarian, and Croatian graduates are more likely to be employed in an occupation that is below their qualification level, when they move abroad after graduation. In the other countries, moving abroad does not affect vertical mismatch, i.e. overeducation.

Figure 7.5.1: Effects of moving abroad after graduation on overeducation, job satisfaction, and life satisfaction by country

Explanatory factors (sociodemographics, country, cohort, degree level, study-related factors) for the likelihood of living in another country than country of reference programme.

All graduates by country



Data source: EUROGRADUATE 2022, data version 3.0.0.
Countries not covered in “overeducation” and “job satisfaction” model: DE, IT, GR, MT, RO, SI;
Countries not covered in “life satisfaction” model: CY, DE, EE, HU, MT, NO, RO.
Method: Logistic and linear regression analyses; independent models for “overeducation”, “job satisfaction”, and “life satisfaction”; Control variables in model that are not shown: parents’ education, immigration background, age, unemployment experiences, partnership, children, cohort, degree program, university type, instruction language, study abroad experiences, study field; Interaction effect between coefficients are average marginal effects (AME).

Job satisfaction. The association between being internationally mobile after graduation and job satisfaction is displayed in the upper right panel in Figure 7.5.1. Effects left of the red-dotted zero line indicate a negative association between job satisfaction and being internationally mobile, effects to the right indicate a possitive association. Leaving the country of graduation is mostly negatively associated with job satisfaction. Graduates from Portugal, Hungary, Croatia, the Czech Republic, Cyprus and Bulgaria are less satisfied with their jobs when living abroad compared to those, who remained in the study country. The job satisfaction of graduates from Latvia, Estonia, and Austria is not additionally affected by leaving the graduation country and living abroad.

Life satisfaction. In contrast to job satisfaction, the association between being internationally mobile after graduation and life satisfaction is predominantly positive across countries. Although data on life satisfaction is missing for several countries, the data suggests that in leaving Latvia, Portugal, Croatia, the Czech Republic or Bulgaria after having graduated from higher education in these countries increases the life satisfaction scores. Internationally mobile Austrian and Slovakian graduates do not differ in their overall life satisfaction compared with those, who still live in Austria and Slovakia.

Overall, the results illustrate that several work and life domains are indeed affected by being internatinally mobile after graduation. Yet, the patterns are complex While there is a small positive association between being mobile and working in a job that matches the graduates' educational qualification in some countries, this is not observed in other countries. Moreover, moving abroad does not make graduates more satisfied with their jobs. It is in particular the domain of life satisfaction that is positively associated with living abroad.

The results are highly relevant to gain a first understanding of the returns of international mobility after graduation. They demonstrate two key aspects. First, there is a clear relation between international mobility and work and life outcomes that is worthwhile to be further investigated. Second, the relation between international mobility and work and life outcomes varies across countries, indicating that the origin-destination patterns shape whether graduates are better off abroad or not.

8. Social Outcomes, Political Attitudes and Political Participation

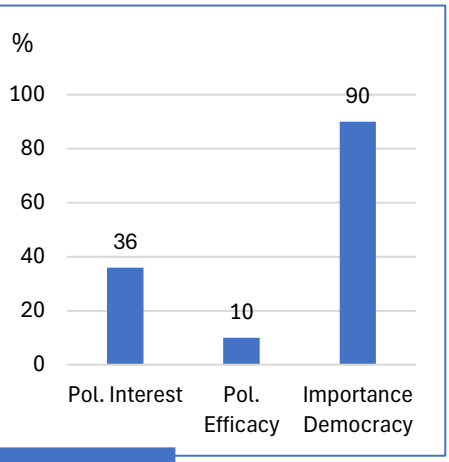
8.1. Main findings

Political Interest

Around 36% of the graduates are (very/somewhat) politically interested, with the biggest group of politically interested graduates in **Austria**, **Czech Republic**, **Germany**, and **Slovakia**. Political interest is highest among **Social Sciences & Journalism** graduates.

Political Efficacy

On average, graduates think that **people in general**, have only **very little influence on politics**, and have **little confidence in their own ability to participate** in politics. Only **10%** of the graduates feel confident to participate in politics.

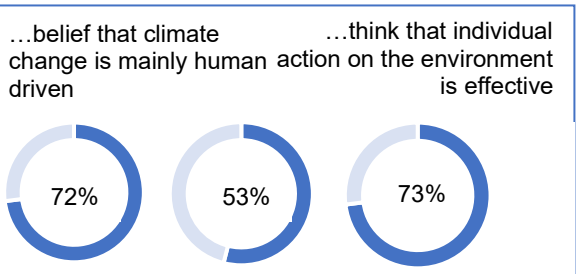


Support for Democracy

Although political interest is only moderately pronounced among the EUROGRADUATE 2022 graduates, and their sense of political efficacy appears limited, support for democracy remains high (∅ >90%). Socio-demographic factors and higher education characteristics seem to be influential for graduates' support for democracy.

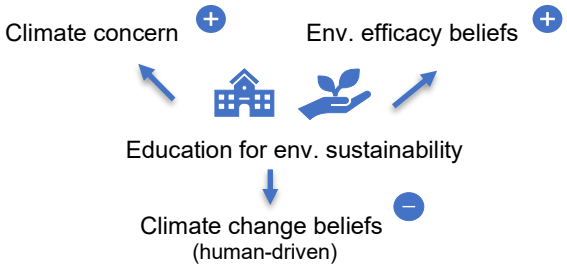
Political Participation

Most graduates engage in **1-2 types** of political participation, while they mostly participate through signing petitions, boycotting certain products and social media.



Climate Attitudes

More than **70%** of the graduates agree that climate change is (mainly) human driven. **Around half** of them indicate to be **very worried** about climate change, while **more than 70%** think that individual action on the environment is effective, regardless of what others do.



Education for environmental sustainability

Education for environmental sustainability as part of the curriculum is associated with **higher levels of climate concerns and feelings of environmental efficacy**. It does not add to beliefs about climate change causes. The country, socio-demographics, and higher education characteristics seem to play a role in the formation of climate attitudes.

8.2. Introduction: Overview and key issues

A major goal of higher education is the provision of knowledge and skills, ensuring students' successful transfer to the labour market. Moreover, higher education is expected to prepare young adults to become active participants in their social and political environment, which is a prerequisite for functioning and stable democracies (Alemàn & Kim, 2015; Benavot, 1996; Boix & Stokes, 2003). This goal has also been acknowledged by the European Commission (2012, p. 2) stating that "the broad mission of education and training encompasses objectives such as active citizenship, personal development, and well-being." Furthermore, with upcoming socio-political challenges posed by global warming, "equipping future generations with proficiency across all environmental sustainability competence areas […] is key to promoting a more sustainable and greener future" (Borgonovi et al., 2022, p. 6).

Against this background, Chapter 8 "Social Outcomes, Political Attitudes and Political Participation", aims at exploring to what extent these goals are met within the higher education systems of the EUROGRADUATE 2022 countries. Therefore, it addresses diverse aspects of social outcomes, political attitudes and political participation as well as attitudes towards climate change. The sub-chapters mainly include descriptive analyses on a country comparative level, as well as more fine-grained analyses considering socio-demographic factors and higher education characteristics.

Please note that the analyses are limited to a smaller set of countries in this chapter. 10 out of the 17 countries that participated in EUROGRADUATE 2022 covered module C of the master questionnaire on social outcomes and political participation (i.e., Austria, Bulgaria, the Czech Republic, Germany, Croatia, Latvia, Malta, Portugal, Slovenia and Slovakia. Out of these, Germany and Slovenia[23] did not cover the questions on climate change).

To reflect upon the mission on improving well-being through higher education, Chapter 8.3 describes general life satisfaction of European graduates, while Chapter 8.4 has a closer look at social trust. According to the literature, both aspects can be interpreted as subjective aspects of well-being and are found to be positively associated with higher education (Cheung & Chan, 2009; Boyadjeve & Iliva-Trichkova, 2015). Therefore, we understand life satisfaction and social trust as a social outcome of higher education. Descriptive analyses on these two concepts are run and reported on with a specific focus on country comparisons.

Chapter 8.5 shifts the focus towards the political attitudes of graduates in the EUROGRADUATE 2022 countries. Higher education is expected to contribute to the development of political values, attitudes and interests, which are considered social outcomes of higher education. The chapter provides a descriptive cross-country analysis on political interest. Additionally, political interest is investigated looking at differences by higher education characteristics and demographic background variables. Political efficacy is analysed at both, a general and individual level. Finally, this sub-chapter evaluates the support for democracy at an internationally comparative level.

Chapter 8.6 deals with the question of how to explain differences in the support for democracy among the graduates of the EUROGRADUATE 2022 countries. By linear regression analyses we test if and to what extent cohort, country, socio-demographic factors, and higher education characteristics can predict the support for democracy.

Next up is Chapter 8.7, which focuses on political participation. Here, channels through which European graduates decide to engage politically are analysed. This chapter mainly provides analyses on the overall EUROGRADUATE 2022 sample, focusing on differences that can be observed based on higher education characteristics and basic demographic factors.

[23] Slovenia did cover one of the three questions on climate attitude (i.e., climate change concern).

Chapter 8.8 deals with attitudes towards climate change. It is important to understand if and how higher education can support young people to form pro-environmental attitudes and equip them with competencies to work towards a greener future. To address this, descriptive cross-national analyses are run to understand graduates' beliefs and concerns about climate change and environmental topics. The chapter focuses on graduates' beliefs about the causes of climate change, their emotional response to it (i.e., climate concern) and their environmental efficacy beliefs (i.e., beliefs that individual action is effective).

The last Chapter 3.9 deals with another specific policy issue and addresses whether education for environmental sustainability strengthens climate change awareness.

For all constructs analysed in this chapter, EUROGRADUATE primarily utilized survey instruments from general population surveys, allowing for comparisons between the views of graduates and those of the general population. Consequently, most sub-chapters include a brief section that contrasts the results of EUROGRADUATE 2022 with results from data of the European Social Survey (ESS) and the International Social Survey Programme (ISSP).

For comparison, we created sub-samples of the ESS and ISSP to match the country selection and the field phase of EUROGRADUATE 2022 as closely as possible. To analyse political attitudes and participation (Chapter 8.3-8.7), we merged data from the ESS10[24] and ESS11[25]. The ESS11 matches the EUROGRADUATE field phase best (2022/23) and includes half of the EUROGRADUATE countries covered in this chapter (5 out of 10). Three further countries were added from the ESS10 (data collection: 2020/21). Two EUROGRADUATE countries could not be matched with the ESS data. Deviations in the field phase and country selection should be considered when comparing the data. To compare our data on climate attitudes (Chapter 8.8), we draw from data from the ESS8[26] (data collection: 2016/17; 2 out of 3 variables) and the ISSP 2020[27] (1 out of 3 variables). Unfortunately, the ESS8 is the latest edition with data on climate attitudes. As the field phase and country selection in the ESS8 and ISSP differ substantially from EUROGRADUATE, we focus on comparing respondents with and without higher education *within* these data sets rather than comparing results against EUROGRADUATE.

8.3. General satisfaction with life

The connection between general life satisfaction and education has been well studied and acknowledged in literature. Accordingly, higher levels of education are associated with more general satisfaction with life (Cheung & Chan, 2009). Therefore, we consider general satisfaction with life as a social outcome of higher education. Against this background, the EUROGRADUATE 2022 data are analysed with regards to the life satisfaction reported by European graduates.

Figure 8.3.1 shows the graduates' general satisfaction with life (as the proportion of graduates who are satisfied, see below). While life satisfaction was measured on a Likert-scale from 0 (extremely dissatisfied) to 10 (extremely satisfied), the figure displays the frequencies of a binary version of the variable (0-5, dissatisfied; 6-10, satisfied). On average, more than 80% of the graduates report to feel generally satisfied with their life. The share of satisfied graduates is lower in the younger cohort 2020/21 ($84\%_{16/17}$; $80\%_{20/21}$).

[24] European Social Survey European Research Infrastructure (ESS ERIC). (2022). ESS10 Data Documentation. Sikt - Norwegian Agency for Shared Services in Education and Research. https://doi.org/10.21338/NSD-ESS10-2020

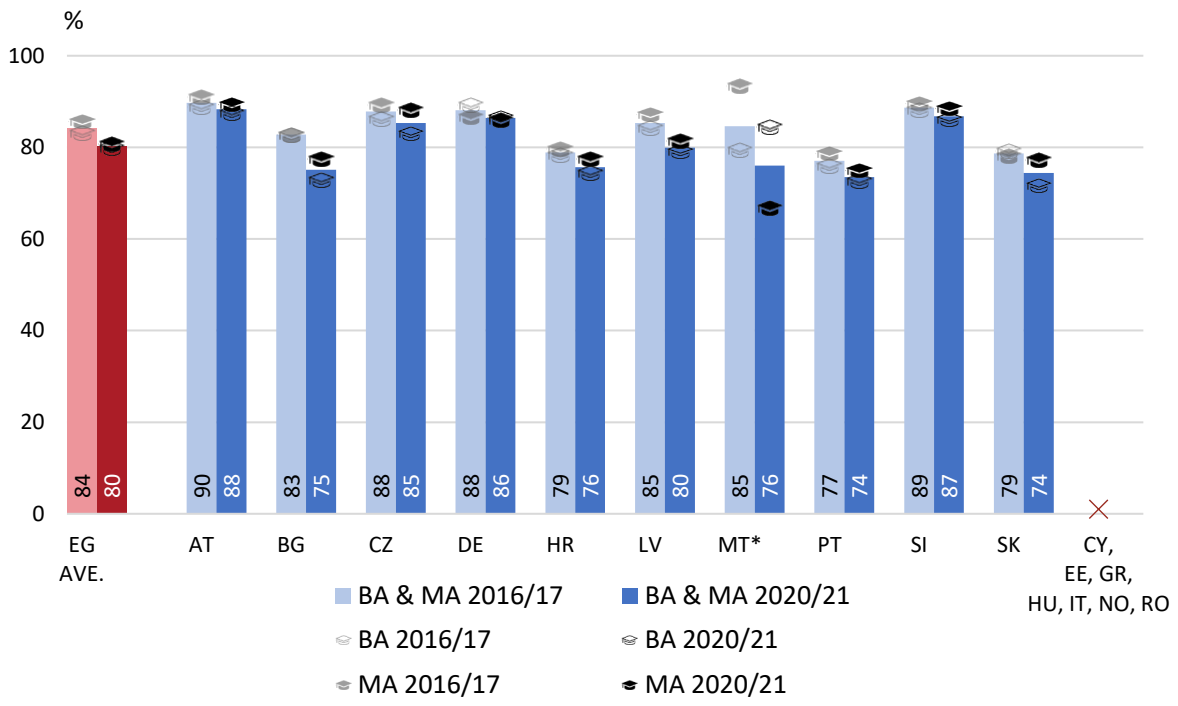
[25] European Social Survey European Research Infrastructure (ESS ERIC). (2024). ESS11 Data Documentation. Sikt - Norwegian Agency for Shared Services in Education and Research. https://doi.org/10.21338/ess11-2023

[26] European Social Survey European Research Infrastructure (ESS ERIC). (2016). ESS8 Data Documentation. Sikt - Norwegian Agency for Shared Services in Education and Research. https://doi.org/10.21338/nsd-ess8-2016

[27] ISSP Research Group (2023). International Social Survey Programme: Environment IV – ISSP 2020. GESIS, Cologne. ZA7650 Data file Version 2.0.0, https://doi.org/10.4232/1.14153

Country. In all countries, 74% to 90% of the graduates report to be satisfied with life. The proportion of graduates that are satisfied with life is highest in Austria (90%$_{16/17}$; 88%$_{20/21}$), Czech Republic (88%$_{16/17}$; 85%$_{20/21}$), Germany (88%$_{16/17}$; 86%$_{20/21}$) and Slovenia (89%$_{16/17}$; 87%$_{20/21}$). Among our countries, lowest shares of satisfied graduates are observed in Bulgaria (83%$_{16/17}$; 75%$_{20/21}$), Croatia (79%$_{16/17}$; 76%$_{20/21}$), Portugal (77%$_{16/17}$; 74%$_{20/21}$) and Slovakia (79%$_{16/17}$; 74%$_{20/21}$), even though these shares still seem considerably high.

Figure 8.3.1: General satisfaction with life, international comparison
Definition: Percentages of graduates that are satisfied with their life as a whole (f1.1)
All graduates by:
Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Degree and cohort. In all countries[28], small differences between the graduates of the degree levels can be observed. The share of master level graduates who report to be satisfied with life is somewhat higher compared to the bachelor level graduates (except for Germany, cohort 2016/17).

Small differences between the cohorts can be seen, with the younger cohort showing smaller proportions of satisfied graduates across all countries. The multiple crises in the past years (e.g., pandemic, inflation, war/conflicts), might have affected graduates from the two cohorts differently. Graduates of 2016/17 had more time to establish themselves in the labour market which might have put them in a more comfortable and safe position than graduates of 2020/21. However, the differences are only minor and should not be overinterpreted.

European Social Survey (ESS10/11). 75% of the ESS-respondents without a higher education degree reported to be satisfied with life in general. The share of ESS-respondents that hold a higher education degree and report high levels of life satisfaction is even higher with 83%. Thus, results from the ESS suggest a positive relation of higher education and life

[28] Malta shows a different trend for cohort 2020/21. However, due to few cases, this trend should be considered with care.

satisfaction as well. The proportion of satisfied graduates in EUROGRADUATE 2022 is similar (84%$_{16/17}$, 80%$_{20/21}$) to the highly educated respondents in the ESS.

8.4. Social trust

High levels of social trust are described to be indispensable for functioning and resilient societies and democracies (Boyadjieva & Ilieva-Trichkova, 2015; Putnam, 1993). Against this background, higher education is expected to foster people's general trust in each other and official institutions. Previous research provided evidence for this expectation, showing that higher education positively influences trust on an individual, interpersonal and institutional level (Boyadjeve & Iliva-Trichkova, 2015; Charron & Rothstein, 2016). In the following, the level of social trust among European graduates is analysed in the context of EUROGRADUATE 2022.

Figure 8.4.1 displays the proportion of graduates who agree that people can generally be trusted. Social trust was measured on a 11-point scale, with 0 indicating that people cannot generally be trusted, and 10 reflecting that people can generally be trusted. For the analysis, a binary version of the scale was created with the values 0-5 indicating no social trust, and 6-10 representing social trust.

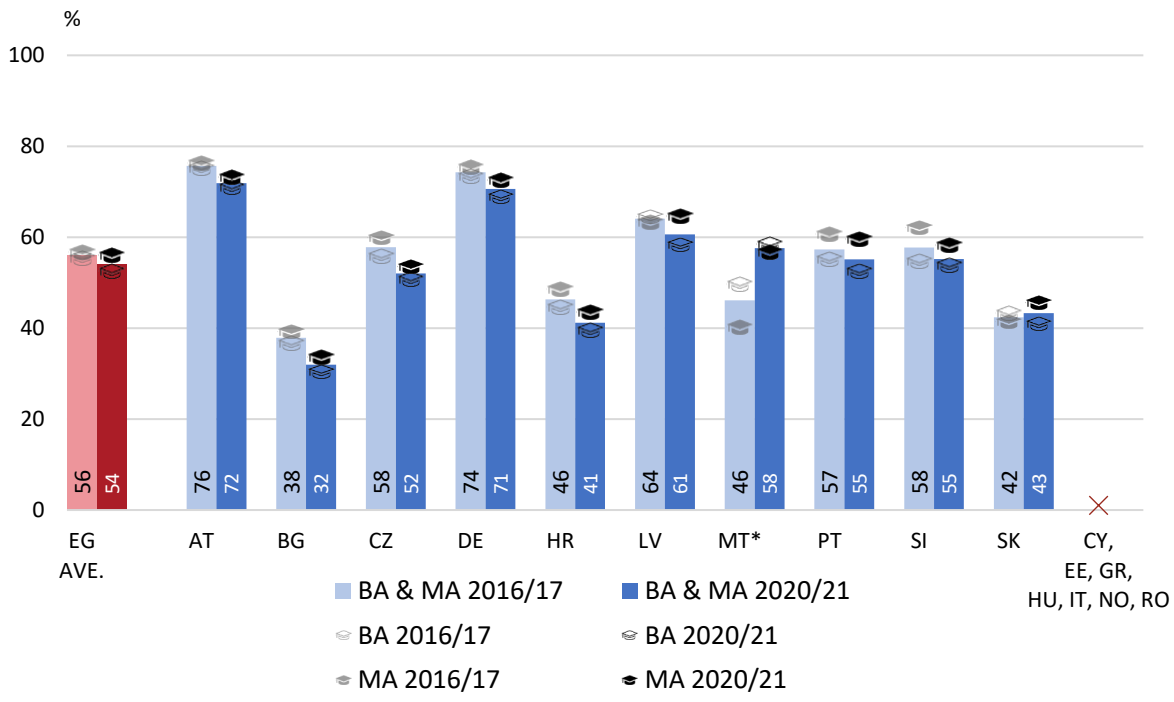
On average, 56%$_{16/17}$ and 54%$_{20/21}$ of the graduates believe that people can generally be trusted. While there are mostly only minor differences between the cohorts and degree levels, we see that in cohort 2020/21, the share of master level graduates (56%$_{20/21}$) who show general trust in people is 4-percentage points higher than that of bachelor level graduates (52%$_{20/21}$).

Figure 8.4.1: Social trust, international comparison

Definition: Percentages of graduates who believe that people can generally be trusted (f1.3)

All graduates by:

Cohort (twin bars), country (x-Axis), degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Country. On a country-level, stronger differences can be observed. In Austria and Germany, the proportions of graduates who agree that people can generally be trusted are highest (>70%). Social trust is less spread among graduates in Bulgaria, Croatia, and Slovakia. Here, less than half of the graduates think that people can generally be trusted. For all other countries

(i.e., CZ, LV, MT, PT, SI), the proportions of graduates who generally trust in people range around 50-60%.

Cohort and degree. The share of graduates who report that they generally trust in people is lower in the younger cohort 2020/21 (between 2 to 6 percentage-points difference[29]).

In most cases, the proportion of graduates who have social trust is larger among master level graduates (exception: Malta, both cohorts; Slovakia, cohort 2016/17). Further higher education appears useful to continuously foster and deepen social trust among students and future graduates.

European Social Survey (ESS10/11). 36% of the ESS-respondents without a higher education degree think that people in general can be trusted. The proportion is higher (44%) for ESS-respondents that hold a higher education degree. Thus, higher education seems to play a relevant role in the establishment of social trust. In comparison, in the EUROGRADUATE 2022 data, we find $56\%_{16/17}$ and $54\%_{20/21}$ of the graduates that believe that people, generally, can be trusted.

8.5. Political interest and political attitudes

This sub-chapter focuses on the political attitudes of graduates. There is a long tradition of investigating the influence of (higher) education on the interest in politics and the formation of political attitudes. Higher education was found to be associated with, for instance, more liberal opinions, lower levels of authoritarianism and racial prejudice, but also with higher levels of economic right-wing attitudes (Weakliem, 2002; Scott, 2022). Moreover, policy makers see higher education as important for developing active and responsible citizens (European Commission, 2022). Hence, the EUROGRADUATE 2022 data are analysed to gain an insight into the political interest and attitudes among the graduates.

Figure 8.5.1 shows the proportion of graduates that report to be politically interested. Political interest was measured on a scale from 1 (very interested) to 5 (not at all interested). The proportions displayed below represent a binary version of the scale, with the values 1-2 indicating interest in politics (very/somewhat interested), while the values 3-5 represent no interest (neutral/somewhat not/not at all interested).

On average, 36% of the graduates of both cohorts report to be (very/somewhat) interested in politics. The share is slightly higher among master level graduates, especially for the cohort 2020/21 ($39\%_{20/21}$).

Country. The highest shares of politically interested graduates can be observed in Austria, the Czech Republic, Germany, and Slovakia. Here, more than 40% of the graduates express political interest. In the other countries, namely Bulgaria, Croatia, Latvia, Malta, Portugal, and Slovenia, less than 40% of the graduates report to be politically interested. The share is smallest in Slovenia ($20\%_{16/17}$; $21\%_{20/21}$).

Cohort and degree. Small differences between the cohorts can be observed in Austria, Bulgaria, and Germany, where less graduates from the cohort 2020/21 express political interest. In contrast, somewhat more graduates from the cohort 2020/21 report political interest in the Czech Republic, Malta and Slovenia. Looking at the degree level, somewhat higher shares of politically interested graduates can be observed for the master's degree level (except for Slovenia: here the shares are higher for bachelor level graduates). This is an indicator, that further higher education can additionally encourage political interest.

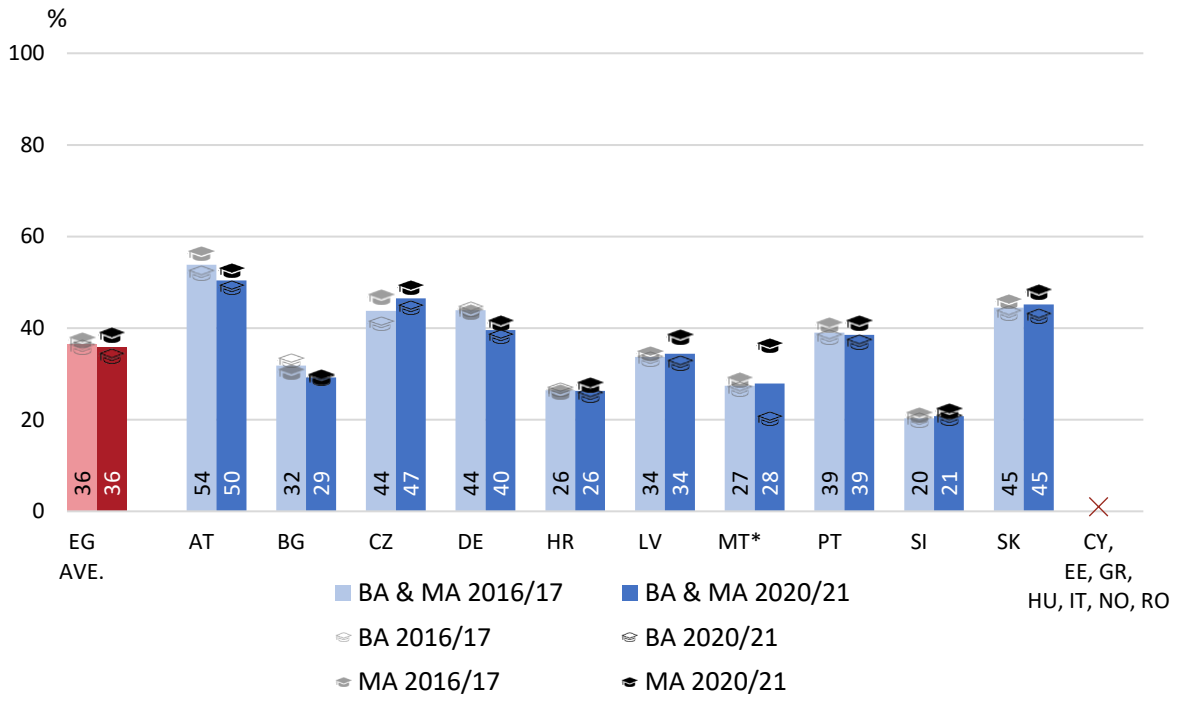
[29] Except for Malta, where social trust is higher among the younger cohort 2020/21. However, due to a low number of cases, this outcome should be considered with care.

Figure 8.5.1: Political interest, international comparison

Definition: Percentages of graduates that are (somewhat/very) interested in politics (f2.1)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

A further analysis of political interest by type of institution, degree level, study field, gender and age can provide first ideas on which characteristics of higher education are positively associated with political interest. Figure 8.5.2 shows the shares of politically interested graduates by the following categories: type of institution, study fields, gender and age.

Type of institution. When comparing the two types of institution, we observe a somewhat higher share of politically interested graduates at universities (39%$_{16/17}$; 40%$_{20/21}$) compared to non-universities (38%$_{16/17}$; 35%$_{20/21}$).

Study field. The share of politically interested graduates is highest within the field of Social Sciences & Journalism (51%$_{16/17}$; 47%$_{20/21}$). This is reasonable as this study field includes study programmes that are closely linked to politics. In contrast, the share of politically interested graduates is lowest within the field of Health studies (24%$_{16/17}$; 27%$_{20/21}$).

Socio-demographics. A large gender-difference can be observed when looking at the political interest of graduates. The share of graduates indicating political interest is much higher among male graduates than among female graduates (around 50% of male graduates compared to almost 30% of female ones, both cohorts). Further, graduates with a higher age reported more often to be interested in politics (34%$_{20/21}$ among graduates below 25 years, 40%$_{16/17}$ and 39%$_{20/21}$ among graduates 35 years or older).

European Social Survey (ESS10/11). The ESS-scale to measure political interest differs from EUROGRADUATE 2022[30]. Thus, results are not comparable. Still, the ESS allows to compare the level of political interest between respondents with different levels of education. 37% of the ESS-respondents without a higher education degree indicated to be politically interested. With

[30] The ESS used a 4-point scale with 1-"very interested", 2-"quite interested", 3-"hardly interested", 4-"not at all interested"; while EUROGRADUATE used a 5-point scale with 1-"very interested" to 5-"not at all interested".

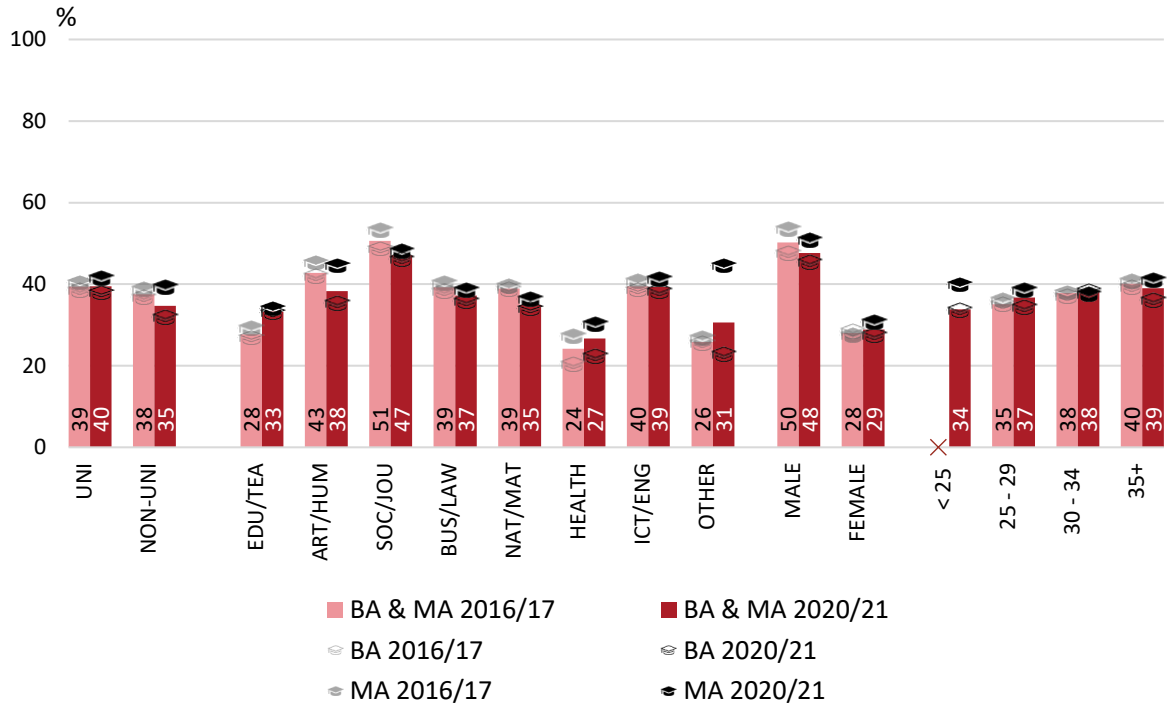
56%, the proportion is substantially higher among those holding a higher education degree. This suggests a positive relationship of higher education and political interest.

Figure 8.5.2: Political interest, EUROGRADUATE averages

Definition: Percentages of graduates that are (somewhat/very) interested in politics (f2.1)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, age (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: Age group <25 too few cases (<30); SI: not included in type of institution; CY, EE, GR, HU, IT, NO, RO: no data

Figures 8.5.3 and 8.5.4 describe the political efficacy of the respondents. Political efficacy is a central component of political support in democracies and has two dimensions (Easton, 1975; Vetter, 1997). *Internal efficacy* refers to the citizens themselves and means that they feel able to participate in the political process and to articulate their political views. *External efficacy* refers to the political system and to political representatives and means that they are willing and able to take up the views of citizens and consider them in political decisions. Figure 8.5.3 shows the external efficacy which is described as the belief that people like oneself, can have an influence on politics. Respondents could express their attitudes on a 5-point scale. It ranges from 1 "not at all", over 2 "very little", 3 "some", 4 "a lot" to 5 "a great deal". Thus, higher values indicate greater feelings of external political efficacy. Figure 8.5.3 shows the mean values for each country[31]. On average, graduates indicate that people have "very little" influence on politics across all countries ($2.3_{16/17}$; $2.4_{20/21}$), pointing at rather low levels of external political efficacy.

Country. Differences can be observed when looking at the country level more closely. The perception, that people can have an impact on the countries' politics, is highest in Germany. Here, graduates on average think that people have "some" influence ($3.1_{16/17}$; $3.1_{20/21}$). In Austria, the Czech Republic, Latvia, Malta, Portugal, Slovenia, and Slovakia the means range between two and three, expressing that graduates in these countries, on average, perceive "very little" to "some" room for people to exert an influence on politics. In Bulgaria ($1.8_{16/17}$; $1.8_{20/21}$) and Croatia ($1.8_{16/17}$; $1.8_{20/21}$), the means are particularly low, located between the

[31] Table 8.5.3a in the appendix shows the proportions of graduates that report of a high level of external political efficacy.

scale points that represent “no possibilities for influence at all” and “very little”. Thus, graduates in these countries perceive least chances for people to exert an influence on politics.

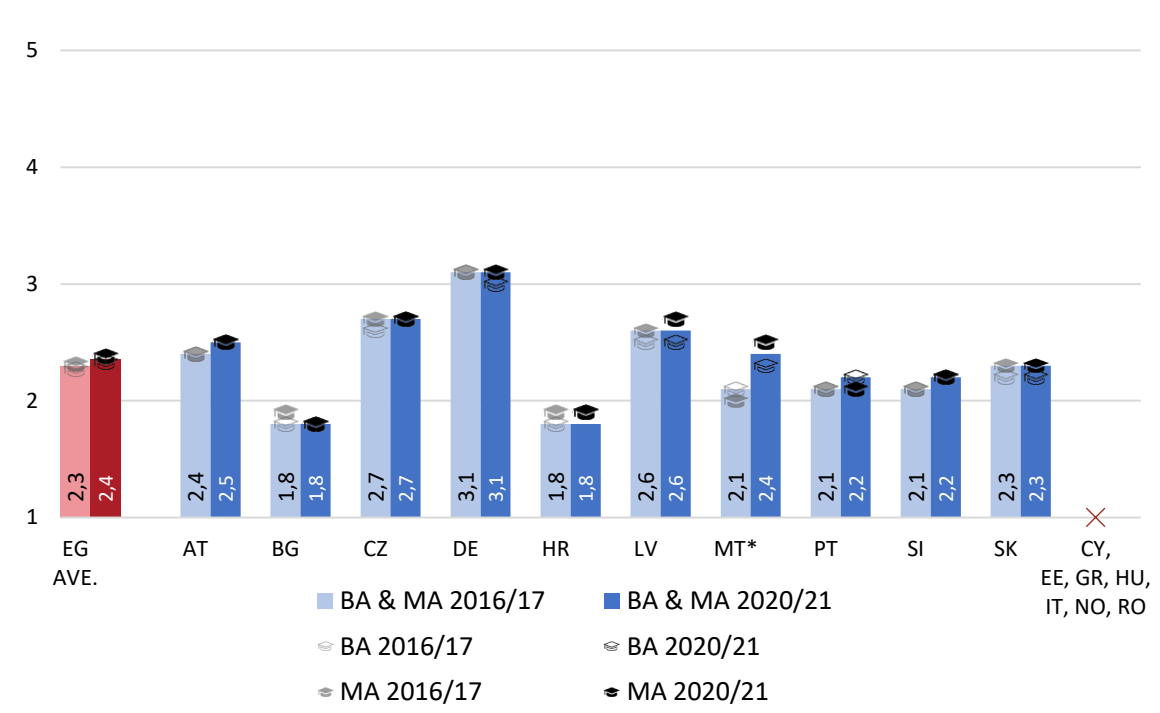
Cohort and degree. There are only small to no differences between the cohorts and the degree levels. Small differences can be observed in Croatia, Latvia, and Slovakia. Here, graduates of the master level degree report somewhat higher means of external political efficacy. However, these differences are very small and represent the same level at the 5-point scale (content-wise).

Figure 8.5.3: External political efficacy, international comparison

Definition: Mean value of the degree to which graduates think that people like oneself can have an influence on politics (1 “not at all” to 5 “a great deal”; f2.2)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Figure 8.5.4 presents the internal dimension of political efficacy. Graduates were asked to assess the confidence they have in their own ability to participate in politics on a 5-point scale, with 1 indicating “not at all confident”, 2 “a little confident”, 3 “quite confident, 4 “very confident” and 5 “completely confident”. Accordingly, a higher value means stronger perceived internal political efficacy, and thus, greater confidence in one’s own abilities to participate in politics.

Figure 8.5.4. displays mean values for all countries, as well as an EUROGRADUATE 2022 average[32]. On average, graduates report to have “a little confidence” ($2.0_{16/17}$; $2.1_{20/21}$) in their ability to participate in politics.

Country. Across all countries, the mean value on graduates’ individual perception of abilities to participate in politics ranges around two, i.e. on average graduates across all countries describe themselves as having “a little confidence” in participating in politics. While differences between the countries are rather small, we see that graduates in Austria ($2.2_{16/17}$; $2,2_{20/21}$), Croatia ($2.2_{16/17}$; $2,2_{20/21}$) and Portugal ($2.3_{16/17}$; $2.3_{20/21}$) reported the highest levels of individual

[32] Table 8.5.4a in the appendix shows the proportions of graduates that report a high level of internal political efficacy.

confidence in their abilities compared to other countries. Interestingly, while Croatian graduates are among those with the highest level of internal efficacy, the external political efficacy was perceived to be lowest in Croatia.

Cohort and degree. There are small to no differences with regards to the cohort and degree level. In countries with minor differences in the mean values representing the own ability to participate in politics (i.e., AT, BG, HR, MT, SI, SK) the overall scale point they are referring to remains consistent.

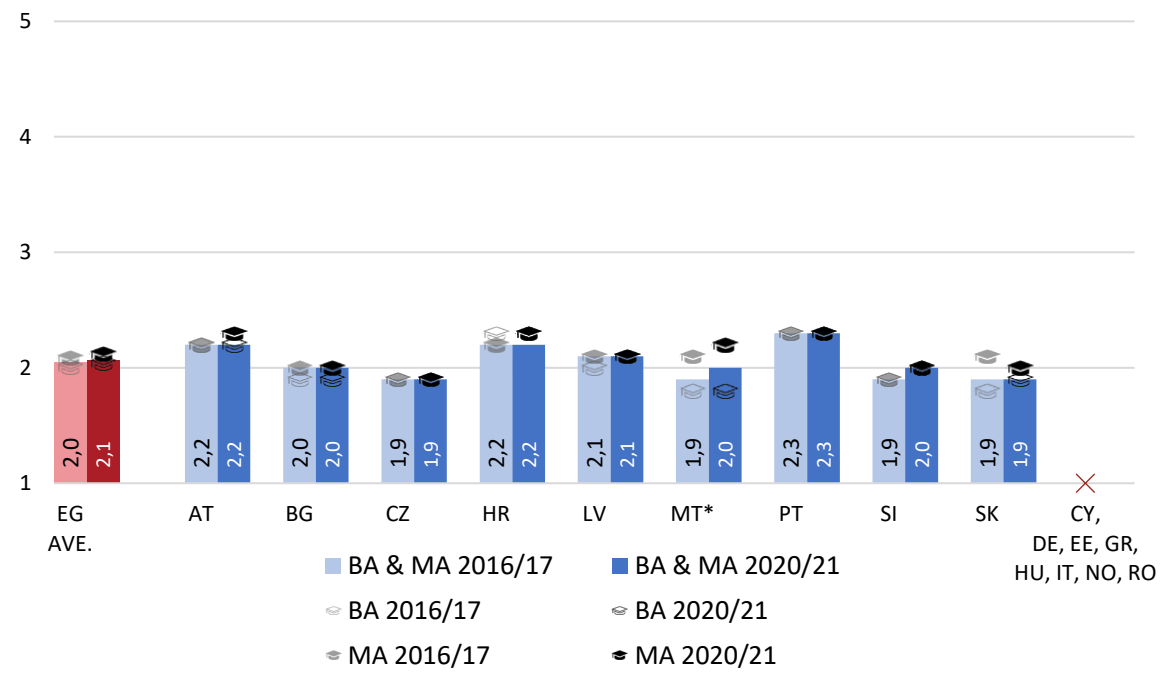
European Social Survey (ESS10/11). For ESS-respondents without a higher education degree, we find a mean value of 1.9 for external political efficacy. This represents the perception that people, in general, have only very little influence on politics in their country. ESS-respondents that hold a higher education degree show a mean value of 2.3. Thus, external political efficacy is slightly more pronounced among highly educated people. Still, the ESS as well as the EUROGRADUATE 2022 data show that the external political efficacy is, overall, rather low among highly educated people. Hence, highly educated respondents mostly think that people only have very little to some influence on politics. The same is true for the confidence in the own ability to participate in politics (i.e., internal political efficacy). The mean value of respondents without a higher education degree in the ESS is 1.9, while the mean value of ESS-respondents holding a higher education degree is 2.4. Again, internal political efficacy is somewhat more pronounced among those with a higher education degree. Either way, the mean value of highly educated people is rather low, similar to the mean that we observed in the EUROGRADUATE data ($2.0_{16/17}$; $2.1_{20/21}$). Thus, people have rather little confidence in their ability to participate in politics. This leads to the conclusion, that it should not only be invested in activating an interest in politics among people, but more specifically, in increasing the awareness on how to exert an influence and actively participate in politics.

Figure 8.5.4: Internal political efficacy, international comparison

Definition: Mean value of the degree to which graduates have confidence in their own ability to participate in politics (1 "not at all confident" to 5 "completely confident"; f2.3)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO: no data

Figure 8.5.5 describes the importance that graduates attribute to democracy. Graduates were asked how important it is to them, that the country they life in is governed democratically. This was measured on an 11-point scale, with 0 representing “not at all important” and 10 “extremely important”. To display proportions of graduates showing support for democratic governance, a binary variable was created. Here, we distinguish between graduates that think it is important (values 6-10) and those who do not think it is important (0-5) to life in a democratically governed country. On average, more than 90% of all graduates across all countries express that it is important to them to life in a democratically governed country.

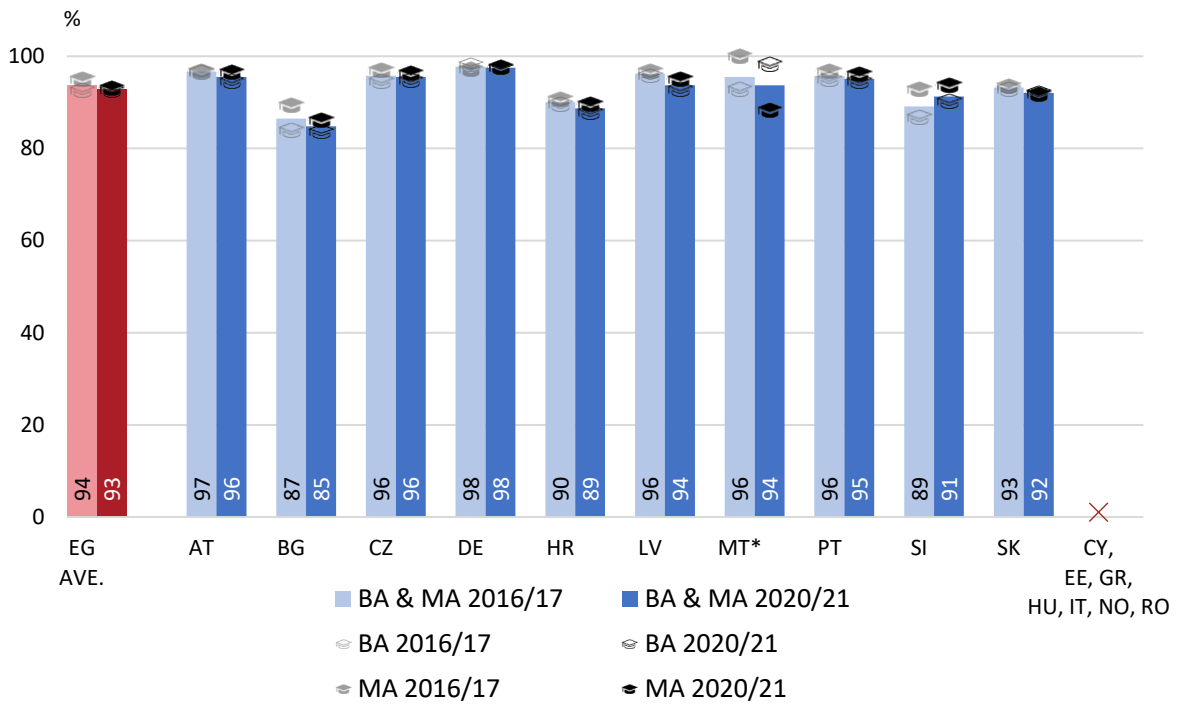
Country. The support for democracy is similarly high in all participating countries. The share of graduates who support democracy is highest in Germany with 98% (both cohorts) and above 90% for most countries. Somewhat lower shares are observed for Bulgaria and Croatia, with values below or equal to 90%.

Figure 8.5.5: Support for democracy, international comparison

Definition: Percentages of graduates that think it is important to live in a country that is governed democratically (f2.5)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Cohort and degree. In most countries, i.e., Austria, Bulgaria, Croatia, Latvia, Malta, Portugal, and Slovakia, there are small differences by one or two percentage points between the cohorts. Here, we see somewhat less support among the younger cohort 2020/21. In contrast, in Slovenia, there is slightly less support among the younger cohort 2020/21. In Bulgaria and Slovenia, we see higher levels of support for democracy among master level compared to bachelor level graduates. In all other countries, there are only very small to no differences based on the degree level.

European Social Survey (ESS10/11). There is no comparable measurement with regards to the importance of democracy in the European Social Survey dataset.

8.6. *Specific policy issue*: Support for democracy by graduates

The support for democracy is very high among the graduates of EUROGRADUATE 2022. On average, more than 90% of the graduates report that, for them, it is important to live in a country that is governed democratically (see Figure 8.5.5). To further understand what factors contribute to support for democracy, more in-depth analyses are run using linear regression.

Against this background, we use a regression model showing if and to what extent the variables cohort, country, gender, age, academic background, immigration background, partnership, children, highest degree, type of institution, and study field are related to the support for democracy. The regression coefficients tell us, how strong a relationship is and if it is positive or negative.

Figure 8.6.1 displays the regression coefficients of the regression model for the support of democracy. The blue dots represent the regression coefficients. Additionally, the spikes represent the confidence intervals, providing information on the statistical significance of the relationship observed. Further, there is a line drawn at the value of zero. If a dot (i.e., coefficient) or the spikes touch upon this line, the coefficient is statistically not significant. In other words, the coefficient is statistically not different from zero and we assume there is no relationship between the variable in question and support for democracy.

To begin with, we see a significant association between the cohort affiliation and support for democracy. The differences are not big, but members of the cohort 2020/21 show significantly less support for democracy.

With regards to the survey country, it can be observed that the support for democracy is significantly lower in all countries compared to Austria (except for Germany, which does not differ significantly from Austria). The difference for the support of democracy is largest for graduates from Bulgaria (-.998, i.e., the support for democracy is around one full scale point lower for Bulgarian graduates compared to Austrian ones). Portugal (-.17) and the Czech Republic (-.28) also show significantly lower support for democracy, but the difference is noticeably smaller. Thus, the country in which a person graduates plays a significant role for the support for democracy.

There is a significant relationship between gender and support for democracy. Interestingly, being female is associated with higher levels of support for democracy. In contrast, when looking at the descriptive statistics, we saw that political interest (see Figure 8.5.2) is clearly lower among female respondents. For the political goal of active citizens, it is important to not only support democracy, but also to live up to it actively. The gender-differences observed could be taken up in the area of political education, for instance by considering different approaches to political topics (e.g., using the support for democracy as an anchor to motivate political interest among women). Further, age is positively associated with the support for democracy. Graduates that are 35 years or older show significantly more support for democracy than younger graduates (i.e. below 25 years).

Having an academic background and being in a partnership is significantly associated with stronger support for democracy. In contrast, we observe a significant, negative relationship for immigration background and having children.

Looking at higher education characteristics, we see that a higher degree level is associated with more support for democracy. Further, graduates from non-universities show significantly lower levels of support for democracies than graduates from universities. Thus, the type of institution seems to matter in the formation of democratic values. Graduates of the field Social Sciences & Journalism show the highest level of support among all study fields.

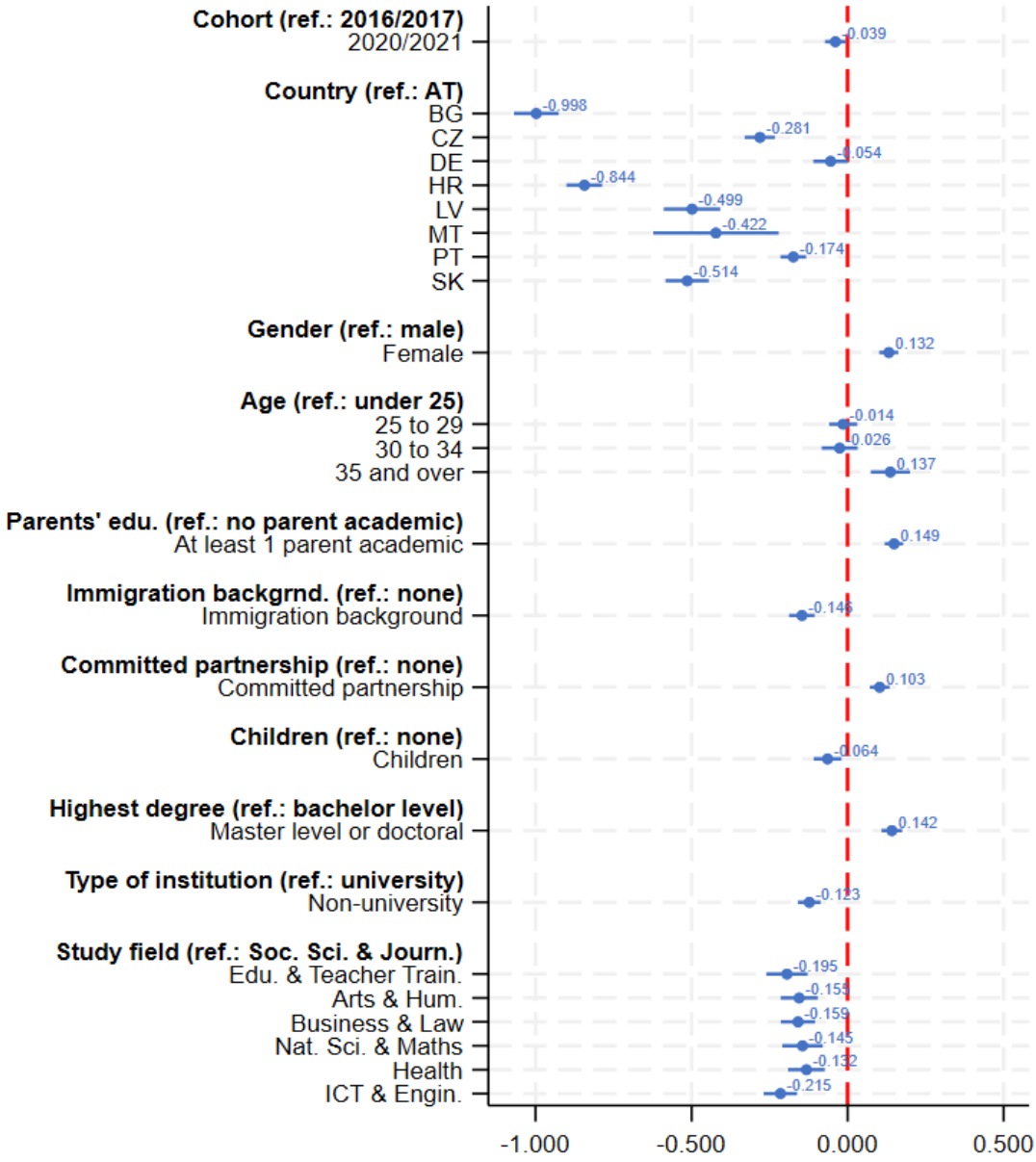
To sum up, demographic factors like age and gender seem to be influential with regards to the support for democracies. This could be considered when designing interventions aimed at motivating democratic values in general, but specifically at higher education institutions. Further, the support for democracy varies across countries, which might be related to factors

such as the history of the country, the economic situation, or cultural differences. Besides, higher education characteristics seem to be influential when it comes to the support for democracy. At the background of our results, it could be considered how to increase support for democracies among graduates of non-universities and how to foster democratic values across different disciplines and study fields (that are not naturally linked to politics like Social Sciences & Journalism).

Figure 8.6.1: Explanatory factors for support for democracy (ordinary least square regression)

Definition: OLS regression to explain the tendency of graduates to think that it is important, that the own country is governed democratically (f2.5)

All graduates



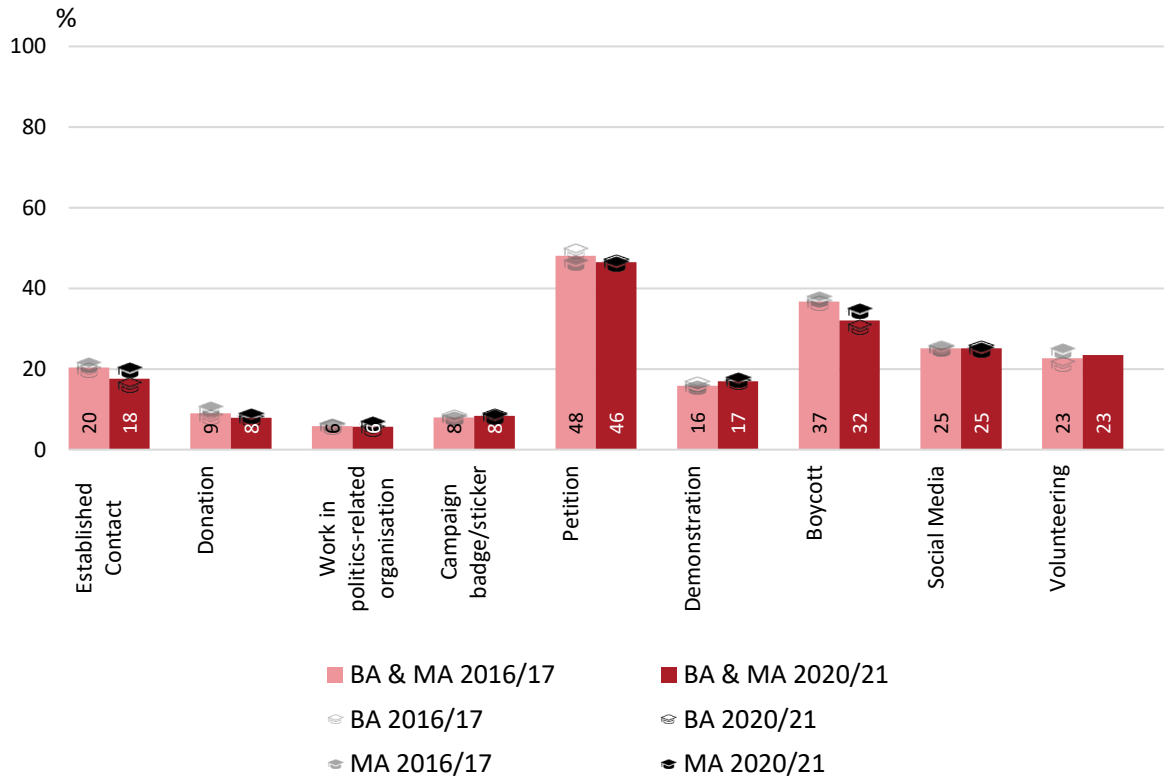
Source: EUROGRADUATE Survey 2022, dataset version 3.1.0.

Notes: Ordinary least square regression model (cohort, country, age, gender, academic background, immigration background, partnership, highest degree, type of institution, study field as independent variables). Adjusted R^2 = 0.0392, p<0.001, N = 49.920. SI no data on type of institution, excluded from model; CY, EE, GR, HU, IT, NO, RO no data, excluded from model

8.7. Political participation

Policy makers expect higher education to contribute to the socialisation of active citizens (e.g. Bologna Process, 2020). It is a well-established finding that political participation increases with the level of education (e.g. Becker, 2004; Hadjar & Schlapbach, 2009; Persson, 2012) even though the mechanisms of how higher education and political participation are related are less well understood (Mühleck & Hadjar, 2023; Persson, 2015). In the following we look at the political participation of European graduates that took part in EUROGRADUATE 2022.

Figure 8.7.1: Types of political participation, EUROGRADUATE averages
Definition: Percentages of graduates that engaged in the different types of political participation within the last 12 months (f2.4a-j)
All graduates by:
Cohort (twin bars); types of political participation (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: CY, EE, GR, HU, IT, NO, RO no data

Figure 8.7.1 shows the proportions of graduates that engaged in the following types of political participation within the past year: **established contact** with a politician, **donated** to or participated in a political party or pressure group, **worked in a politics-related organisation**, worn a **campaign badge/sticker**, signed a **petition**, had taken part in a public **demonstration**, **boycotted** certain products, posted/shared political content online/on **social media**, **volunteered** for a non-profit or charitable organization. The proportions displayed are based on the full EUROGRADUATE 2022 sample.

Most graduates (48%$_{16/17}$, 46%$_{20/21}$) signed a petition, followed by boycotting certain products (37%$_{16/17}$, 32%$_{20/21}$). Furthermore, between 16%$_{16/17}$ to 25%$_{16/17}$ of the graduates in cohort 2016/17, and 17%$_{20/21}$ to 25%$_{20/21}$ of the graduates in cohort 2020/21 engaged in politics by taking part in demonstrations, sharing political content online, volunteering for non-profit or charitable organizations and directly establishing contact with politicians. Donating, working in politics-related organisations or wearing campaign badges/stickers was rarely used as means to engage politically (>10% in both cohorts).

Besides looking at the general proportion of graduates that engaged in different types of political participation, it was analysed in how many different types of political participation graduates engaged within one year. On average, the graduates of EUROGRADUATE 2022 participated in one or two of the listed activities ($1.9_{16/17;}$ $1.8_{20/21}$). Graduates in Germany are most active ($2.6_{16/17}$; $2.8_{20/21}$; for more cross-country comparison see Appendix Table 8.7.3).

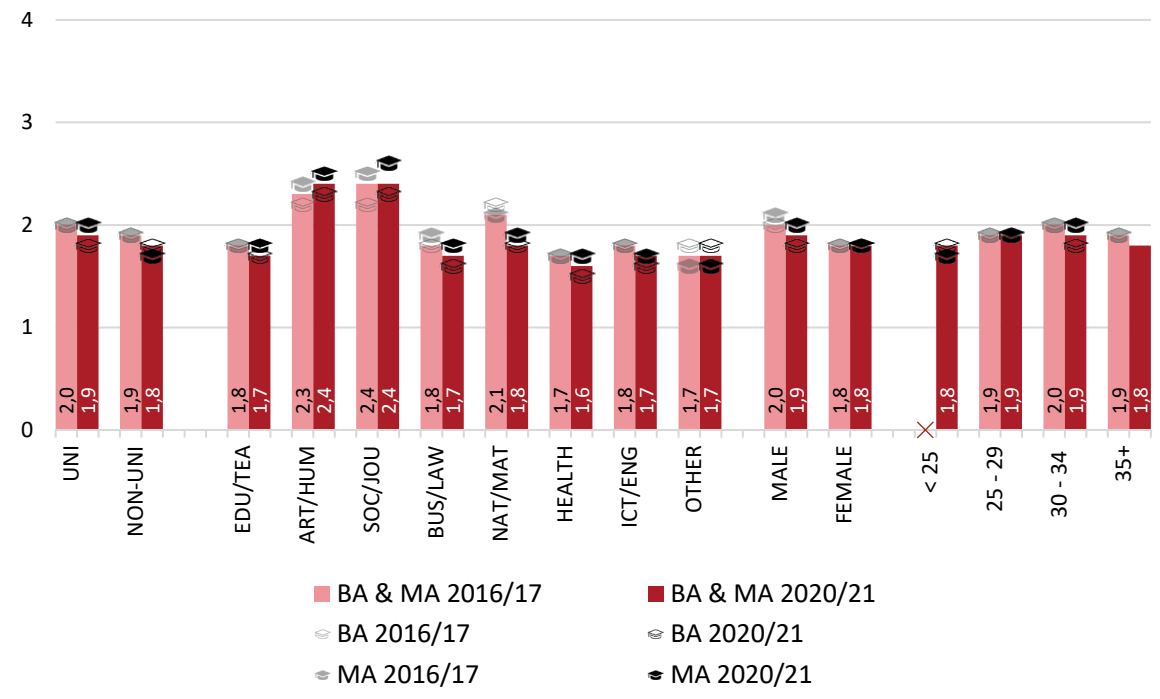
Figure 8.7.2 displays mean values of political participation, i.e. the average number of activities that graduates engaged in during the last 12 months by cohort, degree level, type of degree, study field, gender and age.

Figure 8.7.2: Extent of individual political participation, EUROGRADUATE averages

Definition: Average number of activities in which graduates were involved within the last 12 months (x/9; f2.4a-j)

All graduates by:

Cohort (twin bars); type of institution, study field, gender, age (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.
Notes: Age group <25 too few cases (<30); SI not included in type of institution; CY, EE, GR, HU, IT, NO, RO: no data

Type of institution. There are small to no differences in the average number of graduates from universities in comparison to non-universities. In both cases, graduates report to have, on average, participated in one or two kinds of political activities. Although the differences between the degree levels are relatively small, master level graduates from universities ($2.0_{16/17}$; $2.0_{20/21}$) appear to be most politically active.

Study fields. Looking at political participation across different study fields, it can be seen that graduates from the fields Arts & Humanities ($2.3_{16/17}$; $2.4_{20/21}$), as well as Social Sciences & Journalism ($2.4_{16/17}$; $2.4_{20/21}$), show the highest average number of participation in political activities. Among these study fields, there are further small differences when additionally considering the degree level. Here, master level graduates are somewhat more politically active (Arts & Humanities: $2.4_{16/17}$, $2.5_{20/21}$; Social Sciences & Journalism: $2.5_{16/17}$, $2.6_{20/21}$). Graduates from all other study fields engage in ± 1.7 types of political participation (within one year). An exception is the group of graduates in the field of Natural Sciences & Mathematics from the academic year 2016/17. These graduates report to participate in two political activities (within one year).

European Social Survey (ESS10/11). The ESS measurement of political participation partly differed from EUROGRADUATE. Respondents of the ESS could indicate their engagement in eight instead of nine different types of political participation. Further, it offers a partly different set of activities[33], which does not allow direct comparison between the ESS and EUROGRADUATE. However, it can give an insight in the political participation of respondents with different educational levels within the ESS. Among respondents with and without a higher education degree, signing petitions ($14\%_{withoutHE}$, $28\%_{withHE}$), boycotting certain products ($12\%_{withoutHE}$, $23\%_{withHE}$) and contacting a politician, volunteering for a not-for-profits or charitable organisation or using social media ($\pm10\%_{withoutHE}$, $\pm19\%_{withHE}$) was mentioned most often as means to participate politically. Respondents without a higher education degree reported to engage via none or one form of political participation (0.7), while highly educated respondents engaged in politics via one or two different forms of participation (1.3).

8.8. Attitudes towards climate change

With climate change posing one of the greatest threats to our planet and society, a major goal is to equip "future generations with proficiency across all environmental sustainability competence areas […] [as this] is key to promoting a more sustainable and greener future." (Borgonovi et al., 2022, p. 6). Next to providing relevant skills and competencies to the young generation, it is additionally important to understand their attitudes towards climate change and environmental sustainability to motivate pro-environmental behaviour and engagement. Accordingly, this chapter investigates beliefs and concerns towards climate change among the graduates that participated in EUROGRADUATE 2022, looking at **climate change beliefs**, **climate change concern** and **environmental efficacy beliefs**.

Figure 8.8.1 displays the variable **climate change beliefs**, meaning to investigate the graduates' beliefs on the causes of climate change. Further, it is about reflecting upon whether graduates' beliefs are in line with the scientific consensus, stating that climate change and global warming is caused by human activity (IPCC, 2023). Survey participants were asked if they think that climate change is caused by natural processes, human activity, or both. They could answer on a 5-point scale, with the following scale points: 1 – entirely by natural processes, 2 – mainly by natural processes, 3 – about equally by natural processes and human activity, 4 – mainly by human activity, 5 - entirely by human activity. For the descriptive analysis, the scale was recoded into a binary variable, showing the proportion of graduates believing that climate change is mainly/entirely caused by human activity (values 4-5). Figure 8.8.1 provides an insight into the proportion of graduates per country.

On average, most of the graduates across all countries agree with the scientific consensus with regards to the causes of climate change. Accordingly, 72% (both cohorts) of the graduates believe that climate change is mainly/entirely driven by human activities.

Country. There are considerable differences between countries in the proportion of graduates agreeing with the scientific consensus. In Austria and Portugal more than 80% of the graduates believe that climate change is mainly/entirely human-driven. In the Czech Republic, Malta, and Slovakia the proportion is also rather high (>70%, except for cohort 2020/21 in Malta). In Croatia and Latvia, the share is lower with around 65%. In Bulgaria the proportions are smallest, with less than 60% of the graduates believing that climate change is mainly/entirely human-driven. The results indicate that graduates' beliefs about the causes of climate change, which align with the scientific consensus, are predominantly held and disseminated among graduates in Western and Central European countries participating in EUROGRADUATE 2022.

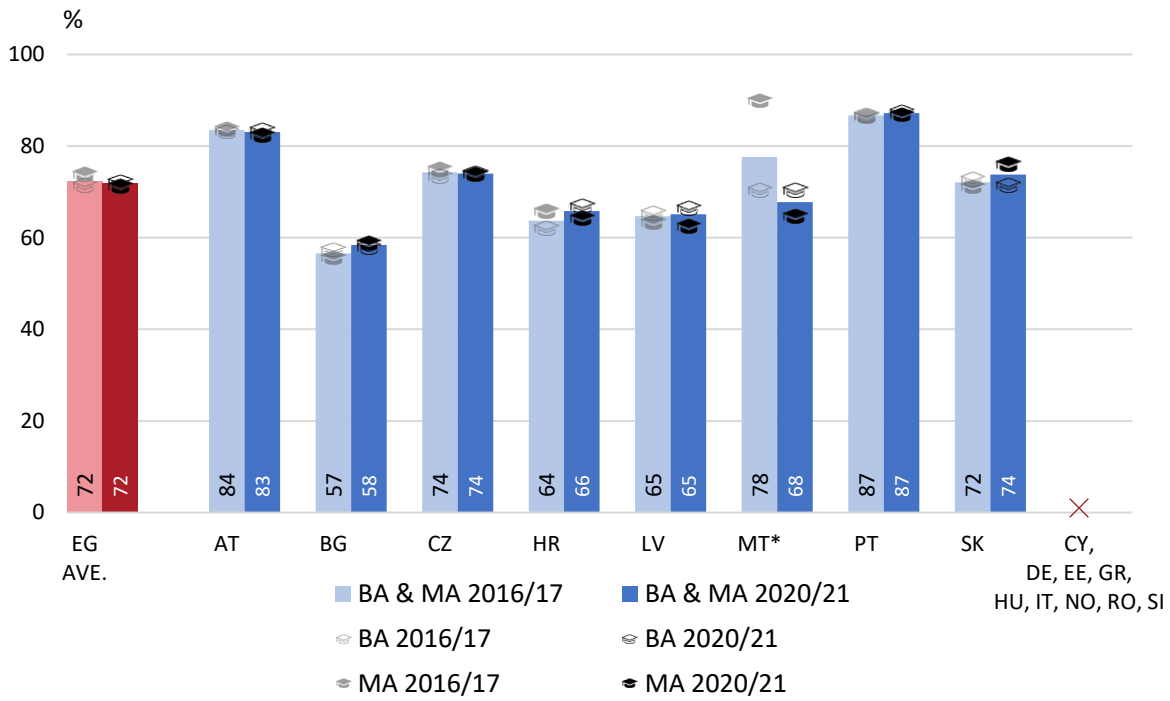
[33] 1) Contacted politician or government official, 2) donated to or participated in political party or pressure group, 3) worn or displayed campaign badge/sticker, 4) signed petition, 5) taken part in public demonstration, 6) boycotted certain products, 7) posted or shared anything about politics online, 8) volunteered for not-for-profit or charitable organisation

Figure 8.8.1.: Climate change beliefs, international comparison

Definition: Percentages of graduates that believe that climate change is mainly/entirely human driven (f3.1)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO, SI: no data

Degree and cohort. Looking at the cohorts, minor differences can be observed in Bulgaria, Croatia, and Slovakia. Here, somewhat more graduates from the younger cohort 2020/21 believe that climate change is mainly/entirely human-driven (difference of 1-2-percentage-points). On a descriptive level, no clear trend with regards to the degree level can be observed.

European Social Survey (ESS8). 43% of the ESS-respondents without a higher education degree believe that climate change is mainly/entirely human-driven. Looking at the proportion of ESS-respondents that hold a higher education degree, we find that 50% of the participants believe that climate change is mainly/entirely happening due to human activity. Thus, a higher level of education seems to be relevant for the formation of climate change beliefs that match the scientific consensus. In EUROGRADUATE 2022, we find that 72% of the graduates believe that climate change is mainly human driven. The reasons for this difference are unclear, however it seems likely that the time-lag between both surveys plays a role. The data for the 8th round of the ESS were collected in 2016/17. The topic of climate change and global warming has arrived in society at large, latest since the establishment of the Fridays for Future Movement in 2019. Rising general awareness of the topic and media-coverage have presumably contributed to people's beliefs on the causes of climate change. Further, the ESS8 includes (mostly) a different set of European countries. This might add to differences between the data. Overall, the data are not comparable.

Figure 8.8.2 shows the variable **climate change concern**, focusing on graduates that are very or even extremely worried about climate change. Graduates could express their level of concern about climate change ("How worried are you about climate change?") on a 5-point scale, with the following scale points: 1-"not at all worried", 2-"not very worried", 3-"somewhat worried", 4-"very worried", 5-"extremly worried". The variable was then recoded into a binary

distinction with the values 1-3 indicating “not (very) worried” and 4-5 representing “very/extremely worried”.

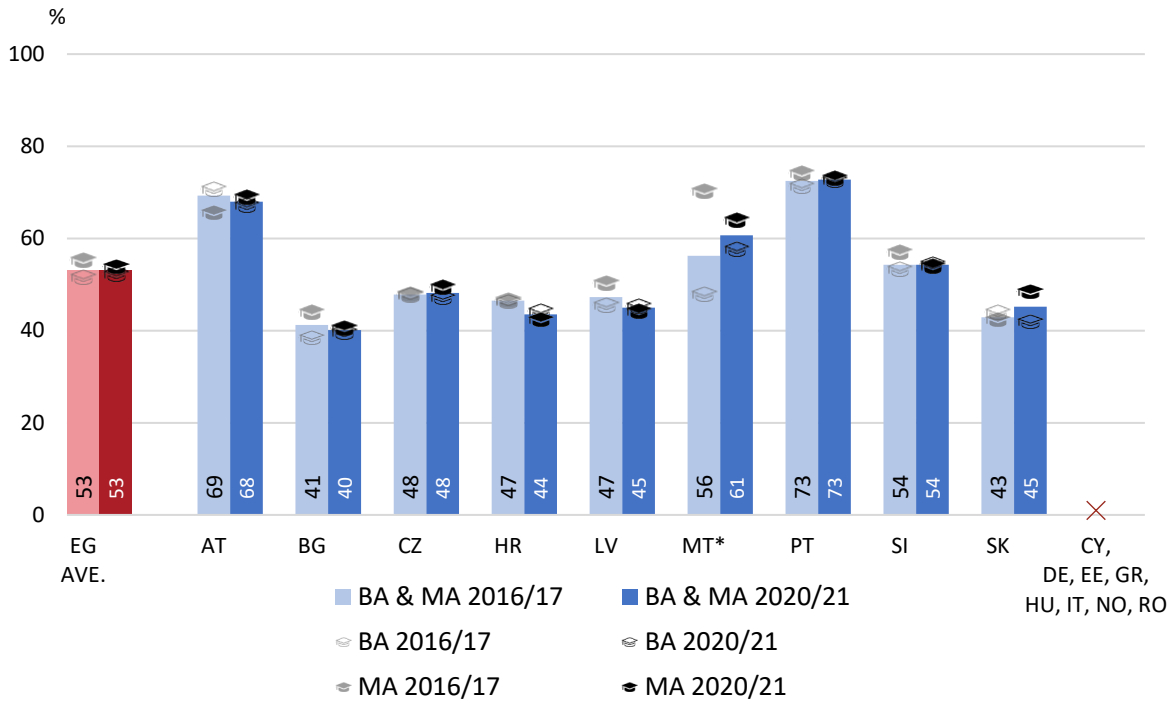
On average, a bit more than half of all the graduates report to be very or even extremely worried (53%, both cohorts). The proportion of master level graduates that are very/extremely worried is somewhat higher (by ~2%-points, both cohorts), while no differences can be observed between the cohorts.

Figure 8.8.2: Climate change concern, international comparison

Definition: Percentages of graduates that are very/extremely worried about climate change (f3.2)

All graduates by:

Cohort (twin bars); country (x-axis); degree level (icon)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO: no data

Country. On the country level, some variation with regards to climate change concerns can be observed. Similarly to the beliefs on climate change causes described above, the proportion of graduates that are very/extremely worried about climate change are highest in Austria (69%$_{16/17}$, 68%$_{20/21}$) and Portugal (73%, both cohorts). In most other countries (i.e., Bulgaria, the Czech Republic, Croatia, Latvia, Slovakia) less than half of the graduates feel very/extremely worried about climate change. The proportion of graduates that are very/extremely worried is lowest among graduates in Bulgaria (41%$_{16/17}$; 40%$_{20/21}$). Again, there seems to be a trend that graduates from Western and Central European countries that participated in EUROGRADUATE show higher levels of concerns.

Degree and cohort. There are only minor differences between the cohorts and degree levels. In Austria, Bulgaria, Croatia, and Latvia the proportions of graduates that are very/extremely worried is somewhat smaller among the cohort 2020/21, while in Malta and Slovakia the proportion within cohort 2020/21 is somewhat higher.

Looking at the degree level, the share of master level graduates that report to feel very/extremely worried about climate change is higher in most countries. Exceptions can be observed for the cohort 2016/17 in Austria and Slovakia. Here the share of bachelor level graduates that show high levels of climate concerns is somewhat higher. All in all, however, results suggest that continued higher education is associated with higher levels of climate change concerns.

European Social Survey (ESS8). 26% of the ESS8-respondents without a higher education degree indicate to be very/extremely worried about climate change. With 32%, the share is higher among people with a higher education degree. As discussed before, the share of the highly educated EUROGRADUATE respondents that are very/extremely worried about climate change is 53%. Again, time (and with that rising awareness) and a (partly) different set of European countries in the ESS might be reasons for these different results. The data are not comparable.

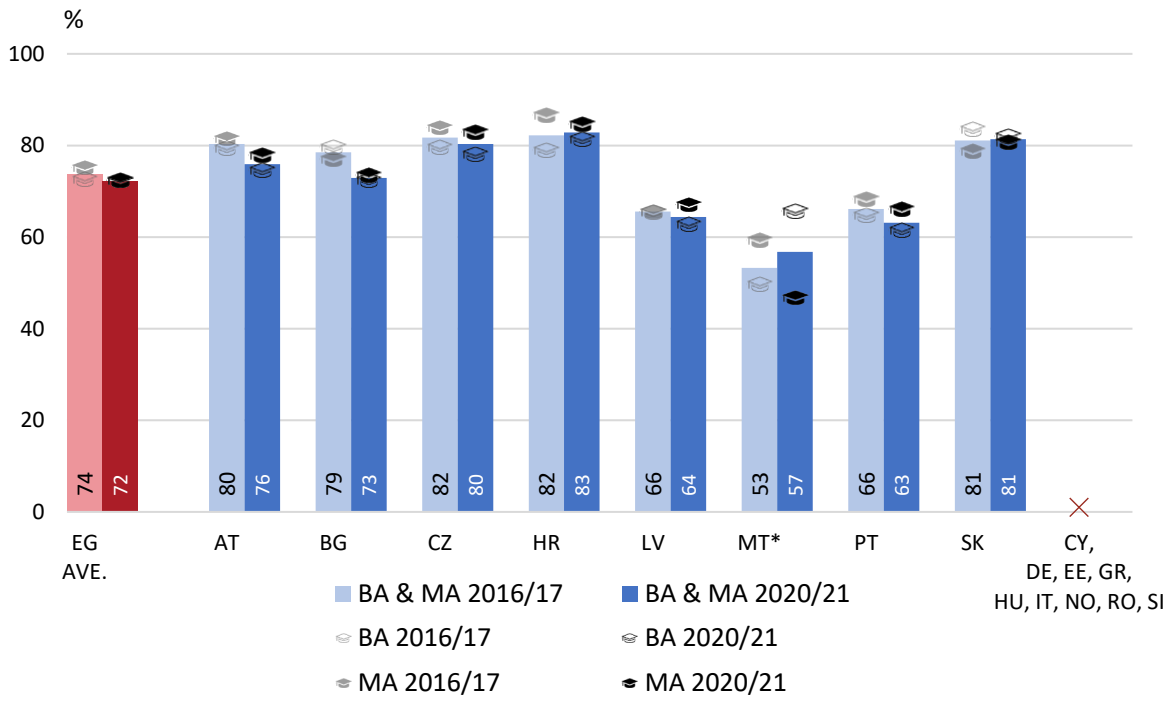
Figure 8.8.3 displays **environmental efficacy beliefs** of the graduates, which can be understood as the individual belief that environmental activities are effective, regardless of what others do. In this context, graduates were asked to express their agreement with the following statement on a 5-point scale (1 “agree strongly” to 5 “disagree strongly”): “There is no point in doing what I can for the environment, unless others do the same.” Persons (strongly) agreeing to this statement have low efficacy beliefs, as they feel that the effectiveness of their activities depends on the activity of others. Persons (strongly) disagreeing to this statement show high levels of efficacy beliefs as they feel their activities can make a difference independently from others. For the descriptive analysis of the graduates’ efficacy beliefs, this variable has been rebuilt to fit a binary distinction, showing the proportion of graduates believing that their environmental actions are effective, regardless of what others do (i.e., high level of environmental efficacy beliefs; values 4-5). Accordingly, Figure 8.8.3 displays the proportion of graduates across countries.

Figure 8.8.3.: Environmental efficacy beliefs, international comparison

Definition: Percentages of graduates that believe that individual activities are effective, regardless of what others do (f3.3)

All graduates by:

Cohort (twin bars); county (x-axis); degree level (icons)



Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO, SI: no data

On average, more than 70% of the graduates show high levels of environmental efficacy, supporting the idea that individual action is effective, regardless of others. The share is somewhat higher among graduates of the cohort 2016/17, even more so for master level students of this cohort. There is no difference with regards to the degree level within the cohort 2020/21.

Country. At the country level, the share of graduates perceiving individual acts for the environment as effective (regardless of what others do), is highest in Austria, the Czech Republic, Croatia and Slovakia (>80%, both cohorts; except for cohort 2020/21 in Austria). The shares are lowest among graduates in Malta (53%$_{16/17}$, 57%$_{20/21}$).

While the share of graduates who believe that individual actions for the environment can be effective is relatively high in countries like Bulgaria and Croatia, the proportion of graduates who believe that climate change is primarily human-driven is comparatively low in these countries (compared to the other countries). A similar trend is observed for climate change concerns, which are also relatively low in Bulgaria and Croatia compared to other countries. Although this may seem contradictory at first, it doesn't have to be. Environmental protection is often highly valued or seen as socially desirable, so even if climate change isn't a significant concern for an individual, they may still be motivated to act for the environment in general.

Degree and cohort. Comparing the degree level of the graduates, it can be seen that - in most cases - the shares of graduates who favour individual action upon the environment, regardless of what others do, is higher on the master's degree level. When looking at the cohorts, there are minor differences, showing – mostly - somewhat lower proportions of graduates who think that individual action is effective in cohort 2020/21.

International Social Survey Programme: Environment IV (ISSP 2020) . Around half of the ISSP20-respondents without a higher education degree show high levels of environmental efficacy (56%). Among the ISSP20-respondents who hold a higher education degree, 68% think that individual action is valuable, regardless of what others do (i.e., high environmental efficacy). Thus, it seems that higher education can have a positive impact on environmental efficacy beliefs. This impression can be backed up by the results of EUROGRADUATE 2022. Here, more than 70% of the graduates show high levels of environmental efficacy, and thus, favour individual action regardless of what others do.

8.9. *Specific policy issue*: Does education for environmental sustainability strengthen climate change awareness?

The design of the curricula of study programmes at higher education institutions can play a role in strengthening the awareness for climate change as one of the key problems requiring the green transition of European societies and economies. According to Witte (2023, p. 96), designing curricula that include or even focus on environmental topics can help to provide and evoke "(a) knowledge and awareness of facts, (b) behaviour change and (c) coping strategies". Hence, there is a demand to integrate education for sustainable development in the curricula of study programmes at higher education institutions to foster pro-environmental attitudes and behaviour.

To understand the extents to which this demand is already or can be met in higher education, the EUROGRADUATE 2022 data are used to investigate whether the extent to which environmental sustainability was a topic in the (reference) study programme leads to differences in climate/environmental attitudes. We analyse which factors influence **climate change beliefs**, **climate change concerns** and **environmental efficacy beliefs** using three linear regression models. These three variables are relevant for the green transition as they are related to the question whether European citizens have the right competencies and attitudes for the green transition and are ready and able to support this transition actively (be it as consumers, employers, employees, voters, or active citizens).

As a first necessary component we consider correct beliefs on the causes of climate change (i.e., climate change beliefs). In the Intergovernmental Panel on Climate Change (IPCC), a body of the United Nations, hundreds of leading climate researchers from around the globe assess climate change. These researchers are "certain" (IPCC, 2022b: p. 7) that "[a]ll of the observed warming (1.1°C/2°F) we have seen since the pre-industrial era is a result of human activities" (ibid.). The item used for measuring beliefs on the causes of climate change tries to

link to this and asks respondents whether they think climate change is entirely caused by human activity or entirely by natural processes or a mix (see Chapter 8.8 for more details). This proxy for adequate beliefs on climate change causes is analysed in the first model (Figure 8.9.1, blue dots).

Next to providing individuals with knowledge on climate change and environmental sustainability, it is important to evoke an affective response to the topic. Individuals need to feel concerned with climate change to seek and process information on it (Yang et al., 2014), get motivated to actively deal with it, form behavioural intentions (Rogers, 1975; Aijzen, 1991) and in long term, to act upon it (Slovic et al., 2004). At the same time, worries or negative emotions towards a risk such as climate change should not be too high, as individuals may feel overwhelmed otherwise. Concerns about climate change are analysed in the second model (Figure 8.9.1, red dots).

Further, to become active, individuals need to have a sense that they can do something to handle a risk, such as climate change (i.e., feelings of self-efficacy, coping strategies; Rogers, 1975). Environmental efficacy beliefs mean the perception that individual action on climate change is effective, regardless of what others do (see above, Chapter 8.8). In the third model we analyse which factors influence graduates' perceptions that their individual efforts are impactful and if higher education does play a role in fostering such feelings of environmental efficacy (Figure 8.9.1, green dots).

Figure 8.9.1 shows the coefficient plots of the linear regression models. The dots (blue, red and green) represent the regression coefficients, which tell us how strong the influence of the respective variable is and if it is a positive or negative relationship. Additionally, the spikes represent the confidence intervals, providing information on whether the relationship is statistically significant. If a dot or a spike touch upon the dashed zero line, the coefficient in question is statistically not different from zero, i.e. we detect no relationship. The extent to which environmental sustainability was part of the study programme is included as independent variable. It was measured on a 5-point scale, with 1 indicating "to a very high extent" and 5 "not at all". For the analysis, the scale was reversed so that higher values indicate a larger extent. Further, the following control variables were included in all models: cohort, country, socio-demographic background (i.e., gender, age, parents' education, immigration background, partnership, children), and higher education characteristics (i.e., highest degree, type of institution, study field, international mobility).

Cohort and country. For none of the three climate attitudes we observe significant differences between the two cohorts, while controlling for the other variables in our models.

In contrast, climate attitudes of graduates differ considerably by countries, resembling the differences observed in the descriptive results above. For climate change beliefs and climate concerns, the patterns of country differences are very similar. Among all countries, graduates of Portugal and Austria most strongly attribute climate change to human activities (in line with scientific research). The (vast) majority of graduates in the other countries shares this view, as we have seen above, however, they believe significantly less in human activity as main or sole cause. The size of the coefficients spans from -.15 in Malta to -.38 in Bulgaria. Regarding environmental efficacy beliefs, graduates of most countries do not differ significantly from graduates of Austria. Exceptions are Latvia, Malta, and Portugal where graduates feel to a stronger extent that the effect of their own activities depends on the activities of others.

The reasons for these country differences are unclear. It could be that the saliency of the topic in media coverage makes a difference or how strongly countries are (possibly) affected by climate change or how strong pro-environmental movements or parties are in the country. This could be investigated by further research.

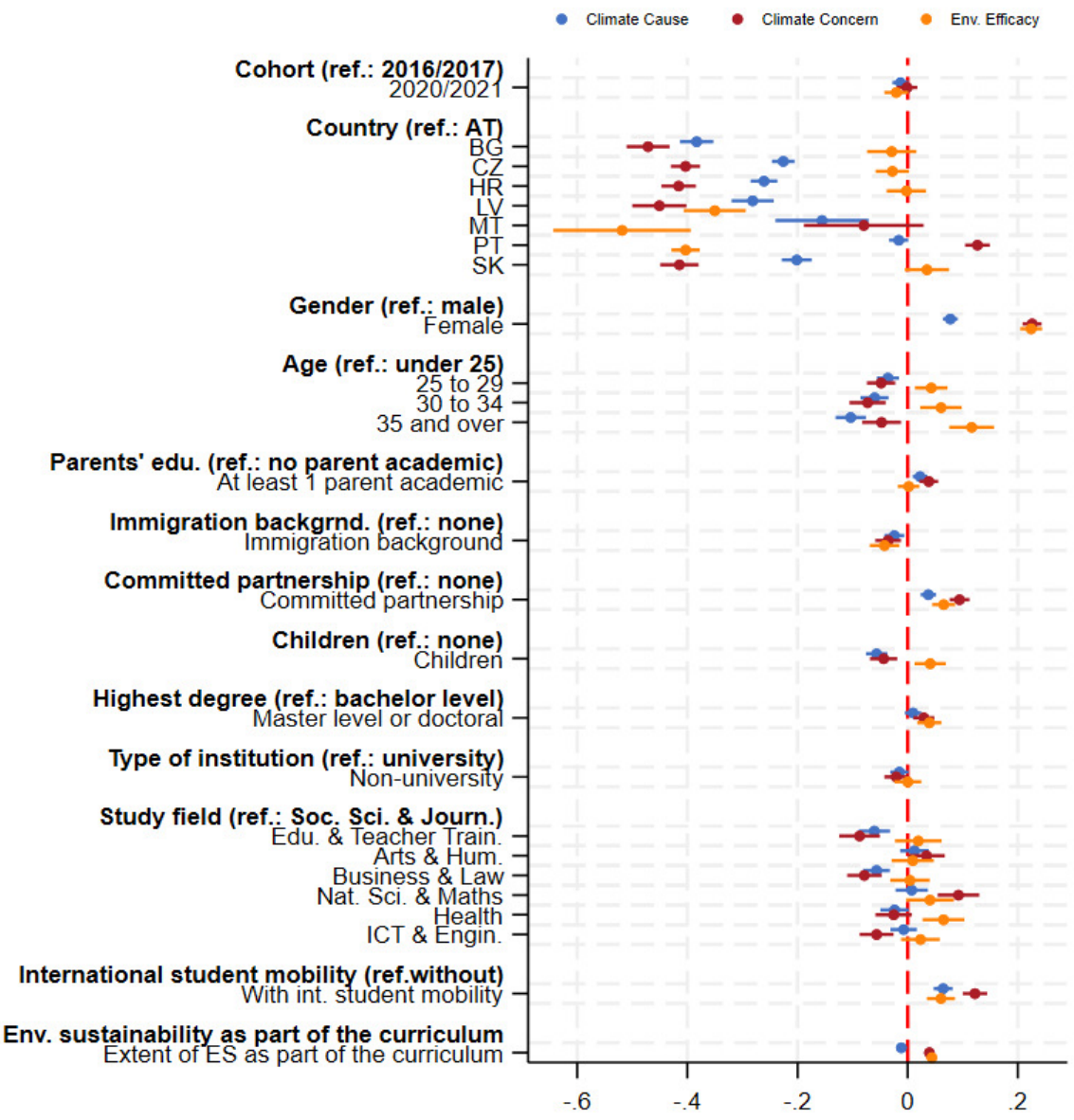
Socio-demographic characteristics. Female graduates differ significantly in all climate attitudes from male graduates and the differences are consistent with each other. They believe to a stronger extent in human activities being the (main) reason for climate change, they are

more worried about climate change, and they perceive more environmental efficacy. As we have not measured whether graduates engage in pro-environmental or pro-climate activities we cannot tell if these differences result in female graduates being more active for the climate issues.

Figure 8.9.1: Explanatory factors for climate attitudes (ordinary least square regression)

Definition: OLS regression to explain graduates' believes on the causes of climate change (natural vs. human-driven; f3.1), the extent to which they feel concerned about climate change (f3.2), and the extent to which they believe that individual activities are effective, regardless of what other so (f3.3)

All graduates



Source: EUROGRADUATE 2022, dataset version 3.1.0.

Notes: Ordinary least square regression models: Blue: Adjusted R^2=0.0457, p<0.001, N=45,422; Red: Adjusted R^2=0.1004, p<0.001, N=45,434, Orange: Adjusted R^2=0.0568, p<0.001, N=45,488; All models: env. sustainability as part of the curriculum as independent variable; cohort, country, age, gender, academic background, immigration background, partnership, highest degree, type of institution, study field, student mobility as control variable; SI only data on climate concern, but no data on type of institution, excluded from all models; CY, DE, EE, GR, HU, IT, NO, RO: no data, excluded from the model

There are several statistically significant attitudinal differences by age even though they are not very big. Compared to the youngest age group of below 25 years, all other age groups believe somewhat less in human activity as reason for climate change, are somewhat less worried and feel *more* environmental efficacy. The youngest age group is most affected by climate change and thus it seems quite straightforward that they are most worried and that their climate change beliefs are best in line with scientific research. It seems a bit surprising that environmental efficacy is lowest in this group. It could be that the youngest age group feels most strongly that the success of pro-environmental activities depends others because they most strongly depend on older cohorts and generations acting on the behalf of the younger generation. But of course, this speculation only.

Persons with an academic background are slightly more worried about climate change and attribute climate change slightly more to human activity. There is no significant difference regarding environmental efficacy. **Family situation**. Climate attitudes of graduates in committed partnerships differ significantly though not tremendously from graduates without a partnership. All differences seem consistent, in a "pro-climate" sense, i.e. attributing climate change more to humans, being more worried about climate change, and perceiving more environmental efficacy.

Except for environmental efficacy, effects of having children go in the opposite direction, which is surprising. One could have expected that persons with children are more worried and better informed about climate change as their offspring is affected by it, but apparently this is not the case.

Higher education characteristics. The level of the degree makes a minor difference. A higher level is associated with being more worried and perceiving more environmental efficacy but not with a difference in climate change beliefs.

Graduates of different types of institution do not differ in their climate attitudes.

It seems plausible to assume that graduates of Social Sciences & Journalism lean to the "pro-climate" side of climate attitudes as climate change is politically highly salient issue and thus graduates of these subjects are likely to be relatively well-informed. A similar profile could be expected for graduates of the field Natural Sciences & Maths. Roughly, the observed differences are in line with these expectations. Graduates of Education & Teacher Training and Business & Law attribute climate change somewhat more to natural processes. Graduates of the other fields do not differ significantly. Graduates of Natural Sciences & Maths are most worried about climate change. Graduates of Arts & Humanities and Health do not differ in worries from graduates of Social Sciences & Journalism. Graduates of the other three broad fields feel less worried. For environmental efficacy, finally, the picture is less clear. Health graduates perceive more environmental efficacy; no statistically significant differences can be reported on the other fields of subjects. Human health is directly related to and impacted by climate change (i.e., by heatwaves, spread of diseases due to climatic changes), and thus, provides a good anchor to address environmental problems and evoke behaviour change. This might be among the reasons why health graduates are more supportive for environmental efforts in general and see good means to effectively address environmental problems.

International student mobility. Mobility during higher education goes together with higher climate change worries, higher environmental efficacy, and believing more in human activity as cause for climate change. These are interesting findings as international mobility and climate attitudes could well be in a tensed relationship.[34] On the one hand, student mobility has been found to contribute to pro-environmental attitudes (Rexeisen, 2014). On the other hand, international student mobility has a negative impact on the environment itself (Shield & Lu,

[34] Recent projects and publications are trying to address (and help to reduce) the environmental impact of student mobility, e.g. the Green Erasmus Project (https://www.greenerasmus.org/) or the book „The Age of Sustainable Education Abroad" by McBride and Nikula (2023).

2023). Thus, students with international mobility experience could be motivated to ignore or play down the problem of climate change (or students less aware of the relationship between long distance travelling and climate change could be more likely to become internationally mobile). However, our results rather confirm a positive relationship of international mobility and climate change awareness.

Environmental sustainability as part of the curriculum. Respondents have been asked, to what extent environmental sustainability has been a topic in their study programme. We have seen in Chapter 3 that environmental sustainability was a topic to a (very) high extent for close to a fourth of the respondents. What is the relationship with climate attitudes? For concern about climate change and environmental efficacy beliefs we observe a positive relationship. I.E. graduates who have had environmental sustainability as topic to a larger extent are more worried and believe more strongly in the effectiveness of their individual activities for the environment. Even though the effect is not very large (.04 for both variables) and we cannot be certain about the causality (persons attending courses on environmental sustainability may have had stronger pro-climate attitudes in the first place), these positive relationships seem very straightforward.

In contrast, there is a significant, negative relationship with the extent to which environmental sustainability was a topic and the believe in human activity as cause of climate change. The difference is very small (-.01) but still this finding is quite counterintuitive. One would expect climate change beliefs to be more strongly aligned with scientific research if a person is more exposed to the topic. There is no clear explanation for this negative relationship. It might be that the reason is of methodological nature and due to an imprecise wording of the question. Survey participants were asked to indicate whether they think that climate change is caused by natural processes, human activities, or both. In fact, the climate always changes to some extent because of natural processes (IPCC, 2022) and graduates dealing with the topic more often, may be more aware of this. Human activity, in contrast, sped-up this process massively, which is why humankind is facing fast changes in climate and global warming, leading to the human made climate catastrophe. However, the term “climate change” does not address this very precisely and some respondents might rather think about the causes of climate changes more generally. Of course, this is speculation only and further research on this matter would be needed. In any case, it seems worthwhile considering potential alternative or complementary survey instruments in future rounds of EUROGRADUATE.

9. References

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10. Table Appendix

10.1. Tables Chapter 3: Education Experience

Table 3.3.1: Main higher education characteristics, EUROGRADUATE averages

Definition: Percentages of graduates per type of institution, degree level and study field (a1.1a5, a1.1a3, a1.1a4)

All graduates by:

Cohort, type of institution, degree level, study field

	Main higher education characteristics											
Cohort	**UNI**	**NON-UNI**	**BA**	**MA**	**EDU/TEA**	**ART/HUM**	**SOC/JOURN**	**BUS/LAW**	**NAT/MAT**	**HEALTH**	**ICT/ENG**	**OTHER**
2016/17	83	17	57	43	10	10	10	25	6	13	20	6
2020/21	79	21	61	39	11	9	10	25	6	13	20	7

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.; IE: Central Statistics Office of Ireland

Note: IE included; SI not included in type of institution

Table 3.3.2a: Type of institution, EUROGRADUATE averages

Definition: Percentages of graduates per type of institution (a1.1a5)

All graduates by:

Cohort; study field, gender, academic background, immigration background; degree level

Cohort 2016/17

		EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	NONACADEMIC	ACADEMIC	WITHOUT IMMIGRATION BACKGR.	IMMIGRATION BACKGR.
BA level	***Uni***	84	89	95	73	97	72	80	64	80	82	82	83	81	78
	Non-Uni	16	11	5	27	3	28	20	36	20	18	18	17	19	22
MA level	***Uni***	92	91	95	82	96	91	89	88	88	90	90	92	90	89
	Non-Uni	8	9	5	18	4	9	11	12	12	10	10	8	10	11

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.; IE: Central Statistics Office of Ireland

Notes: IE included in study fields and gender; SI: no data

Table 3.3.2b: Type of institution, EUROGRADUATE averages

Definition: Percentages of graduates per type of institution (a1.1a5)

All graduates by:

Cohort; study field, gender, academic background, immigration background; degree level

Cohort 2020/21

		EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	NONACADEMIC	ACADEMIC	WITHOUT IMMIGRATION BACKGR.	IMMIGRATION BACKGR.
BA level	***Uni***	85	86	95	70	96	68	79	68	78	80	79	83	81	72
	Non-Uni	15	14	5	30	4	32	21	32	22	20	21	17	20	29
MA level	***Uni***	87	92	93	79	94	88	86	81	84	87	86	90	86	87
	Non-Uni	13	8	7	21	6	12	14	19	16	13	14	10	14	13

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.; IE: Central Statistics Office of Ireland

Notes: IE included in study fields and gender; SI: no data

Table 3.3.3a: Type of degree, EUROGRADUATE averages

Definition: Percentages of graduates per degree level (a1.1a3)

All graduates by:

Cohort, type of institution, study field, gender, age, academic background, immigration background

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+	NONACADEMIC	ACADEMIC	WITHOUT IMMIGRATION BACKGR.	IMMIGRATION BACKGR.
BA level	53	71	48	66	57	52	57	53	58	68	56	56	t.f.c.	82	40	43	57	53	60	47
MA level	47	29	52	34	43	48	43	47	42	32	44	44	t.f.c.	18	60	57	43	47	40	53

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.; IE: Central Statistics Office of Ireland

Notes: Age group <25 too few cases (<30); IE included in type of institution, study fields, gender, age; IT not included in age; SI not included in type of institution.

Table 3.3.3b: Type of degree, EUROGRADUATE averages

Definition: Percentages of graduates per degree level (a1.1a3)

All graduates by:

Cohort, type of institution, study field, gender, age, academic background, immigration background

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+	NONACADEMIC	ACADEMIC	WITHOUT IMMIGRATION BACKGR.	IMMIGRATION BACKGR.
BA level	59	69	54	69	64	58	63	60	64	69	61	61	94	51	43	46	63	60	64	49
MA level	41	31	46	31	36	42	37	40	36	31	39	39	6	49	57	54	37	41	36	51

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.; IE: Central Statistics Office of Ireland

Notes: IE included in type of institution, study fields, gender, age; IT not included in age; SI not included in type of institution.

Table 3.3.4a: Study fields, EUROGRADUATE averages

Definition: Percentages of graduates per study field (a1.1a4)

All graduates by:

Cohort; type of institution, gender, age, academic background, immigration background; degree level

Cohort 2016/17

		EDU/ TEA	ART/ HUM	SOC/ JOURN	BUS/ LAW	NAT/ MAT	HEALTH	ICT/ ENG	OTHER
BA level	**UNI**	84	89	95	74	97	72	81	64
	NON-UNI	16	11	5	26	3	28	19	36
	MALE	18	30	33	39	42	19	73	46
	FEMALE	82	70	67	61	58	81	27	54
	<25	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.
	25 - 29	57	60	67	59	72	51	61	57
	30 - 34	19	24	21	22	23	29	27	25
	35+	23	16	11	19	5	21	12	17
	NON-ACADEMIC	74	61	60	63	54	72	59	68
	ACADEMIC	26	39	40	37	47	28	41	32
	WITHOUT IMMIGRATION BACKGR.	95	90	91	90	92	91	92	92
	IMMIGRATION BACKGR.	6	10	10	10	8	9	8	8
MA level	**UNI**	92	91	95	82	97	91	89	88
	NON-UNI	8	9	5	18	3	9	11	12
	MALE	20	30	34	40	40	28	68	41
	FEMALE	80	70	66	60	60	72	32	59
	<25	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.	t.f.c.
	25 - 29	12	17	22	20	30	17	19	17
	30 - 34	44	51	52	45	53	56	59	55
	35+	44	32	26	35	17	28	22	27
	NON-ACADEMIC	68	56	55	58	58	52	57	66
	ACADEMIC	32	44	45	42	42	48	43	34
	WITHOUT IMMIGRATION BACKGR.	81	87	87	89	90	87	89	92
	IMMIGRATION BACKGR.	19	13	13	11	10	13	12	8

n/a: not applicable, n.d.: no data; t.f.c: too few cases

Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland

Notes: Age group <25 too few cases (<30) in cohort 2016/17; IE included in type of institution, gender, age; IT not included in age; SI not included in type of institution.

Table 3.3.4b: Study fields, EUROGRADUATE averages

Definition: Percentages of graduates per study field (a1.1a4)

All graduates by:

Cohort; type of institution, gender, ages, academic background, immigration background; degree level

Cohort 2020/21

		EDU/ TEA	ART/ HUM	SOC/ JOURN	BUS/ LAW	NAT/ MAT	HEALTH	ICT/ ENG	OTHER
BA level	UNI	85	86	95	70	96	68	79	68
	NON-UNI	15	14	5	30	4	32	21	32
	MALE	18	28	29	37	40	22	71	44
	FEMALE	82	72	71	63	60	78	29	56
	<25	37	48	55	43	58	37	43	47
	25 - 29	31	36	32	30	34	40	40	35
	30 - 34	8	6	5	9	5	8	8	6
	35+	24	10	7	17	3	14	9	12
	NON-ACADEMIC	68	56	55	61	54	66	57	66
	ACADEMIC	32	44	45	39	46	34	43	34
	WITHOUT IMMIGRATION BACKGR.	89	87	88	85	89	88	90	91
	IMMIGRATION BACKGR.	11	13	12	15	11	12	10	9
MA level	UNI	87	92	93	79	94	88	86	81
	NON-UNI	13	8	7	21	6	12	14	19
	MALE	22	33	31	40	43	28	64	47
	FEMALE	78	67	69	60	57	72	36	53
	<25	5	3	6	5	5	3	5	2
	25 - 29	43	51	55	47	70	57	66	56
	30 - 34	18	20	16	18	15	15	16	11
	35+	34	26	24	29	10	26	14	30
	NON-ACADEMIC	66	56	56	60	57	56	55	62
	ACADEMIC	34	44	45	40	43	44	45	38
	WITHOUT IMMIGRATION BACKGR.	82	81	81	82	87	86	85	91
	IMMIGRATION BACKGR.	18	19	19	18	13	14	15	9

n/a: not applicable, n.d.: no data; t.f.c: too few cases

Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland

Notes: Age group <25 too few cases (<30) in cohort 2016/17; IE included in type of institution, gender, age; IT not included in age; SI not included in type of institution.

Table 3.4.1: Teaching and learning modes, EUROGRADUATE averages

Definition: Mean values of the extent to which different teaching and learning modes were part of the study programme (1 "not at all" to 5 "to a very high extent"; a1.3a-j)

All graduates by:

Cohort; degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
LECTURES	4.5	4.5	4.4	4.4	4.5	4.4
GROUP ASSIGNMENTS	3.4	3.5	3.4	3.5	3.5	3.4
RESEARCH PROJECTS	2.3	2.2	2.3	2.3	2.3	2.5
INTERNSHIPS/ WORK PLACEMENTS	2.7	2.8	2.5	2.8	2.9	2.7
PROJECT/ PBL	3.0	3.0	3.0	3.1	3.1	3.1
WRITTEN ASSIGNMENTS	4.0	4.0	3.9	4.0	4.0	4.0
ORAL PRESENTATION	3.5	3.5	3.5	3.6	3.6	3.6
SELF STUDY	4.2	4.1	4.3	4.2	4.2	4.3
INTERDISCIPLINARY LEARNING ACTIVITIES	2.7	2.8	2.7	2.8	2.8	2.9
ENTREPRENEURIAL ACTIVITIES	2.1	2.2	2.0	2.2	2.2	2.1

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: GR, IT, RO no data.

Table 3.4.2: Online courses before and during the pandemic, international comparison

Definition: Mean values of the number of courses offered online before/during the COVID-19 pandemic (1 "none of them", 3 "about half of them", 5 "all of them"; a1.4, a1.5)

All graduates by:
Cohort; country; degree level

	Pre-Pandemic						During Pandemic		
	Cohort 2016/17			Cohort 2020/21			Cohort 2020/21		
	BA & MA	BA	MA	BA & MA	BA	MA	BA & MA	BA	MA
AT	1.3	1.3	1.3	1.5	1.4	1.5	4.1	4.3	3.8
BG	1.3	1.3	1.2	1.5	1.4	1.6	4.2	4.3	4.1
CY	n.d.	n.d.	n.d.	3.3	2.4	3.9	4.4	4.4	4.4
CZ	1.3	1.4	1.3	1.6	1.6	1.6	4.2	4.3	4.1
EE	1.2	1.2	1.2	1.5	1.5	1.6	3.9	3.9	3.9
HR	1.1	1.1	1.1	1.7	1.7	1.7	n.d.	n.d.	n.d.
HU	1.2	1.2	1.2	1.3	1.3	1.3	4.4	4.4	4.4
LV	1.5	1.4	1.5	1.7	1.7	1.9	4.2	4.1	4.2
MT*	1.3	1.2	1.3	2.1	2.1	2.2	4.4	4.6	4.2
NO*	1.5	1.6	1.4	n.d.	2.0	n.d.	n.d.	4.1	n.d.
PT	1.1	1.1	1.2	1.4	1.4	1.3	4.1	4.4	3.6
SI	1.3	1.3	1.3	1.4	1.4	1.3	3.9	4.1	3.1
SK	1.6	1.5	1.6	1.9	1.9	2.0	4.3	4.4	4.2
DE, GR, IT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	1.3	1.3	1.3	1.7	1.7	1.8	4.2	4.3	4.0

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; DE, GR, IT, RO: no data.

Table 3.5.1a: Types of learning environments, international comparison

Definition: Percentages of learning environments provided in (1) lecture style, (2) PBL style, (3) mixed style, and (4) other modes (a1.3a-j)

All graduates by:

Cohort; country; degree level

Cohort 2016/17

	BA				MA			
	LECTURE STYLE	PBL STYLE	LECTURE & PBL	OTHER MODES	LECTURE STYLE	PBL STYLE	LECTURE & PBL	OTHER MODES
AT	49	7	30	14	49	10	29	13
BG	34	5	46	14	33	9	45	13
CY	32	5	57	7	29	9	50	12
CZ	55	6	27	12	50	9	27	14
DE	53	6	34	7	55	9	28	8
EE	65	3	28	4	66	2	26	5
HR	66	1	26	7	62	3	26	10
HU	70	3	21	7	62	4	26	8
LV	55	3	36	6	54	1	36	9
MT*	62	5	33	0	48	8	32	13
NO*	53	6	29	11	54	8	29	10
PT	59	2	32	6	56	4	35	6
SI	63	5	22	10	62	6	25	8
SK	58	4	32	6	52	6	33	10
GR, IT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	55	4	32	8	52	6	32	10

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, IT, RO: no data.

Table 3.5.1b: Types of learning environments, international comparison

Definition: Percentages of learning environments provided in (1) lecture style, (2) PBL style, (3) mixed style, and (4) other modes (a1.3a-j)

All graduates by:

Cohort; country; degree level

Cohort 2020/21

	BA				MA			
	LECTURE STYLE	PBL STYLE	LECTURE & PBL	OTHER MODES	LECTURE STYLE	PBL STYLE	LECTURE & PBL	OTHER MODES
AT	48	9	30	13	42	12	32	15
BG	28	10	50	13	32	8	45	15
CY	22	6	61	11	32	7	51	10
CZ	51	8	30	11	47	8	34	12
DE	44	7	40	10	42	9	38	12
EE	61	2	33	4	51	5	38	6
HR	59	2	33	7	61	3	30	6
HU	63	4	27	7	60	4	29	7
LV	57	2	33	7	55	5	32	9
MT*	34	3	50	13	48	13	27	12
NO*	50	8	27	15	n.d.	n.d.	n.d.	n.d.
PT	58	3	32	7	54	3	36	7
SI	64	4	24	9	60	5	23	11
SK	58	2	30	10	50	4	37	10
GR, IT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	50	5	36	10	49	7	35	10

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0

Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, IT, RO: no data.

Table 3.5.2a: Types of learning environments, EUROGRADUATE averages

Definition: Percentages of learning environments provided in (1) lecture style, (2) PBL style, (3) mixed style, and (4) other modes (a1.3a-j)

All graduates by:

Cohort; type of institution, study field, gender, age; degree level

Cohort 2016/17

		UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA level	*LECTURE STYLE*	57	48	56	56	66	50	74	56	46	63	51	58	t.f.c	56	57	55
	PBL STYLE	4	5	5	6	2	5	2	4	5	3	5	4	t.f.c	4	5	4
	LECTURE & PBL	32	38	26	28	26	37	22	32	43	26	35	31	t.f.c	34	29	30
	OTHER MODES	7	9	13	10	6	8	2	8	6	8	9	7	t.f.c	6	9	11
MA level	*LECTURE STYLE*	53	41	48	51	58	53	58	56	44	67	48	55	t.f.c	54	55	47
	PBL STYLE	6	11	7	9	5	5	6	5	8	3	7	6	t.f.c	4	6	7
	LECTURE & PBL	31	43	33	25	26	33	30	27	42	23	35	30	t.f.c	33	29	35
	OTHER MODES	11	6	13	15	10	9	6	12	7	8	11	9	t.f.c	9	10	11

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO no data.

Table 3.5.2b: Types of learning environments, EUROGRADUATE averages

Definition: Percentages of learning environments provided in (1) lecture style, (2) PBL style, (3) mixed style, and (4) other modes (a1.3a-j)

All graduates by:

Cohort; type of institution, study field, gender age; degree level

Cohort 2020/21

		UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA level	*LECTURE STYLE*	52	38	49	52	61	44	67	55	43	51	46	53	53	51	44	45
	PBL STYLE	5	6	5	8	3	5	2	3	6	4	5	5	5	5	8	4
	LECTURE & PBL	34	45	32	29	29	39	28	33	43	37	39	33	35	34	34	38
	OTHER MODES	9	11	14	12	7	12	4	8	7	9	10	10	8	10	14	14
MA level	*LECTURE STYLE*	50	34	48	49	57	46	56	57	39	55	44	53	54	53	42	45
	PBL STYLE	5	13	8	10	4	6	4	5	8	11	7	6	3	5	8	10
	LECTURE & PBL	35	41	31	27	32	38	35	28	45	28	39	31	35	33	37	34
	OTHER MODES	10	11	14	15	7	10	6	11	9	7	10	10	7	9	13	11

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO no data.

Table 3.6.1: Environmental sustainability as part of the curriculum, international comparison

Definition: Percentages of graduates whose curriculum included the topic of environmental sustainability to a high or very high extent (a1.7)

All graduates by:

Cohort; country; degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
AT	19	18	20	29	28	29
BG	23	26	19	31	33	29
CY	33	36	31	37	40	35
CZ	14	15	14	19	17	21
HR	18	19	17	28	30	25
LV	24	26	20	31	32	29
MT*	11	14	7	25	33	15
PT	18	17	19	24	25	22
SI	21	23	17	25	27	20
SK	27	24	29	31	30	31
DE, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	21	22	19	28	29	25

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); DE, EE, GR, HU, IT, NO, RO no data.

Table 3.6.2: Environmental sustainability as part of the curriculum, EUROGRADUATE averages

Definition: Percentages of graduates whose curriculum included the topic of environmental sustainability to a high or very high extent (a1.7)

All graduates by:

Cohort, country, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
UNI	20	21	19	27	27	26
NON-UNI	26	26	25	33	38	25
EDU/TEA	22	20	23	24	26	21
ART/HUM	15	16	13	20	21	18
SOC/JOU	13	13	13	21	24	17
BUS/LAW	17	20	14	29	31	26
NAT/MAT	34	34	35	40	39	39
HEALTH	14	19	10	20	20	19
ICT/ENG	26	24	28	33	32	35
OTHER	42	43	42	45	51	35
MALE	23	23	21	30	32	28
FEMALE	20	21	18	27	28	24
< 25	n.d.	n.d.	n.d.	26	27	19
25 - 29	21	23	18	26	29	25
30 - 34	18	18	18	31	36	26
35+	23	24	23	32	37	28

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; DE, EE, GR, HU, IT, NO, RO no data.

Table 3.7.1: Graduates with (any) experience abroad during reference programme, international comparison

Definition: Percentages of graduates with any experience abroad covering all stays in another country including study stay, work/internship abroad, language course abroad, summer school abroad (a2.1a)

All graduates by:

Country, graduate cohort and degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	BA	MA	BA & MA	BA	MA
AT	27	24	32	19	16	24
BG	14	17	11	12	14	10
CY	14	17	13	14	18	12
CZ	20	15	25	18	13	23
DE	32	32	33	24	22	27
EE	17	15	19	14	14	15
GR*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
HR	13	11	17	8	6	12
HU	13	10	18	10	8	12
IT	17	7	18	11	8	14
LV	24	24	22	18	21	14
MT*	16	22	17	17	13	22
NO*	21	17	28	n.d.	n.d.	n.d.
PT	16	15	19	9	8	12
RO	16	18	12	7	8	6
SI	16	12	24	12	10	22
SK	12	10	14	11	10	14
Ø	17	17	20	13	13	16

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: NO 2020/21: bachelor level graduates only; GR no data.

Table 3.7.2: Graduates with learning mobility during reference programme, international comparison

Definition: Percentage of graduates with learning mobility including study experiences that lasted for at least 2 months and where at least 2 ECTS points were obtained (a2.1a, a2.1a3, a2.1a4)

All graduates by:

Country, graduate cohort and degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	BA	MA	BA & MA	BA	MA
AT	17	15	20	11	10	13
BG	7	8	5	5	6	3
CY	9	10	8	7	9	6
CZ	12	8	15	11	8	14
DE	18	18	17	17	16	19
EE	9	8	10	8	8	7
GR*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
HR	7	5	9	4	3	6
HU	7	6	8	6	5	8
IT	14	5	15	9	7	13
LV	13	14	11	11	14	5
MT*	10	17	10	11	9	15
NO*	16	13	21	n.d.	n.d.	n.d.
PT	10	10	10	7	7	7
RO	8	9	7	2	2	1
SI	9	8	12	8	6	14
SK	7	6	9	7	7	7
Ø	12	9	14	9	7	12

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: DE, IT: limited comparability; NO 2020/21: bachelor level graduates only; GR no data.

Table 3.7.3: Explanatory factors for the chance to participate in any abroad mobility experiences

Definition: Average marginal effects (AME) for the likelihood of participating (vs. not participating) in any experience abroad covering all stays in another country including study stay, work/internship abroad, language course abroad, summer school abroad (a2.1a)

All graduates

Independent variable		Model 1	Model 2	Model 3
2020/21 cohort (ref.: 2016/17)		-.032***	-.031***	-.038***
Country of reference degree (ref.: AT)				
	BG	-.065***	-.078***	-.072***
	CY	-.056***	-.066***	-.059***
	CZ	-.015***	-.024***	-.027***
	DE	.064***	.054***	.047***
	EE	-.044***	-.046***	-.046***
	HR	-.063***	-.073***	-.070***
	HU	-.053***	-.062***	-.068***
	IT	.003	.003	.002
	LV	-.009	-.019**	-.013
	MT	-.019	.000	.019
	NO	-.000	.005	.003
	PT	-.046***	-.042***	-.044***
	RO	-.081***	-.097***	-.093***
	SI	-.039***	-.033***	-.033***
	SK	-.044***	-.059***	-.061***
Study field of reference degree (ref.: Education & Teachers Training)				
	Arts&Humanities		.106***	.082***
	Soc.Scien.&Journ.		.069***	.062***
	Business&Law		.072***	.051***
	Nat. Scien.&Math.		.039***	.003
	Health		.031***	-.013***
	ICT&Engineer.		.088***	.028***
	Other		.048***	.011**
Type of institution: Non university (ref.: university)				
	Non-university		-.033***	-.015***
Age group (reference: under 25)				
	25 to 29			-.002
	30 to 24			-.016***
	35 and over			-.078***
Female (ref.: Male)				.008***
Academic background (at least 1 parent) (ref.: none)				.043***
Highest degree: MA level or higher (ref.: max. BA level)			.036***	.034***
Immigration background (ref.: none)				.012***
N		70861	70861	70861
Nagelkerke R^2		.287	.288	.317

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.
Source: EUROGRADUATE 2022, data version 3.2.0.
*Notes: * p < 0,05; ** p < 0,01; DE, IT: limited comparability; NO 2020/21: bachelor level graduates only; GR no data.*

Table 3.7.4: Country-specific effects of social background and gender on the chance of experiencing learning mobility.

Definition: Average marginal effects of the interaction between the social background/gender and the survey country, describing the likelihood of participating (vs. not participating) in any experience abroad covering all stays in another country including study stay, work/internship abroad, language course abroad, summer school abroad (a2.1a)

All graduates

Country	At least one parent academic	Gender (female)
AT	.033**	-.005
BG	.029**	.003
CY	.007	-.005
CZ	.039***	-.006
DE		
EE	.006	-.005
HR	.032***	.015
HU	.034	.014
IT	.041	
LV	.047	.018
MT	.026	-.001
NO	.032	-.029
PT	.0444***	-.006
RO		
SI		-.006
SK	.053	.003
N	36,461	36,461
Nagelkerke R^2	0.0639	0.0635

Data source: EUROGRADUATE 2022, data version 3.2.0.
Method: Logistic regression analyses; coefficients are average marginal effects (AME).
Notes: GR no data.

Table 3.8.1: Graduates with labour market experience while studying, international comparison

Definition: Percentages of graduates with any kind of internship/work placement/paid labour while studying (a2.1a1/b1/c1/d1/e1, a2.2a, a2.2b)

All graduates by:

Cohort; country; degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	95	96	94	94	94	94
BG	83	85	81	83	87	80
CY	48	56	43	62	69	59
CZ	89	87	91	89	86	92
DE*	95	96	94	65	66	63
EE	92	91	93	95	95	94
HR	92	92	93	93	92	94
HU	94	95	93	94	95	93
IT	86	94	85	85	84	86
LV	96	96	95	96	96	96
MT*	72	74	69	62	72	50
NO*	89	90	89	n.d.	86	n.d.
PT	63	61	66	62	59	67
SI	90	91	88	90	91	88
SK	91	89	94	92	90	93
RO, GR*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	85	86	85	84	84	82

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: DE: limited comparability for cohort 2020/21; MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, RO: no data.

Table 3.8.2a: Graduates with study-related labour market experiences, EUROGRADUATE averages

Definition: Percentages of graduates with labour market experience that was related to their study programme (e.g., compulsory internship, ECTS awarded, and/or content-related relevance; a2.1a1/b1/c1/d1/e1, a2.1a4, a2.2a1, a2.2b1)

All graduates by:

Cohort; type of institution, study field, gender, age; degree level

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA&MA	64	76	75	55	57	62	55	83	66	78	64	67	t.f.c.	67	67	64
BA level	63	80	85	52	53	62	53	92	65	80	64	69	t.f.c.	66	67	72
MA level	65	66	71	60	62	62	58	72	68	74	66	65	t.f.c.	70	68	60

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; IT not included in age; GR, RO no data.

Table 3.8.2b: Graduates with study-related labour market experiences, EUROGRADUATE averages

Definition: Percentages of graduates with labour market experience that was related to their study programme (e.g., compulsory internship, ECTS awarded, and/or content-related relevance; a2.1a1/b1/c1/d1/e1, a2.1a4, a2.2a1, a2.2b1)

All graduates by:

Cohort; type of institution, study field, gender, age; degree level

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA&MA	64	63	79	51	57	54	48	85	64	75	61	67	64	69	61	60
BA level	63	69	81	48	53	57	45	89	65	81	62	67	64	68	64	66
MA level	66	48	77	61	65	51	55	80	65	63	60	67	65	70	61	56

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: SI not included in type of institution; IT not included in age; GR, RO no data.

Table 3.9.1: Study satisfaction, international comparison

Definition: Mean values of the overall satisfaction with the study programme (1 "very unsatisfied" to 5 "very satisfied"; a1.8)

All graduates by:

Cohort; country; degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	BA	MA	BA & MA	BA	MA
AT	3.8	3.8	3.9	3.8	3.8	3.9
BG	3.8	3.7	3.8	3.8	3.7	3.9
CY	4.1	4.0	4.2	4.1	4.1	4.1
CZ	3.9	3.9	3.9	3.8	3.8	3.9
DE	3.9	3.9	4.0	3.9	3.9	4.0
EE	3.8	3.8	3.9	3.8	3.8	3.9
HR	3.5	3.5	3.4	3.6	3.6	3.6
HU	3.6	3.6	3.8	3.7	3.6	3.7
LV	3.7	3.7	3.8	3.7	3.6	3.7
MT*	3.7	3.4	4.0	4.0	4.0	4.0
NO*	3.9	3.8	4.1	n.d.	3.6	n.d.
PT	3.8	3.7	3.9	3.9	3.8	3.9
SI	3.7	3.6	3.7	3.7	3.7	3.8
SK	3.7	3.8	3.7	3.6	3.5	3.8
GR, IT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	3.8	3.7	3.9	3.8	3.8	3.9

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; GR, IT, RO: no data.

Table 3.9.2a: Study programme as a good basis for the professional career, EUROGRADUATE averages

Definition: Mean values of the extent to which graduates rated their study programme as good basis for the professional career (1 "not at all" to 5 "to a very high extent"; a1.6a)

All graduates by:

Cohort; type of institution, study fields, gender, age, degree level

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA & MA	3.7	3.9	3.9	3.5	3.4	3.7	3.6	4.1	3.8	3.5	3.7	3.7	t.f.c.	3.6	3.7	4.0
BA level	3.6	3.8	3.7	3.5	3.3	3.6	3.5	4.1	3.8	3.4	3.7	3.6	t.f.c.	3.6	3.6	4.0
MA level	3.8	4.1	4.0	3.6	3.7	3.8	3.7	4.1	3.8	3.6	3.8	3.8	t.f.c.	3.8	3.8	4.0

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: SI not included in type of institution; DE, GR, IT, RO: no data.

Table 3.9.2b: Study programme as a good basis for the professional career, EUROGRADUATE averages

Definition: Mean values of the extent to which graduates rated their study programme as good basis for the professional career (1 "not at all" to 5 "to a very high extent"; a1.6a)

All graduates by:

Cohort; type of institution, study fields, gender, age, degree level

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA & MA	3.7	3.9	3.9	3.4	3.6	3.8	3.7	4.0	3.8	3.6	3.8	3.7	3.7	3.7	3.8	4.0
BA level	3.6	3.9	3.9	3.3	3.5	3.7	3.6	4.0	3.7	3.6	3.7	3.7	3.7	3.6	3.8	4.0
MA level	3.8	3.9	3.9	3.6	3.7	3.8	3.8	4.0	3.8	3.7	3.9	3.8	3.6	3.7	3.8	4.1

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: SI not included in type of institution; DE, GR, IT, RO: no data.

Table 3.9.3a: Study programme as a good basis for the personal development, EUROGRADUATE averages

Definition: Mean values of the extent to which graduates rated their study programme as a good basis for the personal development (1 "not at all" to 5 "to a very high extent"; a1.6b)

All graduates by:

Cohort; type of institution, study fields, gender, age; degree level

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA& MA	3.9	4.1	4.1	4.1	4.0	3.9	3.8	3.9	3.9	3.8	4.0	3.9	t.f.c.	3.8	3.9	4.3
BA level	3.9	4.0	3.9	4.1	4.0	3.9	3.8	3.9	3.9	3.8	3.9	3.9	t.f.c.	3.8	3.8	4.3
MA level	4.0	4.3	4.2	4.2	4.0	3.9	3.9	3.9	3.9	3.9	4.0	4.0	t.f.c.	3.9	3.9	4.3

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; DE, GR, IT, RO: no data

Table 3.9.3b: Study programme as a good basis for the personal development, EUROGRADUATE averages

Definition: Mean values of the extent to which graduates rated their study programme as a good basis for the personal development (1 "not at all" to 5 "to a very high extent"; a1.6b)

All graduates by:

Cohort; type of institution, study fields, gender, age; degree level

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
BA& MA	3.9	4.1	4.0	4.0	4.0	3.9	3.8	3.9	3.8	3.9	3.9	3.9	3.8	3.8	4.0	4.3
BA level	3.9	4.0	3.9	4.0	3.9	3.9	3.8	3.9	3.8	3.9	3.9	3.9	3.8	3.8	4.0	4.3
MA level	4.0	4.2	4.0	4.2	4.2	4.0	3.9	3.9	3.9	3.9	4.0	4.0	3.7	3.8	4.1	4.4

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: SI not included in type of institution; DE, GR, IT, RO no data.

Table 3.10.1: Graduates with further higher education after graduation, international comparison

Definition: Percentages of graduated that started an additional higher education programme after the graduation from their reference study programme (a3.5.1)

All graduates by:

Cohort; country; degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
AT	49	65	28	49	68	21
BG	40	54	24	31	42	19
CY	33	43	27	27	34	22
CZ	45	70	19	47	70	18
DE	49	65	29	45	65	21
EE	35	45	18	22	32	7
GR	51	61	31	35	41	19
HR	35	48	15	31	48	6
HU	47	53	35	32	40	20
IE	33	37	23	21	24	17
IT*	8	17	8	41	67	6
LV	32	39	20	24	30	14
MT*	55	65	41	29	42	12
NO*	39	49	22	n.d.	41	n.d.
PT	41	50	27	37	48	16
RO	61	74	36	50	59	34
SI	26	37	10	27	35	8
SK	37	60	14	29	45	12
Ø	40	52	24	34	46	16

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: IE included; IT 2016/17: data not comparable; MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: no data on master level gradates.

Table 3.10.2a: Graduates with further higher education after graduation, EUROGRADUATE averages

Definition: Percentages of graduates that started an additional higher education programme after the graduation from their reference study programme (a3.5.1)

All graduates by:

Cohort; type of institution, study fields, gender, academic background; degree level

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	NONACADEMIC	ACADEMIC
BA & MA	42	35	34	48	46	35	63	32	41	37	40	41	44	38
BA level	56	41	46	60	62	51	77	34	56	45	53	53	61	49
MA level	25	22	24	25	23	19	43	28	22	21	23	24	26	21

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: IE included in type of institution, study field, gender; SI not included in type of institution.

Table 3.10.2b: Graduates with further higher education after graduation, EUROGRADUATE averages

Definition: Percentages of graduates that started an additional higher education programme after the graduation from their reference study programme (a3.5.1)

All graduates by:

Cohort; type of institution, study fields, gender, academic background; degree level

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	NONACADEMIC	ACADEMIC
BA & MA	37	29	30	42	42	31	57	24	38	32	35	35	39	32
BA level	51	37	43	53	56	44	71	30	52	40	47	48	53	43
MA level	17	12	15	20	17	13	34	16	14	13	16	16	18	14

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: IE included in type of institution, study field, gender; SI not included in type of institution.

Table 3.10.3: Graduates with further education after the reference degree, international comparison

Definition: Percentages of graduates that engaged in any kind of further education and learning experiences within 12 months after graduation, that are no part of higher education (e.g., life-long-learning; courses, workshops, seminars, on-the-job training, private lessons; a3.6b)

All graduates by:

Cohort; country; degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
AT	67	65	71	55	48	66
BG	54	53	54	51	50	53
CY	59	50	64	59	50	65
CZ	66	65	68	65	58	73
GR	63	62	64	65	66	64
HR	68	67	70	59	53	68
HU	58	56	60	55	53	58
LV	72	69	78	68	62	80
MT*	64	64	65	52	53	52
NO*	61	59	64	n.d.	58	n.d.
PT	69	66	73	66	65	68
SI	68	64	74	62	58	71
SK	68	69	68	67	60	75
DE, EE, IT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	64	62	67	60	56	66

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: cohort 2016/17 both degrees low number of cases (<100), cohort 2020/21, MA level low number of cases (<100); NO 2020/21: bachelor level graduates only; DE, EE, IT, RO: no data.

10.2. Tables Chapter 4: Labour Market Participation

Table 4.1: Out of labour force by reason

Definition: Shares of graduates if no employment (a3.7.1, a3.7.2, b1.0) and another occupation (parental leave, civic/military service, unpaid work, other) reported (a3.7.3, a3.7.5-7, a3.7.9).

Graduates currently not enrolled by:

Cohort, degree level

	Cohort 2016/17		Cohort 2020/21	
	BA	**MA**	**BA**	**MA**
EMPLOYED	88	91	70	89
OUT OF LABOUR FORCE (STUDYING)	4	2	24	3
OUT OF LABOUR FORCE (OTHER)	5	5	3	4
UNEMPLOYED	3	2	3	4

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: NO: cohort 2020/21 MA level: no data.

(additional table for executive summary, not in general results of the report)

Table 4.2.1: Overall and higher education graduate (un)employment rates in survey countries

Definition: Proportions of persons in unemployment among the labour force (excluding persons out of labour force); Employment rate: Proportion of persons in paid employment among the total population (including persons out of labour force).

All graduates by:

Country, age, education

	Unemployment rate					Employment rate		
	Youth 15-29 (LFS)	General population 25-74 (LFS)	General population 25-54 (LFS)	Tertiary educated 25-74 (LFS)	EG 2022 sample BA+MA level (EG)	Youth 15-29 (LFS)	General population 25-54 (LFS)	Tertiary educated 25-54 (LFS)
AT	8	4	5	3	1	64	85	90
BG	8	4	4	2	4	37	83	93
CY	12	5	5	5	6	56	85	89
CZ	5	2	2	1	1	44	88	88
DE	5	3	3	2	1	63	85	90
EE	12	6	6	4	2	53	86	91
GR	22	10	11	8	9	35	76	84
HR	13	5	5	3	6	43	82	91
HU	8	4	4	2	3	47	88	95
IE	9	3	4	3	1	59	84	90
IT*	17	7	4	4	7	35	74	84
LV	10	6	8	3	3	46	82	89
MT*	6	3	6	2	1	69	89	93
NO*	8	2	3	2	2	68	84	90
PT	14	6	3	4	7	46	86	92
RO	13	5	6	1	7	35	78	94
SI	8	3	5	2	2	49	89	94
SK	12	5	6	2	3	43	85	92
Ø	11	5	5	4	4	50	84	90

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0 (EG sample unemployment); IE: Central Statistics Office of Ireland; EUROSTAT, European Labour Force Survey (une_rt_a) Youth, General Population, and Tertiary educated unemployment rates, average for 2023.

Notes: IE included; IT: Questionnaire deviation; only single-choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 2020/21, MA level, no data

Table 4.3.1: Graduates in paid employment at any point since graduation, international comparison

Definition: Shares of graduates in paid employment at any point since graduation; if any (self-) employment was reported since graduation, regardless of current occupational status (questions a3.7.1, a3.7.2, b1.0, b7.1)

All graduates by:

Country, cohort, degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
AT	98	97	99	91	87	98
BG	88	87	89	95	94	96
CY	91	86	94	91	86	95
CZ	85	86	85	89	83	97
DE	86	83	89	76	69	84
EE	90	90	90	97	96	98
GR	89	86	93	76	72	88
HR	95	94	96	78	66	96
HU	91	90	93	92	90	94
IE	94	94	94	92	91	94
IT*	89	91	89	58	42	78
LV	90	89	94	97	96	97
MT*	95	92	100	99	98	100
NO*	98	97	99	n.d.	89	n.d.
PT	93	94	91	80	73	93
RO	85	86	83	79	76	84
SI	95	96	94	79	71	98
SK	90	91	90	87	76	97
Ø	91	90	92	86	81	93

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0; IE: Central Statistics Office of Ireland.

Notes: IE included; IT: Questionnaire deviation; only single-choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 20/21, MA level: no data.

Table 4.3.2: Graduates with paid employment at any point since graduation, EUROGRADUATE averages

Definition: Shares of graduates that ever have been employed; if any (self-)employment was reported since graduation regardless of current occupational status (questions a3.7.1, a3.7.2, b1.0, b7.1)

All graduates by:

Cohort, degree level, type of institution, study field, gender, age

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Cohort 2016/17																
BA & MA	91	94	91	89	90	92	84	93	94	91	95	89	t.f.c.	90	91	94
BA level	90	93	88	88	89	92	82	93	94	89	94	88	t.f.c.	90	91	93
MA level	92	94	93	89	92	93	87	93	94	93	96	90	t.f.c.	90	92	95
Cohort 2020/21																
BA & MA	85	93	90	77	81	90	68	93	85	86	86	86	77	89	93	95
BA level	79	90	85	73	74	87	59	90	80	82	82	80	76	85	92	94
MA level	93	97	96	86	92	95	86	96	94	93	94	93	93	94	94	96

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0; IE: Central Statistics Office of Ireland.

Notes: Age group <25 (16/17) too few cases (<30); IE included; IT: not included in age groups; NO: cohort 20/21, MA level, no data; SI: not included in type of institution.

Table 4.4.1a: Employment status of graduates, international comparison

Definition: Proportions of graduates considered employed if any (self-)employment was reported (a3.7.1, a3.7.2, b1.0); out of labour force (studying) if no employment and studying (a3.7.3); out of labour force (other) if no employment, not studying (a3.7.3), and in another occupation (parental leave, civic/military service, unpaid work, other; a3.7.5, a3.7.6, a3.7.7, a3.7.9); unemployed if unemployment (a3.7.4) and no other occupation was reported.

All graduates by:

Country, graduate cohort, degree level

Cohort 2016/17

	BA				MA			
	EMPLOYED	OUT OF LABOUR FORCE (OTHER)	OUT OF LABOUR FORCE (STUDYING)	UN-EMPLOYED	EMPLOYED	OUT OF LABOUR FORCE (OTHER)	OUT OF LABOUR FORCE (STUDYING)	UN-EMPLOYED
AT	90	4	5	1	94	1	4	1
BG	84	2	11	4	88	1	8	3
CY	86	6	5	3	94	0	3	3
CZ	86	3	10	1	85	1	13	1
DE	81	13	5	1	88	6	5	2
EE	90	2	6	2	91	1	7	1
GR	86	5	2	7	93	2	3	2
HR	92	2	2	4	95	1	2	2
HU	87	3	7	2	90	2	6	2
IT*	91	0	5	4	89	0	7	4
LV	88	3	6	3	93	0	6	1
MT*	91	4	2	4	100	0	0	0
NO*	90	3	4	3	96	1	2	2
PT	89	5	1	5	88	8	1	3
RO	86	2	7	4	83	3	10	5
SI	93	2	4	2	93	0	5	2
SK	88	32	7	3	88	1	9	2
Ø	88	4	5	3	91	2	5	2

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: IT: Questionnaire deviation; only single choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 20/21, MA level, no data.

Table 4.4.1b: Employment status of graduates, international comparison

Definition: Proportions of graduates considered employed if any (self-)employment was reported (a3.7.1, a3.7.2, b1.0); out of labour force (studying) if no employment and studying (a3.7.3); out of labour force (other) if no employment, not studying (a3.7.3), and in another occupation (parental leave, civic/military service, unpaid work, other; a3.7.5, a3.7.6, a3.7.7, a3.7.9); unemployed if unemployment (a3.7.4) and no other occupation was reported.

All graduates by:

Cohort; country; degree level and employment status

Cohort 2020/21

	BA				MA			
	EMPLOYED	OUT OF LABOUR FORCE (OTHER)	OUT OF LABOUR FORCE (STUDYING)	UN-EMPLOYED	EMPLOYED	OUT OF LABOUR FORCE (OTHER)	OUT OF LABOUR FORCE (STUDYING)	UN-EMPLOYED
AT	72	26	2	1	93	3	3	1
BG	86	4	5	5	88	1	6	5
CY	77	13	4	7	88	2	5	5
CZ	63	34	2	1	92	3	4	1
DE	61	38	1	1	84	13	1	1
EE	88	7	3	2	92	1	5	2
GR	72	15	3	11	88	3	3	6
HR	54	41	2	4	89	1	3	7
HU	80	15	3	3	89	5	3	3
IT*	42	47	7	4	78	1	13	8
LV	87	5	6	3	87	2	8	4
MT*	92	6	2	0	99	0	0	1
NO*	73	24	2	2	n.d.	n.d.	n.d.	n.d.
PT	61	32	1	7	85	8	1	7
RO	76	16	1	8	84	3	4	9
SI	51	47	1	1	92	1	5	2
SK	51	47	2	1	89	3	4	3
Ø	70	24	3	3	89	3	4	4

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: IT: Questionnaire deviation; only single choice between employment, unemployment and studying possible; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 20/21, MA level, no data.

Table 4.4.2: Employment status of graduates, EUROGRADUATE averages

Definition: Shares of graduates considered employed if any (self-)employment was reported (a3.7.1, a3.7.2, b1.0); out of labour force (studying) if no employment and studying (a3.7.3); out of labour force (other) if no employment, not studying, and in another occupation (parental leave, civic/military service, unpaid work, other; a3.7.5, a3.7.6, a3.7.7, a3.7.9); unemployed if unemployment (a3.7.4) and no other occupation was reported

All graduates by:

Cohort, type of institution, field of study, gender, age

		UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Cohort 2016/17 (proportions)																	
BA level	***EMPLOYED***	87	91	84	84	86	90	78	90	93	87	93	85	t.f.c	87	87	92
	OUT OF LABOUR FORCE (STUDYING)	4	2	3	5	5	2	15	2	3	2	3	4	t.f.c	5	3	2
	OUT OF LABOUR FORCE (OTHER)	5	5	11	5	4	5	4	6	2	7	1	8	t.f.c	5	6	4
	UNEMPLOYED	3	2	2	6	5	3	3	2	2	4	3	3	t.f.c	3	3	2
MA level	***EMPLOYED***	91	93	91	87	90	92	85	92	93	90	96	88	t.f.c	89	90	94
	OUT OF LABOUR FORCE (STUDYING)	2	1	1	3	1	1	7	1	2	1	2	2	t.f.c	3	2	1
	OUT OF LABOUR FORCE (OTHER)	5	4	6	6	7	6	5	6	4	6	1	8	t.f.c	6	6	3
	UNEMPLOYED	2	1	2	4	2	2	3	2	2	2	2	2	t.f.c	2	2	2
Cohort 2020/21 (proportions)																	
BA level	***EMPLOYED***	68	82	75	60	61	76	42	80	69	72	72	68	61	73	86	92
	OUT OF LABOUR FORCE (STUDYING)	25	13	19	31	33	17	52	13	27	23	23	25	34	20	7	3
	OUT OF LABOUR FORCE (OTHER)	3	2	3	3	2	3	2	4	2	2	2	3	2	3	4	2
	UNEMPLOYED	4	3	3	6	4	3	3	3	3	4	3	4	3	4	3	3
MA level	***EMPLOYED***	88	94	89	80	87	91	79	89	91	88	91	87	87	88	87	93
	OUT OF LABOUR FORCE (STUDYING)	3	2	1	5	4	1	13	2	4	3	4	3	9	4	3	1
	OUT OF LABOUR FORCE (OTHER)	4	2	6	6	4	4	3	6	2	4	2	6	0	4	5	3
	UNEMPLOYED	5	2	3	10	6	4	5	3	3	5	4	4	4	4	4	3

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: IT: not included in age groups; NO: cohort 2020/21, MA level, no data; SI: not included in type of institution.

Table 4.4.3: Explanatory factors for being out of labour force (average marginal effects)

Definition: No employment (a3.7.1, a3.7.2, b1.0) and another occupation (parental leave, civic/military service, unpaid work, other) reported (a3.7.3, a3.7.5, a3.7.6, a3.7.7, a3.7.9).

Graduates who are part of the labour force and currently not enrolled

Independent variable		Model 1	Model 2	Model 3
2020/21 cohort (ref.: 2016/17)		0,0023**	-0,0226**	0,0013
Country of reference degree (ref.: AT)				
	BG	0,0079**	0,0516**	0,0066
	CY	0,0082	-0,0096	-0,0198*
	CZ	0,0057**	0,0494**	0,0185**
	DE	0,0045**	-0,0232**	-0,0253**
	EE	0,0063*	0,0197**	-0,0131*
	HR	0,0042**	-0,0119**	-0,0244**
	HU	0,0049	0,0064	-0,0057
	LV	0,0098**	0,0372**	-0,0102
	MT*	0,0082**	-0,0455**	-0,0555**
	NO*	0,0044**	-0,024**	-0,0402**
	PT	0,0032**	-0,041**	-0,0482**
	SK	0,006	0,0128*	0,0001
	GR, IT, RO, SI*	n.d.	n.d.	n.d.
Study field of reference degree (ref.: Social Sciences & Journalism)				
	Arts & Humanities		0,0083	0,0098*
	Educ. & Teachers Training		0,0263**	0,0065
	Business & Law		-0,0037	-0,0056
	Nat. Scien. & Math.		0,0034	0,0054
	Health		0,0099*	-0,0025
	ICT & Engineer.		-0,0298**	-0,0112*
	Other		-0,0005	-0,0014
Learning environment (ref.: Lecture style)				
	Lecture + PBL		-0,0058*	-0,0055*
	Other modes		0,0000	-0,0006
	PBL		-0,0014	-0,0014
Internship abroad (ref.: none)			0,0054	-0,0077
Work exp. during ref. prog. (ref.: none)			-0,0011	-0,009*
Age group (reference: under 25)				
	25 to 29			- 0,0062**
	30 to 24			-0,0041
	35 and over			- 0,0126**
Female (ref.: Male)				0,0051**
In partnership (ref.: none)				- 0,0107**
Has children (ref.: none)				- 0,0087**
Academic background (at least 1 parent) (ref.: none)				-0,003
Highest degree: MA level or higher (ref.: max. BA level)				- 0,0079**
Immigration background (ref.: none)				0,0062*
N		38.832	38.832	38.832
Nagelkerke R^2		0,0644	0,0827	0,3187

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.
Source: EUROGRADUATE 2022, data version 3.1.0.
*Notes: * p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (independent variable(s) not surveyed). NO: cohort 2020/21 MA level - no data.*

Table 4.5.1: Explanatory factors for being unemployed (average marginal effects)

Definition: Unemployment (a3.7.4, b1.0) and no other occupation (a3.7.3, a3.7.5, a3.7.6, a3.7.7, a3.7.9) was reported.

Graduates who are part of the labour force and currently not enrolled

Independent variable		Model 1	Model 2	Model 3
2020/21 cohort (ref.: 2016/17)		0,0016**	0,0186**	0,0145**
Country of reference degree (ref.: AT)				
	BG	0,0031	0,0089*	0,0108**
	CY	0,0066**	0,0308**	0,0316**
	CZ	0,0017**	- 0,0055 **	- 0,0056**
	DE	n.d.	n.d.	n.d.
	EE	0,0024	-0,0009	-0,001
	HR	0,0033**	0,0232**	0,0241**
	HU	0,0023**	0,007**	0,0056*
	LV	0,0055**	0,0166**	0,0152**
	MT*	0,0049	-0,0059	-0,0064
	NO*	0,0031**	0,0079**	0,0077*
	PT	0,0026**	0,0372**	0,0321**
	SK	0,0033**	0,01**	0,0114**
	GR, IT, RO, SI*	n.d.	n.d.	n.d.
Study field of reference degree (ref.: Social Sciences & Journalism)				
	Arts & Humanities		0,0098**	0,0084**
	Educ. & Teachers Training		-0,0052	-0,0018
	Business & Law		- 0,0116**	- 0,0104**
	Nat. Scien.&Math.		0,0079*	0,0083*
	Health		- 0,0088**	- 0,0086**
	ICT & Engineer.		- 0,0157**	- 0,0136**
	Other		0,004	0,0041
Learning environment (ref.: Lecture style)				
	Lecture + PBL		- 0,0054**	- 0,0052**
	Other modes		-0,0004	0,0005
	PBL		- 0,0093**	- 0,0083*
Internship abroad (ref.: none)			0,0054	0,0046
Work exp. during ref. prog. (ref.: none)			-0,0011	-0,0015
Age group (reference: under 25)				
	25 to 29			- 0,0062**
	30 to 24			-0,0041
	35 and over			- 0,0126**
Female (ref.: Male)				0,0051**
In partnership (ref.: none)				- 0,0107**
Has children (ref.: none)				- 0,0087**
Academic background (at least 1 parent) (ref.: none)				-0,003
Highest degree: MA level or higher (ref.: max. BA level)				- 0,0079**
Immigration background (ref.: none)				0,0062*
N		39.665	39.665	39.665
Nagelkerke R^2		0,0781	0,097	0,115862

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.
Source: EUROGRADUATE 2022, data version 3.1.0.
*Notes: * p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (independent variable(s) not surveyed). NO: cohort 2020/21 MA level - no data.*

Table 4.6.1: Part-time employment among working graduates, EUROGRADUATE averages

Definition: Shares of graduates that reported of part-time employment in main job (b2.7), as opposed to full-time employment

Graduates in employment and currently not enrolled, by:

Cohort, study field, gender and parenting, age

	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	M, no kids	F, no kids	M, with kids	F with kids	<25y	25-29y	30-34y	35y+
Cohort 2016/17																
BA & MA	10	14	8	4	7	10	4	7	5	7	4	13	t.f.c.	6	8	8
BA level	9	14	7	4	9	11	3	6	5	7	2	14	t.f.c.	5	9	8
MA level	11	15	10	4	5	9	4	9	5	7	5	13	t.f.c.	6	8	7
Cohort 2020/21																
BA & MA	11	21	11	5	7	10	4	7	7	9	4	13	10	7	11	8
BA level	14	19	10	7	9	11	5	9	8	10	4	13	11	8	13	8
MA level	10	21	10	4	6	8	4	5	5	8	4	13	9	6	10	8

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 (16/17) too few cases (<30). GR, RO: not included in gender by parenthood.

Table 4.6.2: Average hours actually worked weekly in main (self-) employment, international comparison

Definition: Self-reported number of hours usually worked per week, including overtime (b2.8b).

Graduates in employment and currently not enrolled, by:

Country, cohort, degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
AT	40	39	42	40	39	41
BG	41	41	41	41	42	41
CY	38	43	35	38	40	37
CZ	41	41	42	42	40	42
DE	41	40	41	38	36	39
EE	41	41	41	41	41	40
HR	41	41	41	41	42	41
HU	42	42	44	42	42	43
IT*	38	38	38	39	39	38
LV	42	41	42	39	38	42
MT*	45	45	46	40	40	41
NO*	40	39	41	n.d.	38	n.d.
PT	41	41	42	40	40	40
SI	42	42	43	42	42	42
SK	42	40	43	42	41	42
GR, IE, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	41	41	41	40	40	41

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: IT: Questionnaire deviation: weekly hours reported in 5-hour-wide categories, mean values estimated based on category centre; MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO cohort 2020/21 MA level: no data.

Table 4.6.3: Multiple jobs: Prevalence and split of hours worked in all jobs, international comparison

Definition prevalence of multiple jobs: Shares of employed graduates reporting multiple jobs (b1.1); Definition split of hours worked: Self-reported number of hours usually worked per week in main job (b2.8b) and additional job(s) (b5b) at time of survey, including overtime.

Graduates currently not enrolled, in employment (% with >1 job) and with more than one job (split of hours worked) by:
Country, cohort

	Cohort 2016/17		Cohort 2020/21	
	MAIN JOB HOURS	ADDITIONAL JOB(S) HOURS	MAIN JOB HOURS	ADDITIONAL JOB(S) HOURS
AT	38	9	36	11
BG	47	15	43	16
CY*	t.f.c.	t.f.c.	39	17
CZ	42	10	42	11
DE*	t.f.c.	t.f.c.	23	22
EE	42	12	41	12
HR	39	11	39	12
HU	43	14	44	14
LV	42	11	40	14
NO	39	9	n.d.	n.d.
PT	41	13	39	14
SI	43	11	42	14
SK	40	11	43	15
GR, IT, MT, RO*	n.d.	n.d.	n.d.	n.d.
Ø	41	12	39	14

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: CY 16/17, DE 16/17, MT excluded due to insufficient case numbers. GR, IT, RO: no data on working hours in additional job(s).

Table 4.7.1: Job security of current job, international comparison

Definition: Shares of employed graduates in unlimited term contracts, fixed-term, and other contract types (b2.5).

Graduates in employment (excluding self-employment) and currently not enrolled by:

Country, cohort, degree level

	Cohort 2016/17						Cohort 2020/21					
	BA			MA			BA			MA		
	UNLIMITED TERM	FIXED TERM	OTHER	UNLIMITED TERM	FIXED TERM	OTHER	UNLIMITED TERM	FIXED TERM	OTHER	UNLIMITED TERM	FIXED TERM	OTHER
AT	88	11	1	83	17	0	82	18	0	77	23	0
BG	90	6	4	88	8	4	84	14	2	81	12	7
CY	79	17	4	80	19	2	68	30	2	69	30	1
CZ	81	19	0	85	15	0	68	32	0	74	26	0
DE	88	12	0	77	23	0	77	23	0	66	34	0
EE	92	8	0	93	7	0	92	7	1	92	8	0
GR	72	24	5	69	16	16	73	19	9	62	20	18
HR	81	19	0	85	15	0	67	33	0	67	33	0
HU	95	5	0	89	11	0	89	11	0	82	17	1
IT	74	19	7	63	31	6	48	49	3	43	51	6
LV	90	10	0	88	12	0	88	11	1	91	9	0
MT*	93	7	0	73	27	0	86	15	0	95	6	0
NO*	92	7	0	93	5	3	86	12	2	n.d.	n.d.	n.d.
PT	82	17	1	83	16	1	64	35	1	63	35	2
RO	93	7	0	93	7	0	81	19	0	88	12	0
SI	86	13	1	82	16	2	71	26	3	73	25	2
SK*	84	16	1	82	17	1	75	25	0	72	28	0
Ø	86	13	1	83	15	2	77	22	1	75	23	2

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: MT: BA level 16/17, MA level 16/17, MA level 20/21: low number of cases (<100); NO: cohort 2020/21 MA level: no data, questionnaire deviation: Different wording (permanent/temporary instead of unlimited/fixed term); SK: BA level 20/21: low number of cases (<100).

Table 4.7.2: Job security of current job, EUROGRADUATE averages

Definition: Shares of employed graduates in unlimited term contracts, fixed-term, and other contract types (b2.5).

Master level (ISCED-7) graduates in employment (excluding self-employment) and currently not enrolled by:

Cohort, type of institution, field of study, gender, age

		UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Cohort 2016/17																	
BA level	***UNLIMITED TERM***	85	91	78	79	81	90	82	87	92	84	89	84	t.f.c.	86	86	90
	FIXED TERM	14	8	19	19	17	9	18	11	8	15	11	14	t.f.c.	13	13	9
	OTHER	2	1	3	2	2	1	1	2	0	1	1	2	t.f.c.	1	1	2
MA level	***UNLIMITED TERM***	82	92	77	77	83	91	72	66	90	85	85	81	t.f.c.	83	84	85
	FIXED TERM	16	7	20	20	15	8	25	32	9	14	13	17	t.f.c.	17	16	11
	OTHER	2	1	3	3	3	2	3	3	1	2	2	2	t.f.c.	0	1	4
Cohort 2020/21																	
BA level	***UNLIMITED TERM***	79	82	75	70	75	84	78	75	87	71	84	76	75	78	86	90
	FIXED TERM	20	18	24	26	24	16	20	24	12	27	15	23	25	20	13	8
	OTHER	2	1	1	4	2	1	3	2	1	2	1	2	1	2	1	2
MA level	***UNLIMITED TERM***	73	87	67	63	70	84	67	63	83	77	79	73	70	73	78	85
	FIXED TERM	25	12	30	34	28	14	30	34	15	20	19	25	29	26	21	11
	OTHER	3	1	3	3	2	1	3	3	2	2	2	2	1	1	1	4

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: IT: not included in age groups; NO: cohort 2020/21, MA level, no data; SI: not included in type of institution.

Table 4.8.1: Occupation categories, EUROGRADUATE averages

Definition: International Standard Classification of Occupations (ISCO), 1-digit (Question b2.1a).

2020/21 graduates in employment and currently not enrolled by:
Degree level, type of institution, study field, gender, age

BA Level

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Managers	9	12	2	7	9	18	4	3	7	18	11	9	t.f.c.	7	14	15
Professionals	50	38	77	48	41	35	55	52	60	17	47	49	t.f.c	51	43	44
Technicians and Associate Professionals	20	23	8	15	20	19	20	36	19	24	20	20	t.f.c.	22	17	19
Clerical Support Workers	10	16	2	14	18	19	8	2	5	14	8	13	t.f.c.	9	12	11
Service and Sales Workers	7	7	7	10	8	6	8	5	3	17	6	7	t.f.c.	7	8	6
Skilled Agricultural, Forestry and Fishery Workers	1	1	0	0	0	0	0	0	0	4	1	0	t.f.c.	1	0	0
Craft and Related Trades Workers	2	2	1	3	1	1	3	0	4	1	3	1	t.f.c.	1	4	2
Plant and Machine Operators, and Assemblers	1	0	0	1	0	0	0	0	1	1	1	0	t.f.c.	0	1	1
Elementary Occupations	1	1	1	2	2	1	2	0	1	2	2	1	t.f.c.	1	1	1
Armed Forces Occupations	1	1	2	0	0	1	0	1	0	2	1	1	t.f.c.	1	1	1

MA Level

Managers	10	16	3	8	13	21	5	3	8	16	13	9	t.f.c.	7	12	19
Professionals	63	55	85	65	53	48	72	75	68	42	62	64	t.f.c.	65	64	57
Technicians and Associate Professionals	16	18	5	12	19	17	15	19	17	21	15	16	t.f.c.	16	15	13
Clerical Support Workers	6	5	3	8	10	11	4	2	3	8	4	7	t.f.c.	6	5	6
Service and Sales Workers	3	3	2	4	3	3	3	1	1	7	3	2	t.f.c.	2	3	2
Skilled Agricultural, Forestry and Fishery Workers	0	0	0	0	0	0	0	0	0	3	0	0	t.f.c.	0	0	0
Craft and Related Trades Workers	1	1	0	2	1	0	1	0	2	1	1	1	t.f.c.	1	1	1
Plant and Machine Operators, and Assemblers	0	1	0	0	0	0	0	0	1	1	1	0	t.f.c.	0	0	0
Elementary Occupations	1	1	1	1	1	1	1	0	1	1	1	1	t.f.c.	1	1	1
Armed Forces Occupations	0	0	1	0	1	1	0	0	0	0	1	0	t.f.c.	0	1	1

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); IT not included in age groups; NO: cohort 2020/21, MA level, no data; SI not included in type of institution.

Table 4.9.0: Graduates in (different forms of) self-employment, international comparison

Definition: Shares of graduates in self-employment exclusively, mainly (with additional employment), and additionally (besides main employment) (b2.3, b5a).

Graduates in employment and currently not enrolled, by:

Country, graduate cohort, degree level

	Cohort 2016/17						Cohort 2020/21					
	BA			MA			BA			MA		
	EMPLOYED	UN-EMPLOYED	OUT OF LABOUR FORCE	EMPLOYED	UN-EMPLOYED	OUT OF LABOUR FORCE	EMPLOYED	UN-EMPLOYED	OUT OF LABOUR FORCE	EMPLOYED	UN-EMPLOYED	OUT OF LABOUR FORCE
AT	12	1	2	16	1	2	11	1	2	12	1	2
BG	9	1	5	13	2	4	12	1	5	11	1	4
CY	13	1	3	13	3	4	12	2	3	13	2	6
CZ	19	1	2	23	1	2	17	1	3	18	1	2
DE	4	1	2	6	1	3	9	1	2	5	2	2
EE	20	2	2	19	2	1	14	2	1	16	2	2
GR	18	2	2	14	2	3	17	1	3	14	1	3
HR	9	0	3	7	1	4	9	0	4	7	0	4
HU	8	1	3	13	1	4	7	0	2	7	1	3
IT*	7	0	0	16	0	0	12	0	0	9	0	0
LV	11	1	3	11	3	6	14	0	2	15	2	3
MT*	8	0	1	17	0	3	0	0	0	10	2	5
NO*	7	1	1	8	1	2	6	1	1	n.d.	n.d.	n.d.
PT	18	1	3	17	2	3	18	2	3	18	1	3
RO	16	0	1	11	0	4	16	1	4	13	0	3
SI*	11	0	4	11	0	4	8	1	3	7	0	3
SK	13	0	1	14	1	1	19	0	2	13	1	3
Ø	12	1	2	13	1	3	12	1	3	12	1	3

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: SI not included in type of institution; NO 2020/21: bachelor level graduates only; IT: Not included in age groups.

(not in report, additional material)

Table 4.9.1: Graduates in (different forms of) self-employment, EUROGRADUATE averages

Definition: Shares of graduates in self-employment exclusively, mainly (with additional employment), and additionally (besides main employment) (b2.3, b5a).

Graduates in employment and currently not enrolled, by:

Cohort, degree level, type of institution, study field, gender, age

		UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Cohort 2016/17																	
BA level	***Exclusively self-employed***	12	12	6	18	14	11	7	12	12	12	13	11	t.f.c.	11	14	14
	Mainly self-employed, additionally employment	1	1	1	2	1	0	0	1	1	1	2	1	t.f.c.	1	1	1
	Mainly employed, additionally self-employment	2	3	2	4	2	2	1	2	2	2	2	2	t.f.c.	2	3	3
MA level	***Exclusively self-employed***	14	14	10	23	1	12	7	14	15	15	16	11	t.f.c.	14	12	15
	Mainly self-employed, additionally employment	1	1	2	2	1	1	1	2	1	2	1	1	t.f.c.	1	1	2
	Mainly employed, additionally self-employment	3	2	3	5	3	2	1	3	2	6	3	3	t.f.c.	2	3	3
Cohort 2020/21																	
BA level	***Exclusively self-employed***	12	10	11	20	12	10	8	10	10	13	13	10	11	10	13	11
	Mainly self-employed, additionally employment	1	1	3	2	1	1	0	1	1	1	1	1	1	1	0	2
	Mainly employed, additionally self-employment	3	2	2	3	2	2	2	2	3	3	3	2	3	2	2	3
MA level	***Exclusively self-employed***	12	11	9	24	15	11	8	11	11	12	13	11	8	11	14	13
	Mainly self-employed, additionally employment	1	3	1	1	1	1	0	1	1	1	1	1	0	1	2	2
	Mainly employed, additionally self-employment	3	5	5	5	3	3	1	1	2	3	3	3	1	3	3	4

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: Age group <25 too few cases (<30); IT not included in age groups; NO: cohort 2020/21, MA level, no data; SI not included in type of institution.

Table 4.10.1: Explanatory factors for entrepreneurship (average marginal effects)

Definition: Given when graduates reported being self-employed (b2.3) and having started an own business (b5.1).

Graduates in employment and currently not enrolled

Independent variable		Model 1	Model 2	Model 3
2020/21 cohort (ref.: 2016/17)		0,0026**	- 0,0211**	- 0,0099**
Country of reference degree (ref.: AT)				
	BG	0,0077	-0,0092	-0,0101
	CY	0,0106	-0,0023	-0,0128
	CZ	0,0062**	0,035**	0,0374**
	DE	0,0053**	- 0,0555**	- 0,0517**
	EE	0,0087**	0,0888**	0,0789**
	HR	0,0049**	- 0,0442**	- 0,0329**
	HU	0,005**	- 0,0429**	- 0,0371**
	LV	0,0066**	- 0,0643**	- 0,0576**
	MT*	0,021	-0,0113	-0,0058
	NO*	0,0058**	- 0,0243**	- 0,0292**
	PT	0,0042**	- 0,0481**	- 0,0367**
	SK	0,0074	0,0124	0,0252**
	GR, IT, RO, SI*	n.d.	n.d.	n.d.
Study field of reference degree (ref.: Social Sciences & Journalism)				
	Arts&Humanities		0,0434**	0,0435**
	Edu. & Teacher Train.		- 0,0353**	- 0,0379**
	Business&Law		- 0,0153**	- 0,019**
	Nat. Scien.&Math.		- 0,0606**	- 0,0577**
	Health		- 0,0453**	- 0,0449**
	ICT&Engineer.		- 0,0135**	- 0,0205**
	Other		0,0024	0,0002
Learning environment (ref.: Lecture style)				
	Lectures		- 0,0048**	- 0,0031*
	Project- and probl.-based learning		0,007**	0,0069**
	Written assignments		- 0,006**	- 0,0068**
	Exposure te entrepren. activities		0,0024*	0,0028*
Internship abroad (ref.: none)			0,006	0,0089
Work exp. during ref. prog. (ref.: none)			0,0144**	0,0153**
Age group (reference: under 25)				
	25 to 29			0,0212**
	30 to 24			0,0402**
	35 and over			0,0632**
Female (ref.: Male)				- 0,0284**
In partnership (ref.: none)				0,0078*
Has children (ref.: none)				0,0133**
Academic background (at least 1 parent) (ref.: none)				0,0213**
Highest degree: MA level or higher (ref.: max. BA level)				0,0017
Immigration background (ref.: none)				0,0074
N		42.707	42.707	42.707
Nagelkerke R^2		0,0503	0,0829	0,10897

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.
Source: EUROGRADUATE 2022, data version 3.1.0.
*Notes: * p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (not all independent variable(s) surveyed). NO: cohort 2020/21 MA level - no data.*

10.3. Tables Chapter 5: Labour Market Outcomes

Table 5.3.1: Match of job and highest degree, international comparison

*Definition: Percentages of graduates with match of highest level of education and level of education respondents identified as usually required to perform current job. "Lower HE required"/"Higher HE required": the respondent identified a higher education degree below/above his*her highest degree as required (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1).*

Graduates currently not enrolled by:

Country, cohort, degree level

	Cohort 2016/17									Cohort 2020/21						
	BA						MA			BA				MA		
	no HE required	*lower HE required*	*match*	*higher HE required*	*no HE required*	*lower HE required*	*match*	*higher HE required*	*no HE required*	*lower HE required*	*match*	*higher HE required*	*no HE required*	*lower HE required*	*match*	*higher HE required*
AT	26	5	61	8	13	29	56	2	29	5	64	2	14	33	51	2
BG	28	7	61	4	10	46	43	2	30	6	62	3	9	49	40	2
CY	5	11	77	7	4	65	31	0	8	11	79	3	9	55	33	2
CZ	38	5	34	22	13	18	69	0	46	7	42	5	15	22	63	0
DE	26	0	67	7	7	32	59	2	34	0	63	3	9	30	61	0
EE	15	0	80	6	5	37	58	0	17	0	80	3	5	42	52	0
HR	26	5	55	14	11	18	70	1	37	5	52	7	15	22	63	1
HU	21	5	71	3	6	39	49	6	23	6	70	1	8	45	40	8
IT*	0	21	59	21	0	31	69	0	0	17	59	23	0	33	67	0
LV	9	8	76	6	4	44	50	2	21	13	62	4	3	53	45	0
MT*	n.d.	n.d.	n.d.	n.d.	0	25	67	8	6	17	72	5	8	34	59	0
NO*	10	0	84	6	3	27	69	1	15	0	83	2	n.d.	n.d.	n.d.	n.d.
PT	18	6	70	5	5	45	49	0	16	7	76	2	5	50	45	0
SI	19	26	40	15	5	32	58	4	21	26	46	8	5	30	61	4
SK*	22	14	28	37	19	25	53	4	40	20	31	10	18	26	51	6
GR, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	19	8	62	12	7	34	57	2	23	9	63	5	9	37	52	2

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: IT: limited comparability; MT: BA level, cohort 2016/17, too few cases (<30), cohort 2020/21, low number of cases (<100), MA level, cohort 2016/17, low number of cases (<100); NO: cohort 2020/21, MA level, no data; SK: BA level, both cohorts, low number of cases (<100); GR, RO: no data.

Table 5.3.2: Match of job and highest degree, EUROGRADUATE averages

*Definition: Percentages of graduates with match of highest level of education of respondent and level of education respondents identified as usually required to perform current job. "Lower HE required"/"Higher HE required": the respondent identified a higher education degree below/above his*her highest degree as required (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1).*

Graduates currently not enrolled by:

Cohort, type of institution, study filed, gender, age, degree level

	Cohort 2016/17								Cohort 2020/21							
	BA level				MA level				BA level				MA level			
	no HE required	*lower HE required*	*match*	*higher HE required*	*no HE required*	*lower HE required*	*match*	*higher HE required*	*no HE required*	*lower HE required*	*match*	*higher HE required*	*no HE required*	*lower HE required*	*match*	*higher HE required*
UNI	15	9	64	12	7	34	58	2	20	8	67	5	9	36	53	2
NON-UNI	20	5	70	5	12	37	51	1	20	8	67	5	9	36	53	2
EDU/TEA	13	8	66	14	6	38	56	0	19	13	64	4	7	34	58	1
ART/HUM	21	13	58	7	12	38	48	1	31	11	52	6	13	43	42	1
SOC/JOU	17	14	55	14	8	36	56	0	24	10	58	8	11	41	47	0
BUS/LAW	20	10	59	11	7	37	55	1	22	8	66	5	10	42	47	1
NAT/MAT	20	9	45	27	6	32	58	4	14	5	72	9	8	30	60	2
HEALTH	11	7	79	4	3	23	67	8	9	6	84	1	4	27	61	8
ICT/ENG	13	8	65	14	6	35	58	1	18	6	71	6	7	39	53	1
OTHER	22	11	60	7	15	32	49	5	37	18	43	3	16	34	49	2
MALE	17	10	62	12	7	34	57	2	22	7	66	5	9	38	52	2
FEMALE	16	10	65	10	7	34	57	2	20	10	66	4	9	37	53	2
< 25	t.f.c.	t.f.c	t.f.c	t.f.c	t.f.c	t.f.c	t.f.c	t.f.c	16	8	72	4	6	35	59	0
25 - 29	16	6	64	13	7	29	62	2	22	9	65	4	10	34	54	2
30 - 34	19	9	65	7	8	33	57	3	28	8	62	3	11	40	47	2
35+	20	14	62	5	8	39	51	2	24	10	63	3	8	44	47	1

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: Age group <25 too few cases (<30); IT not included in age groups; SI not included in type of institution; GR, RO: no data.

Table 5.3.3: Match of job and field of study, international comparison

Definition: Percentages of graduates voicing that their current employment is (absolutely) in line with their field of study (b3.2a).

Graduates currently not enrolled by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	66	66	66	61	56	63
BG	60	50	70	64	55	72
CY	69	69	69	69	70	68
CZ	59	55	63	63	54	66
DE	84	85	84	79	75	81
EE	68	66	70	69	64	73
HR	49	47	50	51	45	53
HU	61	57	67	60	54	67
LV	58	52	68	55	47	67
MT*	66	66	67	74	73	75
NO*	74	73	76	n.d.	71	n.d.
PT	69	65	74	73	69	77
SI	63	60	67	65	61	70
SK*	65	68	61	67	63	68
GR, IT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	65	63	68	65	61	69

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: NO: cohort 2020/21, MA level, no data; MT: except BA & MA 2020/21 all categories low number of cases (<100); SK: BA level, cohort 2020/21, low number of cases (<100); GR, IT, RO: no data.

Table 5.3.4: Match of job and field of study, EUROGRADUATE averages

Definition: Percentages of graduates voicing that their current employment is (absolutely) in line with their field of study (b3.2a).

Graduates currently not enrolled by:

Cohort, degree level, type of institution, field of study, gender, age

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	< 25	25 - 29	30 - 34	35+
BA & MA	64	71	74	53	53	63	61	79	67	56	65	65	t.f.c.	63	64	70
BA level	61	70	73	53	51	62	60	76	66	52	63	62	t.f.c.	64	58	66
MA level	67	73	75	54	56	65	62	82	70	64	68	68	t.f.c.	64	66	73

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	< 25	25 - 29	30 - 34	35+
BA & MA	65	69	77	48	53	61	59	83	67	54	65	66	63	65	66	69
BA level	59	68	74	40	41	60	55	84	63	43	61	62	62	61	61	65
MA level	69	69	79	57	60	63	62	83	71	66	69	69	73	68	69	72

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO: no data.

Table 5.4.1: Explaining the risk for overeducation – differences by countries, social groups & HE characteristics

Definition: Logistic regression (average marginal effects (AME)) for risk of being overeducated (current job usually requires a lower degree vs. current job usually requires same level or higher level degree as respondent holds) (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1)

Graduates currently not enrolled

Independent variables		Model 1
2020/21 cohort (ref.: 2016/17)		-0.029**
Country of reference degree (ref.: AT)		
	BG	0.115**
	CY	0.084**
	CZ	-0.044**
	DE	-0.042**
	EE	-0.068**
	HR	-0.098**
	HU	0.067**
	LV	0.037*
	MT	-0.053
	NO	-0.132**
	PT	0.022**
	SK	-0.071**
Female (ref.: male)		0.021**
Age group (reference: under 25)		
	25 to 29	0.046**
	30 to 24	0.061**
	35 and over	0.110**
At least 1 parent academic education (ref.: no parent academic)		-0.066**
Immigration background (ref.: none)		0.010
Committed partnership (ref.: none)		-0.030**
Children (ref.: none)		0.018**
Highest degree master level or doctoral (ref.: bachelor level)		0.224**
Type of institution non-university (ref. university)		0.112**
Study field of reference degree (ref.: Social Sciences & Journalism)		
	Education & Teacher Training	-0.076**
	Arts & Humanities	0.101**
	Business & Law	-0.010
	Natural Sciences (incl.Maths.)	-0.055**
	Health	-0.161**
	Technology & Engineering	-0.047**
	Other	0.054**
N		43,834
Pseudo R^2		0.0689

Source: *EUROGRADUATE 2022, dataset version 3.2.0.*
Notes: ** p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (not all independent variable(s) surveyed.*

Table 5.4.2: Explaining the risk for overeducation – possible impact of learning activities

Definition: Logistic regression (average marginal effects (AME)) for risk of being overeducated (current job usually requires a lower degree vs. current job usually requires same level or higher level degree as respondent holds) (a1.1a3, a3.3.2a2, a3.5.2a2, b3.1)

Graduates currently not enrolled

Independent variable (control variables see below)	**Model 1**
Lectures	-0.009**
Pseudo R^2	0,0683
Independent variable (control variables see below)	**Model 2**
Group assignments	0.010**
Pseudo R^2	0,0685
Independent variable (control variables see below)	**Model 3**
Research projects	0.002
Pseudo R^2	0,0681
Independent variable (control variables see below)	**Model 4**
Internships	-0.028**
Pseudo R^2	0,0730
Independent variable (control variables see below)	**Model 5**
Problem-based learning	-0.000
Pseudo R^2	0,0683
Independent variable (control variables see below)	**Model 6**
Written assignments	0.013**
Pseudo R^2	0,0686
Independent variable (control variables see below)	**Model 7**
Presentations	0.006**
Pseudo R^2	0,0682
Independent variable (control variables see below)	**Model 8**
Self-study	-0.024**
Pseudo R^2	0,0698
Independent variable (control variables see below)	**Model 9**
Interdisciplinary activities	-0.002
Pseudo R^2	0,0681
Independent variable (control variables see below)	**Model 10**
Exposure to entrepreneurial activities	0.002
Pseudo R^2	0,0681
Independent variable (control variables see below)	**Model 11**
International mobility	-0.077**
Pseudo R^2	0,0707
N	41,785

Source: *EUROGRADUATE 2022, dataset version 3.2.0.*

Notes: ** p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (not all independent variable(s) surveyed; independent model for each learning activity; control variables included in all models: cohort, country, gender, age, parents' education, immigration background, partnership, children, degree, type of institution, field of study.*

Table 5.5.1: Gross monthly earnings in € (PPP), international comparison

Definition: Median of gross monthly income in € adjusted with purchasing power parities (PPP) (b2.9a, b2.9b, b5c, b5d).

Graduates currently not enrolled by:

Country, graduate cohort

	Cohort 2016/2017	Cohort 2020/2021
	BA & MA	BA & MA
AT	3516	3208
BG	2156	1812
CY	2061	1691
CZ	2530	2162
DE	4426	3559
EE	2644	2268
HR	2297	1915
HU	2477	2012
IE	2867	2175
LV	2578	2103
NO*	3831	2913
PT	1911	1580
SI	2436	2212
SK	1947	1750
GR, IT, MT, RO*	n.d.	n.d.
Ø	2648	2189

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

*Note: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.*

Table 5.5.2: Gross hourly earnings in € (PPP), cohort 2016/17, international comparison

Definition: Median of gross hourly income based on gross monthly income adjusted to euro currency and purchasing power parity (ppp) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d, b6.13b, b6.13c, b6.13d).

Graduates currently not enrolled by:

Country, graduate cohort 2016/17, degree level

	Cohort 2016/2017	
	Fall 2018 BA & MA	**Fall 2022 BA & MA**
AT	16	20
BG	8	12
CY	9	12
CZ	11	14
DE	18	25
EE	11	15
HR	8	13
HU	10	14
LV	10	15
NO*	18	21
PT	8	11
SI	11	14
SK	8	11
GR, IT, MT, RO*	n.d.	n.d.
Ø	11	15

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

*Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only*

Table 5.5.3: Gross hourly earnings € (PPP), international comparison

Definition: Median of gross hourly income based on gross monthly income in € and adjusted with purchasing power parity (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Country, graduate cohort and degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	BA	MA	BA & MA	BA	MA
AT	20	19	22	18	17	19
BG	12	14	13	10	11	11
CY	12	9	14	10	8	12
CZ	14	13	16	12	11	13
DE	25	23	28	21	19	22
EE	15	15	16	13	12	14
HR	13	12	14	11	10	11
HU	14	13	14	12	11	12
LV	15	14	18	12	12	13
NO*	21	19	24	17	17	n.d.
PT	11	10	13	9	8	11
SI	14	13	15	12	12	14
SK	11	11	11	10	10	10
GR, IT, MT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	15	14	16	13	12	13

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

*Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.*

Table 5.5.4: Gender gap in gross hourly earnings € (PPP), international comparison

Definition: Median of gross hourly income based on gross monthly income in € adjusted with purchasing power parities (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Country, cohort, gender

	Cohort 2016/2017			Cohort 2020/2021		
	Both	**Female**	**Male**	**Both**	**Female**	**Male**
AT	20	19	22	18	17	20
BG	12	11	16	10	9	13
CY	12	12	12	10	10	10
CZ	14	13	17	12	11	14
DE	25	23	28	21	19	23
EE	15	14	18	13	12	16
HR	13	12	15	11	10	12
HU	14	12	17	12	10	13
LV	15	13	19	12	12	15
NO*	21	20	23	17	17	19
PT	11	10	13	9	8	11
SI	14	12	17	12	12	14
SK	11	10	13	10	9	12
GR, IT, MT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	15	13	17	13	12	15

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

*Notes: GR, IT, MT, RO: no data; *NO: cohort 2020/21 bachelor level graduates only.*

Table 5.5.5: Gross hourly earnings € (PPP) by type of institution and field of study

Definition: Median of gross hourly income based on gross monthly income in € adjusted with purchasing power parities (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled by:

Graduate cohort, degree level, type of institution, study field

	Cohort 2016/2017			Cohort 2020/2021		
	BA & MA	BA	MA	BA & MA	BA	MA
UNI	15	13	16	12	12	13
NON-UNI	16	15	19	15	13	16
EDU/TEA	12	12	12	11	10	11
ART/HUM	12	11	13	11	11	12
SOC/JOU	15	13	16	12	11	13
BUS/LAW	16	14	17	13	12	15
NAT/MAT	16	14	16	13	11	13
HEALTH	14	12	17	13	12	13
ICT/ENG	18	18	19	15	15	15
OTHER	13	13	14	12	11	13

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: SI is not included in the type of institution; GR, IT, MT, RO: no data; NO: cohort 2020/21 bachelor level graduates only.

Table *5.5.6*: Explanatory factors for *income difference*

Definition: Logarithmic transformation of gross hourly income based on gross monthly income in € adjusted with purchasing power parities (PPP) divided by actual weekly hours of work (b2.9a, b2.9b, b5b, b5c, b5d).

Graduates currently not enrolled	
Independent variables	
Cohort 2020/21 (ref.: 2016/17)	-.118**
Country of reference degree (ref.: AT)	
BG	-.460**
CY	-.392**
CZ	-.316**
DE	.153**
EE	-.285**
HR	-.423**
HU	-.405**
LV	-.316**
NO	.095**
PT	-.564**
SK	-.512**
Female (ref.: male)	-.162**
Age group (reference: under 25)	
25 to 29	.050**
30 to 24	.086**
35 and over	.150**
University (ref.: non-university)	.009
Study field of reference degree (ref.: Social Sciences & Journalism)	
Education&TeacherTraining	-.086**
Arts&Humanities	-.094**
Business&Law	.059**
Nat. Scien.&Math.	.000
Health	.079**
ICT&Engineer.	.132**
Other	-.057**
Highest Degree: Bachelor (ref.: Master's degree or higher)	-.102**
Academic background (at least 1 parent) (ref.: no Parent academic)	.062**
Has children (ref.: none)	.004
Committed partnership (ref.: none)	.065**
N	38017
R^2	0.301

Source: *EUROGRADUATE 2022, dataset version 3.2.0.*
Notes: ** p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included; NO: cohort 2020/21 bachelor level graduates only; Method: Linear regression analyses, coefficients are logarithmic points which can be converted to a percentage change.*

Table 5.6.1: Gross monthly earnings € (PPP), country comparison using EUROGRADUATE 2018 and 2022

Definition: Median of gross monthly income in € adjusted with purchasing power parities (PPP) (b2.9a, b2.9b, b5c, b5d).

Graduates currently not enrolled by:

Country, graduate cohort and degree level

		Cohort 2016/17			Cohort 2021/22		
		BA & MA	BA	MA	BA & MA	BA	MA
Fall 2018	AT	n.d.	2128	2394	n.d.		
	CZ	n.d.	1552	1825			
	IE	n.d.	1784	2431			
	HR	n.d.	1275	1424			
	NO*	n.d.	2249	2863			
Fall 2022	AT	n.d.			3208	2913	3372
	CZ				2162	1956	2026
	IE				2175	1933	2671
	HR				1915	1761	1955
	NO*				2913	2881	n.d.

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0, IE: Central Statistics Office of Ireland, EUROGRADUATE 2018 pilot survey report Table A6.18.

Notes: NO: cohort 2020/21 bachelor level graduates only; For comparison, the median gross monthly earnings of cohort 2016/17 are taken from the EUROGRADUATE 2018 pilot survey report.

Table 5.6.2: Perceived cause of earnings loss during COVID-19 pandemic, international comparison

Definition: Percentages attributing earnings loss to the COVID-19 pandemic (b8.4).

Graduates currently not enrolled by:

Country, graduate cohort

	Cohort 2016/17			Cohort 2020/21		
	NO, CLEARLY NOT	YES, PERTIALLY	YES, CLEARLY	NO, CLEARLY NOT	YES, PERTIALLY	YES, CLEARLY
AT	6	14	80	4	21	76
BG	3	33	64	4	35	61
CY	7	20	73	3	25	72
CZ	10	22	68	5	23	72
EE	7	29	64	5	30	64
HR	14	24	62	11	24	65
HU	12	32	57	12	31	56
LV	21	25	54	12	38	51
NO*	5	12	83	4	18	79
PT	6	24	71	7	28	65
SI	12	0	88	16	0	84
SK	3	26	71	1	26	73
DE, GR, IE, IT, MT, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	9	23	69	7	27	66

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data set version 3.2.0

Notes: DE, GR, IT, MT, RO: no data. NO: cohort 2020/21 bachelor level graduates only.

Table 5.7.1: Job satisfaction, international comparison

Definition: Percentages of graduates voicing that they are all in all (very) satisfied with their current work situation (two highest values on a five-point scale) (b4.2).

Graduates currently not enrolled by:

Country, graduate cohort and degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	BA	MA	BA&MA	BA	MA
AT	74	72	78	70	67	72
BG	68	68	69	65	62	68
CY	70	73	69	70	72	70
CZ	77	75	79	74	70	76
DE	74	74	74	73	72	74
EE	76	76	77	74	74	73
HR	63	65	61	59	57	61
HU	65	67	62	62	63	61
LV	72	72	73	69	65	74
MT*	55	54	57	60	63	57
NO*	75	74	80	n/a	73	n/a
PT	64	64	63	62	62	63
SI	69	70	69	67	68	64
SK*	75	74	76	74	75	74
GR, IT, RO‘	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	70	70	70	68	67	68

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: NO: cohort 2020/21, MA level, no data; MT: except BA & MA 2020/21 all categories low number of cases (<100); SK*: BA level, cohort 2020/21, low number of cases (<100); GR, IT, RO: no data.*

Table 5.7.2: Job satisfaction, EUROGRADUATE averages

Definition: Percentages of graduates voicing that they are all in all (very) satisfied with their current work situation (two highest values on a five-point scale) (b4.2).

Graduates currently not enrolled by:

Cohort, degree level, type of institution, study field, gender, age

Cohort 2016/17

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	< 25	25 - 29	30 - 34	35+
BA & MA	70	71	71	68	68	72	67	62	75	66	73	68	t.f.c	71	69	70
BA level	69	72	71	69	66	73	65	64	74	65	73	68	t.f.c	72	65	71
MA level	71	70	71	68	71	72	70	60	76	68	74	68	t.f.c.	71	70	70

Cohort 2020/21

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	< 25	25 - 29	30 - 34	35+
BA & MA	68	67	70	61	66	68	68	68	72	61	69	67	68	69	67	67
BA level	66	70	66	61	63	70	58	67	70	62	69	65	67	67	69	68
MA level	70	63	71	62	68	66	71	69	73	59	68	68	73	69	66	66

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; GR, IT, RO: no data.

Table 5.7.3: Job satisfaction, EUROGRADUATE average by overeducation

Definition: Percentages of graduates voicing that they are (very) satisfied with nine different aspects of their job and overall satisfaction (two highest values on a five-point scale) (b4.1, b4.2).

All graduates by:

Graduate cohort 2016/17, job aspects, overeducation

	Cohort 2016/2017	Non-overeducated	Overeducated
Job contents	74	78	68
Work climate	73	75	71
Own ideas	73	74	71
Working conditions	72	76	66
Overall satisfaction	71	72	70
Working hours	70	76	62
Professional position	70	73	65
Reconcile work & private	65	65	65
Career opportunities	50	53	46
Salary	49	52	46

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: All differences between overeducated and non-overeducated are statistically significant except for the job aspect "possibility to reconcile work with private life and family"; GR, IT, RO: no data.

10.4. Tables Chapter 6: Skills Levels and Skills Match

Table 6.3.1: Current own level of skills, EUROGRADUATE averages

Definition: Mean values of current own skills level as self-assessed by respondents on a 7-point scale (1 "very low" to 7 "very high") (c1B).

All graduates currently employed by:

Graduate cohort, degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	BA	MA	BA & MA	BA	MA
Applied ICT	5.9	5.9	5.9	5.8	5.8	5.9
Aquire new knowledge	5.9	5.8	5.9	5.8	5.8	5.8
Work with others	5.8	5.8	5.9	5.8	5.8	5.8
Coordinate activities	5.7	5.7	5.7	5.6	5.5	5.6
Make meaning clear	5.6	5.6	5.7	5.5	5.5	5.6
Analytical thinking	5.6	5.6	5.7	5.5	5.4	5.6
Mastery own field	5.5	5.5	5.6	5.4	5.3	5.4
Develop new ideas	5.4	5.4	5.5	5.3	5.3	5.4
Critical thinking	5.3	5.3	5.3	5.2	5.2	5.3
Foreign language	5.1	5.1	5.2	5.1	5.1	5.1
Present to audience	4.8	4.7	4.9	4.7	4.6	4.9
Advanced ICT	3.9	3.9	3.9	3.9	3.9	3.9

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: GR, DE, IT, RO: no data.

Table 6.3.2: Required level of skills in current work, EUROGRADUATE averages

Definition: Mean values of skills level required in current work as self-assessed by respondents on a 7-point scale (1 "very low" to 7 "very high") (c1A).

All graduates currently employed by:

Graduate cohort, degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	BA	MA	BA & MA	BA	MA
Applied ICT	5.7	5.6	5.7	5.5	5.4	5.6
Aquire new knowledge	5.7	5.7	5.7	5.6	5.6	5.7
Work with others	5.8	5.8	5.8	5.8	5.7	5.8
Coordinate activities	5.7	5.6	5.8	5.6	5.5	5.7
Make meaning clear	5.8	5.8	5.9	5.8	5.7	5.9
Analytical thinking	5.5	5.5	5.6	5.4	5.2	5.5
Mastery own field	5.5	5.4	5.6	5.4	5.3	5.5
Develop new ideas	5.3	5.3	5.3	5.1	5.1	5.3
Critical thinking	5	5	5.1	4.9	4.8	5.0
Foreign language	4.6	4.6	4.6	4.4	4.4	4.5
Present to audience	4.5	4.5	4.6	4.3	4.2	4.6
Advanced ICT	3.7	3.7	3.7	3.6	3.6	3.7

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: DE, GR, IT, RO: no data.

Table 6.3.3: Average match of current own level of skills and skills level required in current work, EUROGRADUATE averages

Definition: Means of current own level of skills minus skills level required in current work as self-assessed by respondents (-6 strongly underskilled to 6 strongly overskilled) (c1A, c1B).

All graduates currently employed by:

Graduate cohort, degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	BA	MA	BA & MA	BA	MA
Foreign language	0.6	0.6	0.5	0.7	0.7	0.6
Present to audience	0.3	0.3	0.3	0.4	0.4	0.3
Critical thinking	0.3	0.3	0.3	0.4	0.4	0.3
Applied ICT	0.3	0.3	0.2	0.3	0.3	0.3
Advanced ICT	0.2	0.2	0.3	0.3	0.3	0.2
Aquire new knowledge	0.2	0.2	0.1	0.2	0.2	0.1
Develop new ideas	0.2	0.1	0.2	0.2	0.2	0.1
Analytical thinking	0.1	0.1	0.1	0.1	0.1	0.0
Work with others	0.0	0.0	0.0	0.1	0.1	0.0
Mastery own field	0.0	0.0	0.0	0.0	0.0	-0.1
Coordinate activities	0.0	0.0	-0.1	0.0	0.0	-0.1
Make meaning clear	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: GR, DE, IT, RO: no data.

Table 6.3.4: Skills match, EUROGRADUATE averages

Definition: Percentages of graduates for which current own level of skills matches level required in current work, for which current own level is below level required (underskilled), and for which current own level is above level required (overskilled) (Questions c1A, c1B)

All graduates currently employed by:

Graduate cohort, degree level

	Cohort 2016/17						Cohort 2020/21					
	BA			MA			BA			MA		
	Under-skilled	Match	Over-skilled	Under-skilled	Match	Over-skilled	Under-skilled	Match	Over-skilled	Under-skilled	Match	Over-skilled
Work with others	25	54	21	24	55	20	25	53	22	25	52	22
Applied ICT	19	53	28	18	54	28	20	50	30	20	51	29
Advanced ICT	18	53	28	18	53	29	19	50	31	20	51	29
Acquire new knowledge	22	51	28	23	51	26	23	48	29	26	47	27
Analytical thinking	25	50	26	24	51	25	26	46	28	29	45	26
Coordinate activities	27	50	23	28	52	20	29	46	25	30	47	23
Make meaning clear	34	46	19	34	49	17	36	45	20	37	46	18
Critical thinking	22	48	30	22	47	30	22	44	34	23	44	33
Develop new ideas	27	44	29	25	48	28	26	42	32	27	45	28
Foreign language	19	46	35	20	45	35	18	43	39	19	44	37
Present to audience	25	42	34	23	45	32	23	40	37	25	41	34
Mastery own field	30	44	26	31	46	23	33	39	28	36	40	24

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: GR, DE, IT, RO: no data.

Table 6.4.1: Field & general productivity skills, cooperation & coordination skills – influence of 10 teaching & learning modes on current own levels of skills

Definition: Regression coefficients from OLS regression models for influence of teaching & learning mode on self-assessed own level of skills (Questions a1.3, c1A).

Graduates currently not enrolled

T&L mode / *Skills*	Own field	Analytical thinking	New knowledge
Lectures	0.051**	0.067**	0.064**
Group assignments	0.058**	0.029**	0.040**
Research projects	0.059**	0.037**	0.031**
Internships	0.039**	0.011**	0.018**
Problem-based learning	0.091**	0.079**	0.066**
Written assignments	0.079**	0.067**	0.074**
Presentations	0.060**	0.043**	0.053**
Self-study	0.070**	0.095**	0.103**
Interdisciplinary activities	0.076**	0.048**	0.054**
Entrepreneurial activities	0.046**	0.028**	0.026**
T&L mode / ***Skills***	**Cooperate productively**	**Coordinate others**	**Make meaning clear**
Lectures	0.062**	0.051**	0.055**
Group assignments	0.092**	0.074**	0.055**
Research projects	0.043**	0.057**	0.041**
Internships	0.028**	0.023**	0.027**
Problem-based learning	0.071**	0.073**	0.061**
Written assignments	0.081**	0.087**	0.093**
Presentations	0.079**	0.076**	0.077**
Self-study	0.081**	0.084**	0.086**
Interdisciplinary activities	0.061**	0.079**	0.063**
Entrepreneurial activities	0.039**	0.051**	0.027**
N			41,785

Source: *EUROGRADUATE 2022, dataset version 3.2.0.*

Notes: ** p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (dependent variable(s) not surveyed); independent model for each respective skill & learning activity (i.e.10 models for each skill) ; omitted control variables: cohort, country, gender, age, parents' education, immigration background, degree, type of institution, field of study; linear regression coefficients.*

Table 6.4.2: Field & general productivity skills, cooperation & coordination skills – influence of 10 teaching & learning modes on current own levels of skills

Definition: Regression coefficients from OLS regression models for influence of teaching & learning mode on self-assessed own level of skills (Questions a1.3, c1A).

Graduates currently not enrolled

T&L mode / *Skills*	New ideas	Critical thinking	Present
Lectures	0.032**	0.030**	0.027**
Group assignments	0.096**	0.061**	0.121**
Research projects	0.086**	0.061**	0.148**
Internships	0.025**	0.005	0.042**
Problem-based learning	0.121**	0.090**	0.136**
Written assignments	0.087**	0.083**	0.121**
Presentations	0.093**	0.075**	0.176**
Self-study	0.086**	0.095**	0.081**
Interdisciplinary activities	0.111**	0.078**	0.162**
Entrepreneurial activities	0.084**	0.051**	0.151**
T&L mode / ***Skills***	**Applied ICT**	**Advanced ICT**	**Foreign language**
Lectures	0.066**	0.017	0.048**
Group assignments	0.056**	0.120**	0.053**
Research projects	0.016**	0.164**	0.026**
Internships	-0.008	0.025**	-0.009
Problem-based learning	0.072**	0.192**	0.059**
Written assignments	0.093**	0.062**	0.048**
Presentations	0.057**	0.057**	0.062**
Self-study	0.063**	0.080**	0.076**
Interdisciplinary activities	0.033**	0.149**	0.021**
Entrepreneurial activities	0.031**	0.180**	0.026**
N			41,785

Source: *EUROGRADUATE 2022, dataset version 3.2.0.*
Notes: ** p < 0,05; ** p < 0,01; GR, IT, RO, SI: not included (dependent variable(s) not surveyed); independent model for each respective skill & learning activity (i.e.10 models for each skill) ; omitted control variables: cohort, country, gender, age, parents' education, immigration background, degree, type of institution, field of study; linear regression coefficients.*

10.5. Tables Chapter 7: Graduate Mobility

Table 7.3.1: Place of residence, international comparison

Definition of place of residence at time of interview: same place as during studies, other place in study country, in another country (d1).

All graduates by:

Country, degree level, graduate cohort

	Cohort 2016/17						Cohort 2020/21					
	BA			MA			BA			MA		
	same place	*moved within country*	*moved abroad*	*same place*	*moved within country*	*moved abroad*	*same place*	*moved within country*	*moved abroad*	*same place*	*moved within country*	*moved abroad*
AT	51	39	10	48	39	13	67	27	6	58	30	12
BG	47	43	10	51	42	8	54	41	6	50	40	10
CY	63	22	15	46	10	44	66	13	21	40	5	56
CZ	37	58	5	34	57	9	54	43	3	48	45	7
DE	37	60	3	37	62	2	60	37	3	56	40	4
EE	55	38	8	55	36	9	64	29	7	61	31	8
GR	45	39	16	71	22	7	52	37	11	76	20	5
HR	41	47	12	49	42	9	57	38	5	47	46	6
HU	40	53	8	46	48	9	48	45	7	52	39	9
IT*	53	46	0	44	55	1	52	48	0	41	58	1
LV	50	44	7	59	35	5	63	34	4	71	26	3
MT*	48	46	6	36	64	0	63	33	4	74	22	4
NO*	48	49	3	46	46	8	62	35	3	n.d.	n.d.	n.d.
PT	49	43	9	47	39	15	64	31	5	60	28	12
RO	71	22	7	73	20	8	76	20	5	79	18	3
SI	39	59	2	41	57	2	55	43	3	21	46	3
SK	48	42	11	46	47	7	71	25	4	55	37	8
Ø	47	45	8	46	49	5	56	41	3	49	47	5

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: DE, IT, MT, LV, RO: <30 cases in the "moved abroad" category; NO cohort 2020/21, MA level, no data.

Table 7.4.1: Place of residence after graduation.

Explanatory factors (country, cohort, degree level, study-related factors, individual-level factors) for the likelihood of living in another country than country of reference programme.

All graduates

Independent variable		Model 1	Model 2	Model 3
2020/21 cohort (ref.: 2016/17)		-.019***	-.013***	-.024***
Country of reference degree (ref.: AT)				
	BG	-.007	-.008**	.033***
	CY	.231***	.249***	.218***
	CZ	-.041***	-.044***	-.019***
	DE	-.063***	-.063***	-.051***
	EE	-.031***	-.029***	-.004
	HR	.005**	.003**	.003**
	HU	-.029***	-.032***	-.0092**
	IT	-.106***	-.122***	
	LV	-.056***	-.052***	-.032*
	MT	-.056***	-.051***	-.038***
	NO	-.012***	-.005**	.016***
	PT	-.049***	-.048***	.010
	RO	-.054***	-.061***	-.017**
	SI	-.048***	-.049***	.010
	SK	-.035***	-.042***	.001
Study field of reference degree (ref.: Education & Teachers Training)				
	Arts&Humanities		.031***	.025***
	Soc.Scien.&Journ.		.033***	.033***
	Business&Law		.019***	.014***
	Nat. Scien.&Math.		.035***	.050***
	Health		.022***	.019***
	ICT&Engineer.		.021***	.010**
	Other		.033***	.038***
Age group (reference: under 25)				
	25 to 29			.0056*
	30 to 24			-.004
	35 and over			-.019***
Study abroad experience (ref.:no)			.045***	.096***
Female (ref.: Male)				-.011***
Academic background (at least 1 parent) (ref.: none)				.025***
Highest degree: MA level or higher (ref.: max. BA level)			.036***	.034***
Immigration background (ref.: none)				.179***
N		67639	67639	67639
Nagelkerke R^2		.200	.212	.262

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.
Source: EUROGRADUATE 2022, data version 3.2.0.
Method: Logistic regression analyses; coefficients are average marginal effects (AME).
*Notes: * p < 0,05; ** p < 0,01; GR no data.*

Table 7.4.2: Place of residence after graduation – country-specific differences

Explanatory factors (sociodemographics, country, cohort, degree level, study-related factors) for the likelihood of living in another country than country of reference programme.

All graduates

Country	Cohort	Degree (MA)	Immigrant Background	One parent academic	Gender (female)	Experienced unemployment
AT	-.031***	.047***	.239***	.034***	-.001	-.009
BG	-.007	.022*	.483***	.031***	-.004	.039***
CY	.067***	.213***	.602***	.001	.018	-.007
CZ	-.020***	.029***	.201***	.020***	-.001	.045***
DE	-.001	.002	.034***	.009	-.009	.003
EE	-.010	.005	.193***	.037***	-.003	.054***
HR	-.043***	.002	.057***	.030***	-.004	.016**
HU	.009	.025**	.356***	.077***	-.025	.074***
IT						
LV	-.021	-.021	.016	-.010	-.001	.045**
MT						
NO	-.008	.018**	.122***	.011	-.011	.023**
PT	-.038***	.056***	.141***	.052***	-.027***	.008*
RO						
SI	-.001	.005	.015	.020**	.000	-.001
SK	-.029**	.003	.127***	.003	.014	.013
N	71,665	71,665	71,665	71,665	71,665	71,665
Nagelkerke R^2	.258	.258	.258	.258	.258	.258

Data source: EUROGRADUATE 2022, data version 3.2.0.
Method: Logistic regression analyses, interaction effects; model with full set of control variables as in Figure 7.3.2; Interaction effects between Country variable and cohort, immigration background, degree level, parents' education, gender, unemployment experiences; coefficients are average marginal effects (AME).
Notes: MT, IT, GR are excluded due to missing information in control variables or too few case numbers (<30).

Table 7.5.1: Effects of moving abroad after graduation on overeducation, job satisfaction, and life satisfaction by country

Explanatory factors (sociodemographics, country, cohort, degree level, study-related factors) for the likelihood of living in another country than country of reference programme.

All graduates

Country	Overeducation	Life Satisfaction	Job Satisfaction
AT	-.087***	-.061*	.095
BG	.004	-.143*	.557***
CY	.030	-.185**	
CZ	-.077**	-.133**	.310***
DE			
EE	.015	-.120	
HR	.125***	-.283***	.615***
HU	.049*	-.278***	
IT			
LV	.106	-.104	.652**
MT			
NO	.024	.007	
PT	.003	-.393***	.777***
RO			
SI			
SK	.150***	.073	.128
N	49,148	49,266	45,946
Nagelkerke R^2	.0583	.0412	.097

Data source: EUROGRADUATE 2022, data version 3.2.0.
Countries not covered in "overeducation" and "job satisfaction" model: DE, IT, GR, MT, RO, SI.
Countries not covered in "life satisfaction" model: CY, DE, EE, HU, MT, NO, RO.
Method: Logistic and linear regression analyses; independent models for "overeducation", "job satisfaction", and "life satisfaction"; Control variables in model that are not shown: parents' education, immigration background, age, unemployment experiences, partnership, children, cohort, degree program, university type, instruction language, study abroad experiences, study field; Interaction effect between coefficients are average marginal effects (AME).

10.6. Tables Chapter 8: Social Outcomes

Table 8.3.1: General satisfaction with life, international comparison

Definition: Percentages of graduates that are satisfied with their life as a whole (f1.1)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	90	89	91	88	88	89
BG	83	83	83	75	73	78
CZ	88	86	89	85	83	88
DE	88	89	87	86	87	86
HR	79	78	80	76	74	78
LV	85	84	87	80	79	81
MT*	85	79	93	76	84	67
PT	77	76	79	74	73	75
SI	89	88	90	87	86	89
SK	79	79	78	74	72	77
CY, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	84	83	86	80	80	81

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Table 8.4.1: Social trust, international comparison

Definition: Percentages of graduates who believe that people can generally be trusted (f1.3)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	76	75	76	72	71	73
BG	38	37	39	32	30	34
CZ	58	56	60	52	51	54
DE	74	74	75	71	69	73
HR	46	45	49	41	40	44
LV	64	65	63	61	58	65
MT*	46	50	40	58	59	57
PT	57	55	61	55	53	60
SI	58	55	62	55	54	58
SK	42	43	41	43	41	46
CY, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	56	55	57	54	53	56

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Table 8.5.1: Political interest, international comparison

Definition: Percentages of graduates that are (somewhat/very) interested in politics (f2.1)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	54	52	56	50	49	53
BG	32	33	31	29	29	29
CZ	44	41	47	47	45	49
DE	44	44	44	40	38	41
HR	26	27	26	26	25	28
LV	34	33	35	34	32	38
MT*	27	27	29	28	20	36
PT	39	38	41	39	37	41
SI	20	20	21	21	20	22
SK	45	43	46	45	43	48
CY, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	36	36	37	36	34	38

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Table 8.5.2: Political interest, EUROGRADUATE averages

Definition: Percentages of graduates that are (somewhat/very) interested in politics (f2.1)

All graduates by:

Cohort, degree level, type of institution, study field, gender, age

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Cohort 2016/17																
BA&MA	39	38	28	43	51	39	39	24	40	26	50	28	t.f.c	35	38	40
BA level	39	37	27	42	49	38	39	20	39	26	48	28	t.f.c	35	37	39
MA level	40	39	29	45	53	40	40	27	41	27	54	28	t.f.c	36	38	41
Cohort 2020/21																
BA&MA	40	35	33	38	47	37	35	27	39	31	48	29	34	37	38	39
BA level	38	32	33	35	46	36	34	22	38	23	45	28	34	34	38	36
MA level	42	39	34	45	48	39	36	30	41	45	51	31	40	39	38	41

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: Age group <25 too few cases (<30); SI: not included in type of institution; CY, EE, GR, HU, IT, NO, RO: no data

Table 8.5.3: External political efficacy, international comparison

Definition: Mean values of the degree to which graduates think that people like oneself can have an influence on politics (1 "not at all" to 5 "a great deal"; f2.2)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	2.4	2.4	2.4	2.5	2.5	2.5
BG	1.8	1.8	1.9	1.8	1.8	1.8
CZ	2.7	2.6	2.7	2.7	2.7	2.7
DE	3.1	3.1	3.1	3.1	3.0	3.1
HR	1.8	1.8	1.9	1.8	1.9	1.9
LV	2.6	2.5	2.6	2.6	2.5	2.7
MT*	2.1	2.1	2.0	2.4	2.3	2.5
PT	2.1	2.1	2.1	2.2	2.2	2.1
SI	2.1	2.1	2.1	2.2	2.2	2.2
SK	2.3	2.2	2.3	2.3	2.2	2.3
CY, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	2.3	2.3	2.3	2.4	2.3	2.4

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Table 8.5.3a: External political efficacy, international comparison

Definition: Percentages of graduates that think that people like oneself can have (a lot/a great deal) of influence on politics (f2.3)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	7	7	7	8	8	9
BG	4	2	6	4	3	5
CZ	17	18	17	17	17	17
DE	25	23	27	27	25	29
HR	3	2	3	3	3	3
LV	17	14	22	15	13	19
MT*	10	11	8	11	10	12
PT	4	4	4	4	4	5
SI	5	6	5	5	5	5
SK	7	6	6	9	5	7
CY, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	10	9	10	10	9	11

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<200); CY, EE, GR, HU, IT, NO, RO: no data

(additional material, not in report)

Table 8.5.4: Internal political efficacy, international comparison

Definition: Mean values of the degree to which graduates have confidence in their own ability to participate in politics (1 "not at all confident" to 5 "completely confident"; f2.3)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	BA	MA	BA&MA	BA	MA
AT	2.2	2.2	2.2	2.2	2.2	2.3
BG	2.0	1.9	2.0	2.0	1.9	2.0
CZ	1.9	1.9	1.9	1.9	1.9	1.9
HR	2.2	2.3	2.2	2.2	2.3	2.3
LV	2.1	2.0	2.1	2.1	2.1	2.1
MT*	1.9	1.8	2.1	2.0	1.8	2.2
PT	2.3	2.3	2.3	2.3	2.3	2.3
SI	1.9	1.9	1.9	2.0	2.0	2.0
SK	1.9	1.8	2.1	1.9	1.9	2.0
CY, DE, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	2.0	2.0	2.1	2.1	2.0	2.1

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO: no data

Table 8.5.4a: Internal political efficacy, international comparison

Definition: Percentages of graduates that report to be (very/completely) confident to participate in politics (f2.3)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	BA	MA	BA&MA	BA	MA
AT	10	11	10	11	11	11
BG	10	8	11	10	10	10
CZ	6	6	6	6	6	7
HR	12	13	12	15	15	15
LV	7	8	6	7	6	7
MT*	9	4	19	9	5	13
PT	12	11	12	11	11	11
SI	10	10	10	10	10	11
SK	9	7	12	9	8	10
CY, DE, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	9	9	11	10	9	11

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO: no data

(additional material, not in report)

Table 8.5.5: Support for democracy, international comparison

Definition: Percentages of graduates that think it is important to live in a country that is governed democratically (f2.5)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	97	97	97	96	95	97
BG	87	84	89	85	84	86
CZ	96	95	97	96	95	96
DE	98	98	97	98	98	98
HR	90	90	91	89	88	90
LV	96	96	97	94	93	95
MT*	96	93	100	94	98	88
PT	96	95	97	95	95	96
SI	89	87	93	91	90	94
SK	93	93	94	92	92	92
CY, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	94	93	95	93	93	93

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data

Table 8.6.1: Explanatory factors for support for democracy (ordinary least squares regression)

Definition: OLS regression to explain the tendency of graduates to think that it is important, that the own country is governed democratically (f2.5)

All graduates

Independent variables		Model 1
2020/21 cohort (ref.: 2016/17)		-0.039**
Country of reference degree (ref.: AT)		
	BG	-0.998**
	CZ	-0.281**
	DE	-0.054
	HR	-0.844**
	LV	-0.499**
	MT	-0.422**
	PT	-0.174**
	SK	-0.514**
Study field of reference degree (ref.: Social Sciences & Journalism)		
	Education&TeacherTraining	-0.195**
	Arts&Humanities	-0.155**
	Business&Law	-0.159**
	Nat. Scien.&Math.	-0.145**
	Health	-0.132**
	ICT&Engineer.	-0.215**
	Other	-0.318**
Age group (reference: under 25)		
	25 to 29	-0.014
	30 to 24	-0.026
	35 and over	0.137**
Female (ref.: male)		0.132**
In partnership (ref.: none)		0.103**
Has children (ref.: none)		-0.064**
Academic background (at least 1 parent) (ref.: none)		0.149**
Highest degree: MA level or higher (ref.: max. BA level)		0.142**
Immigration background (ref.: none)		-0.146**
N	49920	
adjusted R^2	0.0392	

Source: *EUROGRADUATE 2022, dataset version 3.1.0.*
Notes: ** p < 0,05; ** p < 0,01; CY, EE, GR, HU, IT, NO, RO, SI: not included (not all independent variable(s) surveyed.*

Table 8.7.1: Types of political participation, EUROGRADUATE averages

Definition: Percentages of graduates that engaged in the different types of political participation within the last 12 months (f2.4a-j)

All graduates by:

Graduate cohort, degree level, types of political participation

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
Established contact	20	20	21	18	16	20
Donation	9	8	10	8	8	8
Work politics-related organisation	6	6	6	6	5	6
Campaign badge/sticker	8	8	8	8	9	8
Petition	48	49	46	46	47	46
Demonstration	16	16	15	17	17	17
Boycott	37	36	37	32	30	34
Social media	25	25	25	25	25	25
Volunteering	23	21	25	23	23	24

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: CY, EE, GR, HU, IT, NO, RO no data

Table 8.7.2: Extent of individual political participation, EUROGRADUATE averages

Definition: Average number of activities in which graduates were involved within the last 12 months (x/9; f2.4a-j)

All graduates by:

Cohort, degree level, type of institution, study field, gender, age

	UNI	NON-UNI	EDU/TEA	ART/HUM	SOC/JOU	BUS/LAW	NAT/MAT	HEALTH	ICT/ENG	OTHER	MALE	FEMALE	<25y	25-29y	30-34y	35y+
Cohort 2016/17																
BA&MA	2.0	1.9	1.8	2.3	2.4	1.8	2.1	1.7	1.8	1.7	2.0	1.8	t.f.c	1.9	2.0	1.9
BA level	2.0	1.9	1.8	2.2	2.2	1.8	2.2	1.7	1.8	1.8	2.0	1.8	t.f.c	1.9	2.0	1.9
MA level	2.0	1.9	1.8	2.4	2.5	1.9	2.1	1.7	1.8	1.6	2.1	1.8	t.f.c	1.9	2.0	1.9
Cohort 2020/21																
BA&MA	1.9	1.8	1.7	2.4	2.4	1.7	1.8	1.6	1.7	1.7	1.9	1.8	1.8	1.9	1.9	1.8
BA level	1.8	1.8	1.7	2.3	2.3	1.6	1.8	1.5	1.6	1.8	1.8	1.8	1.8	1.9	1.8	1.7
MA level	2.0	1.7	1.8	2.5	2.6	1.8	1.9	1.7	1.7	1.6	2.0	1.8	1.7	1.9	2.0	1.9

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: Age group <25 too few cases (<30); SI not included in type of institution; CY, EE, GR, HU, IT, NO, RO: no data

Table 8.7.3: Extent of political participation, international comparison

Definition: Average number of activities in which graduates were involved within the last 12 months

All graduates by:

Cohort; country; degree level

	Cohort 2016/17			Cohort 2020/21		
	BA & MA	**BA**	**MA**	**BA & MA**	**BA**	**MA**
AT	1.9	1.9	1.8	1.8	1.8	1.8
BG	1.4	1.4	1.4	1.1	1.1	1.8
CZ	2.1	2.1	2.2	2.0	2.0	1.8
DE	2.6	2.6	2.5	2.8	2.8	1.8
HR	1.9	1.9	1.9	1.7	1.6	1.8
LV	1.7	1.7	1.7	1.7	1.6	1.8
MT	2.0	1.8	2.2	1.8	1.7	1.8
PT	2.0	2.0	2.1	2.0	2.0	1.8
SI	1.4	1.5	1.4	1.4	1.4	1.8
SK	2.2	2.2	2.2	2.0	1.9	1.8
CY, EE, GR, HU, IT, NO, RO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	1.9	1.9	1.9	1.8	1.8	1.8

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, dataset version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, EE, GR, HU, IT, NO, RO: no data.

(additional material, not in the report)

Table 8.8.1: Climate change beliefs, international comparison

Definition: Percentages of graduates that believe that climate change is mainly/entirely human driven (f3.1)

All graduates by:

Country, graduate cohort, degree level

		Cohort 2016/2017			Cohort 2020/2021	
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	84	83	84	83	84	82
BG	57	57	56	58	58	59
CZ	74	74	75	74	74	74
HR	64	62	66	66	67	64
LV	65	65	64	65	67	63
MT*	78	70	90	68	71	65
PT	87	87	87	87	87	87
SK	72	73	71	74	72	76
CY, DE, EE, GR, HU, IT, NO, RO, SI*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	72	71	74	72	72	71

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO, SI: no data

Table 8.8.2: Climate change concern, international comparison

Definition: Percentages of graduates that are very/extremely worried about climate change (f3.2)

All graduates by:

Country, graduate cohort, degree level

		Cohort 2016/2017			Cohort 2020/2021	
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	69	71	66	68	67	69
BG	41	39	44	40	40	41
CZ	48	48	48	48	47	49
HR	47	46	47	44	44	42
LV	47	46	50	45	45	44
MT*	56	48	70	61	58	64
PT	73	71	74	73	73	73
SI	54	53	57	54	54	54
SK	43	44	42	45	42	49
CY, DE, EE, GR, HU, IT, NO, RO*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	53	52	55	53	52	54

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO: no data

Table 8.8.3: Environmental efficacy beliefs, international comparison

Definition: Percentages of graduates that believe that individual activities are effective, regardless of what others do (f3.3)

All graduates by:

Country, graduate cohort, degree level

	Cohort 2016/2017			Cohort 2020/2021		
	BA&MA	**BA**	**MA**	**BA&MA**	**BA**	**MA**
AT	80	79	82	76	75	78
BG	79	80	77	73	73	74
CZ	82	80	84	80	78	83
HR	82	79	87	83	81	85
LV	66	66	66	64	63	67
MT*	53	50	59	57	66	47
PT	66	65	68	63	62	66
SK	81	84	79	81	82	81
CY, DE, EE, GR, HU, IT, NO, RO, SI*	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Ø	74	73	75	72	72	72

n/a: not applicable, n.d.: no data; t.f.c.: too few cases.

Source: EUROGRADUATE 2022, data version 3.2.0.

Notes: MT: both cohorts, both degrees low number of cases (<100); CY, DE, EE, GR, HU, IT, NO, RO, SI: no data

Table 8.9.1: Explanatory factors for climate attitudes (ordinary least squares regression)

Definition: OLS regression to explain graduates' believes on the causes of climate change (natural vs. human-driven; f3.1), the extent to which they feel concerned about climate change (f3.2), and the extent to which they believe that individual activities are effective, regardless of what other so (f3.3)

All graduates

Independent variables		Model 1	Model 2	Model 3
2020/21 cohort (ref.: 2016/17)		-0.013	-0.001	-0.021
Country of reference degree (ref.: AT)				
	BG	-0.383**	-0.471**	-0.029
	CZ	-0.226**	-0.403**	-0.028
	HR	-0.261**	-0.416**	-0.002
	LV	-0.281**	-0.451**	-0.350**
	MT	-0.155**	-0.08	-0.519**
	PT	-0.016	0.127**	-0.403**
	SK	-0.201**	-0.414**	0.035
Type of institution (ref.: University)				
	Non-university	-0.015	-0.021	0.000
Study field of reference degree (ref.: Social Sciences & Journalism)				
	Education&TeacherTraining	-0.061**	-0.088**	0.019
	Arts&Humanities	0.012	0.034*	0.009
	Business&Law	-0.057**	-0.079**	0.004
	Nat. Scien.&Math.	0.007	0.092**	0.040
	Health	-0.024	-0.025	0.065**
	ICT&Engineer.	-0.007	-0.056**	0.023
	Other	-0.048**	-0.073**	-0.001
International student mobility (ref.: without)		0.064**	0.122**	0.060**
Env. Sustainability as part of the curriculum		-0.012**	0.039**	0.044**
Age group (reference: under 25)				
	25 to 29	-0.036**	-0.048**	0.043**
	30 to 24	-0.06**	-0.073**	0.061**
	35 and over	-0.103**	-0.047**	0.116**
Female (ref.: male)		0.077**	0.226**	0.224**
In partnership (ref.: none)		0.038**	0.094**	0.065**
Has children (ref.: none)		-0.056**	-0.044**	0.041**
Academic background (at least 1 parent) (ref.: none)		0.022**	0.038**	0.002
Highest degree: MA level or higher (ref.: max. BA level)		0.01	0.029**	0.039**
Immigration background (ref.: none)		-0.024**	-0.036**	-0.042**
N		45422	45434	45448
adjusted R^2		0.0457	0.1004	0.0568

Source: *EUROGRADUATE 2022, dataset version 3.1.0.*
Notes: ** p < 0,05; ** p < 0,01; Model 1: climate change beliefs, Model 2: climate change concern, Model 3: environmental efficacy beliefs; CY, DE, EE, GR, HU, IT, NO, RO, SI: not included (not all independent variable(s) surveyed).*

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