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Foreword

Equitable access to adult learning for all is a pillar of the European Union (EU) education and training and employment policies. To promote individual employability and support economic competitiveness while ensuring equity and social inclusion, Europe does not only have to increase participation in adult learning but should also make it more inclusive.

The EU education and training strategy (ET 2020) devotes specific attention to equity in adult learning: all individuals, irrespective of their personal, social or economic circumstances should be able to acquire, update and develop their skills over their lifetime. The 2010 guidelines for employment policies in EU Member States identify the development of a skilled workforce responding to evolving labour market needs and the promotion of lifelong learning as objectives to be pursued, ensuring that every adult is given the chance to train in order to obtain and maintain a job and/or to progress in his or her career. The Bruges communiqué also underlines the need for inclusiveness and to increase participation in continuing vocational education and training. The communiqué particularly stresses this need for people facing transitions in the labour market as well as for groups with typically low participation in training. Recently, the Riga conclusions appear to reflect the Member States', social partners' and vocational education and training stakeholders' commitment to further develop quality in vocational education and training. In this context, participation (and in particular participation of disadvantaged groups) in continuing vocational education and training, is an important dimension of quality.

Against this background, this report provides a statistical picture of adult participation in job-related training in Europe, such as non-formal education and training undertaken to obtain knowledge and/or acquire new skills for a current or future job. The analysis investigates the influence of individual characteristics, jobs and workplaces on participation in job-related learning. It is based on internationally comparable data from the European Union's 2011 adult education survey.

The data confirm the existence of strong inequalities in access to job-related learning. In particular, people experiencing periods of unemployment appear to suffer from a double handicap in comparison to those in employment: their participation in job-related learning is significantly lower and, as they are not employed, they have fewer opportunities to develop their skills informally in a work context. This requires policy attention, to increase the focus on job-

related training as part of active labour market policies, to prevent skills' obsolescence and alienation from the labour market. The analysis also confirms the existence of strong inequalities among those in employment: people with lower education levels, in small and medium enterprises and in occupations and sectors with lower skills intensity participate in job-related learning to a much lower extent. Once again, this demonstrates the existence of a vicious circle that perpetuates unequal learning and career paths. Devising the right incentives to increase equity in access to training is necessary – more than ever before.

I sincerely hope that the evidence presented this report will not only contribute to a better understanding of participation patterns in continuing vocational education and training but also to the further development of policies and practices which promote a more equitable and inclusive access to adult learning.

Joachim James Calleja
Director

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Executive summary

This study provides an in-depth analysis of participation in job-related, non-formal adult education and training (NFE) in Europe. It investigates its variability and relevant in/equality based on key factors at individual level. The country level dimension is also taken into consideration to a great extent.

The analysis is carried out using microdata from the second and latest wave of the European Union's adult education survey (AES-2011). In this survey, job-related non-formal education and training is essentially understood as job-related training, not leading to a formal qualification recognised by relevant national educational or equivalent authorities. The analysis makes use of multivariate statistical modelling, and in particular of multivariate regressions techniques of the logistic family, to investigate inequalities in participation based on a wide set of variables. These refer to socio-demographic background, educational attainment, labour market status as well as job and workplace characteristics.

The analysis aims to develop available statistical knowledge on inequalities in participation in adult learning, having specific regard to its non-formal job-related component. In particular, this study complements a previous report by Cedefop on job-related adult learning and continuing VET in Europe (Cedefop, 2015).

Two models have been developed for the purposes of the analysis. One model (model A) investigates inequalities in participation based on the employment status of adults: it contrasts participation of employed, unemployed and inactive individuals while controlling a set of key variables in the model. The second model (model B) has been developed for employed adults only. It investigates inequalities in their participation patterns, accounting and simultaneously controls key aspects relating to socio-demographic variables, educational attainment, job and workplace characteristics.

Sufficiently comparable data sets were available and used for analysis covering 25 EU Member States and Norway. Due to the unavailability of data or limited cross-country comparability, the analysis does not cover Belgium, Croatia and Ireland.

Main findings from the models confirm the persistence of significant inequalities. Main inequalities in participation are found on the basis of employment status, educational attainment, occupational group and establishment size. Considerable disadvantages are found for those who are unemployed as well as for workers who have low-level qualifications, who are employed in small establishments or who perform manual and skilled manual

jobs. Other inequalities are found among employed adults, including by age, migrant background, economic sector of activity and part time work.

Employment status

Inequalities based on employment status are very strong, with a clear disadvantage of unemployed and inactive adults in participation in job-related training. Based on aggregate results from model A (which controls gender, age, educational attainment, migrant background, and the presence of small children in the household), the chances of participating in job-related non-formal education and training are much higher for employed adults than for unemployed and inactive adults. Compared to employed adults, the probability of participation is estimated to be 25 percentage points lower for unemployed adults and 41 percentage points lower for inactive adults. Compared to other average marginal effects estimated through modelling, these are very large average marginal effects and the relation between participation and labour market status is strong throughout all countries studied.

Compared to unemployed adults, employed adults benefit from a double advantage in their skills development. Not only do they tend to participate in job-related non-formal education and training to a much greater extent, they can also benefit from skills development which takes place informally during their normal work (as they can learn things by dealing with tasks, situations and people at work). This suggests the need to reinforce the role of training as an active labour market policy even more, with a view to further support training for the unemployed and to narrow down their skills development gap. Because the labour force survey (LFS) data and methodology do not fully/consistently display such big differences between employed and unemployed individuals, partly because it neglects guided on-the-job training, the AES does provide added value when investigating inequalities between employed and unemployed individuals.

Gender

Model B results suggest that, controlling other key variables in the model, inequalities between genders are small. Based on aggregated results, employed women's chances of participating in job-related non-formal education and training are estimated to be only slightly lower than they are for men (1 percentage point lower for women). Albeit small, the difference is found to be

significant from a statistical point of view. At country level, statistically significant negative average marginal effects for female workers are found in seven out of 26 countries (Czech Republic, Denmark, Spain, France, Italy, Poland and Slovenia). Only in Finland does the model estimate and give employed women an advantage over employed men. Model B results are controlled for age, country of birth, presence of young children in households, educational attainment, and occupational group, economic sector of activity, establishment size, professional status (self-employed/employee) and part-time/full time-work.

Age

Inequalities by age and relative disadvantages experienced by older adults are well documented. However, both descriptive statistics and model B results support and confirm the idea that inequalities by age are smaller when the analysis duly considers that most of adult education and training is actually job-related training and that many older adults are not active on the labour market. Controlling other key socio-demographic, job and workplace characteristics, aggregate results from model B suggest that chances of participation in job-related non-formal education and training are similar for two groups of employed adults: those aged 25 to 34 and those aged 35 to 54. On the other hand, 55 to 64 year-old workers compared to young workers (25-34) have a moderately lower participation probability (the difference is estimated to be 6 percentage points). Statistically significant negative average marginal effects (i.e. lower probability of participation) for workers approaching retirement age are found in 13 out of 26 countries, namely the Czech Republic, Germany, Estonia, Greece, Spain, France, the Netherlands, Poland, Portugal, Romania, Finland, Slovakia and Norway. Results are controlled for gender, country of birth, presence of young children in the households, educational attainment, occupational group, economic sector of activity, establishment size, professional status and part- time/full-time work.

Migrant background

Migrant background has been proxied by using the country of birth. Based on model B aggregate results, controlling for other key variables in the model, foreign-born workers have a moderately lower probability of participating in job-related non-formal education and training. This is estimated to be five percentage points lower than that of native-born workers. At country level, a

statistically significant disadvantage for foreign workers is found in 10 out of 25 countries, including Germany, Estonia, Spain, France, Italy, Cyprus, the Netherlands, Austria, Finland and Sweden ([1]). Results are controlled for gender, age, presence of young children in the households, educational attainment, and occupational group, economic sector of activity, establishment size, professional status and part-time/full-time work.

Educational attainment

Statistical modelling confirms that the level of education attained is strongly associated with participation in job-related NFE. It is combined with persisting strong inequalities. When controlling for gender, age, presence of young children in the households, migrant background, occupational group, economic sector of activity, establishment size, professional status and part-time/full time work, model B generated the following insights.

When comparing adult workers with low-level qualifications (ISCED 0-2) to adult workers with high-level qualifications (ISCED 5-6), an aggregate average disadvantage for the low qualified is found: it is statistically significant and it is estimated at 15 percentage points. In 22 out of the 26 countries studied, low-qualified workers have a significantly lower probability of participating in job-related NFE. Only in Lithuania, Luxembourg, Hungary and the United Kingdom, is the disadvantage not found to be statistically significant.

When comparing adult workers with medium-level qualifications (ISCED 3-) with their counterparts with high-level qualifications (ISCED 5-6), an aggregate average disadvantage for the mid-qualified is found to be statistically significant and is estimated at 8 percentage points. In 22 out of 26 countries mid-qualified individuals (ISCED 3-4) have a significantly lower probability of participating in job-related NFE than the highly qualified (ISCED 5-6), the exceptions are Latvia, Luxembourg, Sweden and the United Kingdom.

Occupational group

Model B confirms a strong association between the skills intensity of jobs (proxied by the occupational groups) and participation in job-related NFE. Strong inequalities in participation based on the type of occupation performed continue to exist among employed adults. In model B, which controls key socio-

([1]) No data for the United Kingdom were available on country of birth.

demographic, job and workplace characteristics, the reference category is assumed to be the group of managers and professionals (ISCO1-2) with whom other groups are compared. On average, chances of participation for technicians and associate professionals (ISCO 3) are estimated to be 4 percentage points lower. Clerical, service and support workers (ISCO 4-5) compared to managers and professionals are (by 12 percentage points) less likely to participate in job-related training and this negative effect is significant in 20 countries. Inequalities are even bigger for skilled manual workers (ISCO 6-8) and workers in elementary occupations (ISCO 9), for whom the probability of participation is estimated to be 16 and 25 percentage points lower than that for managers and professionals respectively. Inequalities by occupational positions are found to be statistically significant in 23 out of the 26 countries examined, with the notable exceptions of Bulgaria, Greece and Hungary, where participation is more homogenously low. Results are controlled for gender, age, migrant background, presence of young children in the households, educational attainment, economic sector of activity, establishment size, professional status and part-time/full-time work.

Economic sector of activity

As far as the economic sector of activity is concerned, model B results are controlled for gender, age, migrant background, presence of young children in the households, educational attainment, occupational group, establishment size, professional status and part-time/full-time work. The group of workers in the social (non-health) services sector is assumed as a reference category. As coded in this study, it mainly includes adults employed in public administration and education. When considering pooled data from all countries taken into account, and compared to the reference sector, statistically significant different participation probabilities are found for workers in all other sectors (differences are statistically significant). In the majority of them, considerable negative marginal effects (and therefore lower participation probabilities) are found; these range between 8 and 10 percentage points. These sectors include the extractive sector (-8 percentage points), the transformative sector (-9), the distributive services sector (-9) and the personal services sector (-10). These sectors differ from the reference sector, but participation is quite similar among them. On the other hand, two other sectors show more similar patterns as compared to the reference sector, with high participation levels. These are the producers' services sectors which includes finance, real estate, professional,

scientific and technical activities, and the health and social work sector. The effects of sectors are, nevertheless, considerably different across countries.

Establishment size

The establishment's size is measured in terms of the number of persons employed at the local unit where respondents work and it is strongly associated with participation in job-related training. There are persisting and high inequalities based on size. Model B assumes adults employed in establishments with 1-10 persons as the reference category and contrasts them with other groups. After controlling other key variables in the model, their disadvantage (lower probability of participation) is estimated to be 6 percentage points as compared to workers in establishments with 11-19 persons (the disadvantage is statistically significant in 14 out of 26 countries); 10 percentage points compared to workers in establishments with 20 to 49 persons (disadvantages are statistically significant in 19 countries); 23 percentage points as compared to workers in establishments with 50 or more persons (statistically significant disadvantages are found in 23 out of 26 countries with the exception of Denmark, Latvia and Norway). Results are controlled for gender, age, migrant background, presence of young children in the households, educational attainment, economic sector of activity, occupational group, professional status and part-time/full-time work. These findings further underline the need to reinforce attention to training in small and medium-sized enterprises.

Part-time work

Moderate inequalities in participation of employed adults in job-related non-formal education and training are found based on whether they work part-time or full-time. After controlling other key socio-demographic, job and workplace characteristics, on average, part-time workers are estimated to have a 6-percentage-point lower probability of participation compared to full-time workers. A statistically significant disadvantage for part-time workers is found in 16 out of 26 countries (Denmark, Estonia, Spain, France, Italy, Cyprus, Latvia, Luxembourg, Malta, Austria, Poland, Portugal, Slovakia, Finland, Sweden and Norway). Results are controlled for gender, age, migrant background, presence of young children in the households, educational attainment, and economic sector of activity, occupational group, professional status and establishment size.

Policy implications

Main policy implications relate to access to job-related training for adults in disadvantaged groups. Equitable access for all groups and particularly for those with low participation rates is a pillar of adult education and training policies in the EU.

The public debate often and correctly makes reference to adults with low skill levels or low education levels and older adults. Less prominence is given to other inequalities, such as for instance those relating to employment status, occupational group or enterprise size. Findings from this report show that they all deserve to be taken into serious consideration.

Attention should be devoted to further develop training in small and medium enterprises as well as in sectors with a low training intensity. This is not only for reasons of equity. Training is not only a result of a short-term need but should be seen and promoted as a medium/long-term investment for the employability of individuals and the competitiveness of companies and countries. Training does not only support and follow changes and innovation; it also precedes and stimulates them.

From an enterprise perspective, innovation can also occur in mature sectors and in small establishments. In fact, innovation is not only about technological developments at the frontier of knowledge. It can be of various kinds in increasingly globalised and digital markets. For instance, process and marketing innovation can support customisation or specialisation of products and services and/or internationalisation/modernisation of sales. These can and should be part of enterprises' competitiveness strategies, even and particularly when their size is small and their sector is technologically mature. Training matches such strategies very well, be it prior to, during or after their design and implementation.

From an individual perspective, assuming that development of labour-market-relevant skills for adults occurs mostly through working and job-related training, and considering the effects of the economic crisis, then particular attention should be paid to some specific and now larger groups, namely the unemployed and overqualified workers. The unemployed face a double disadvantage in terms of their skills development: they do not work and they participate less in job-related training than employed adults. There may be a tri-fold disadvantage in that long-term unemployed individuals may lose contact with the world of work and their skills may become obsolete. But there is also a potential threat for employed adults, even if they are highly educated. Cedefop research based on the European Skills and Jobs survey, shows that there are increasingly more employed individuals accepting jobs below their qualification

level, and this is partly due to the crisis. This report shows that, when controlling key factors, including their educational attainment, workers in less skill-intensive occupational groups, participate less in job-related training. This sparks concerns for workers with high-level qualifications who are nevertheless employed in occupational groups with a lower skills' intensity. The main concern is that they may participate in training (and learning at work) to a lower extent than they could have achieved had they been employed in a job that matched their skills more. This issue requires consideration by policy-makers to device measures preventing alienation from the labour market for people who experience periods of joblessness as well as to support a better match between skills and jobs.

CHAPTER 1.

Aim, scope and structure of the study

The Europe 2020 education and training strategy stresses the importance of ensuring equitable education and training systems. Adults' socioeconomic attributes should not generate educational disadvantages for certain societal groups (Council of the European Union, 2009). The Bruges communiqué on supporting vocational education and training in Europe also emphasises the need to advance social cohesion (Council of the European Union 2010) and explicitly calls for specific action to enhance the participation rate in continuing VET for disadvantaged groups. For adult education and training policies, studying, understanding and comparing participation patterns for different socioeconomic groups within countries and across countries is therefore of utmost relevance.

This study provides an in-depth analysis of participation in job-related, non-formal adult education and training (NFE) in Europe. It investigates its variability and (in)equality based on key factors at individual level. These include adults' socio-demographic characteristics and, for employed adults, job and workplace features. Age, gender, country of birth (as a proxy for migrant background), having young children in the household, educational attainment, employment status, occupation, economic sector of activity and size of the establishment are included in the analysis. Along with aggregate results, the country-level dimension is taken into serious consideration.

The analysis is based on microdata resulting from the second wave of the European Union's adult education survey (AES-2011) and is subject to its methodology. In this context, job-related non-formal education and training is essentially understood as job-related training not leading to qualifications acknowledged as formal by relevant national educational or equivalent authorities. Data have been analysed covering 25 EU Member States and Norway. Belgium, Ireland and Croatia are not covered. The analysis makes use of multivariate statistical modelling and in particular of multivariate regressions techniques belonging to the logistic family.

The study details and complements a previous report by Cedefop on job-related adult learning and continuing VET in Europe (Cedefop, 2015) that analyses data from the two most recent AES waves and the continuing vocational education survey (CVTS). By adopting a more detailed level of analysis and by applying statistical modelling, this study adds further

information to the previous one. It allows a more nuanced picture on differences between socioeconomic groups within a country and in cross-country comparison.

In particular, AES-2011 data are used in this study to check whether sound available evidence at international level from the latest wave can be used to support, update, complement, qualify or better specify (in the specific domain of job-related training), the knowledge available on inequalities in participation in adult learning.

Chapter 2 provides an overview of the concepts, definitions, and data used in the report.

Chapter 3 investigates inequalities in participation based on descriptive statistics and serves as an introduction to Chapter 4 presenting results from the multivariate models.

Chapter 4 investigates inequalities by making use of multivariate regression models, controlling a large set of variables.

Chapter 5 summarises key findings from Chapter 4 on a country-by-country basis. Country results are presented and organised in six groups. The only aim of the grouping is to facilitate reading and comparisons. The grouping is not based on the analysis results. It is instead based on a geographical criterion; however, groups and subgroups also fit sufficiently well with various common typologies which are generally used to cluster countries based on varieties of capitalism, welfare states and skill-formation systems.

The methods used for the analysis are described separately in Chapters 3, 4 and 5.

Data presented in this study are – unless otherwise stated – calculated by the research team based on AES-2011 microdata provided by Eurostat. The responsibility for all calculations and conclusions drawn from the data lies entirely with the authors.

CHAPTER 2.

Concepts, definitions and data

2.1. Concepts and definitions

In this report, job-related non-formal adult education and training is defined coherently with the AES-2011 methodological framework. This is composed by the AES-2011 regulation (European Commission, 2010), the AES-2011 implementation manual (Eurostat, 2013) and its annexes (Eurostat, 2012) as well as the 2006 Eurostat classification of learning activities (Eurostat, 2006), which all take into consideration and comply with the broader context defined in ISCED 97.

A description of the AES methodology in general and of the measurement of job-related non-formal education and training (NFE) as well as an assessment of the data quality achieved across the EU Member States is given in Cedefop's previous report (Cedefop, 2015). Further details can be obtained by accessing the relevant documentation. To help the reader, such a complex methodological framework is synthesised here below.

Adults are defined as individuals aged 25-64.

Education and training is understood as learning which is intentional, institutionalised, taught and planned ([2]).

Non-formal education and training is understood as education and training leading to qualifications which are not directly recognised as such by relevant national education authorities (or equivalent authorities) or not leading to any qualification at all (although recognition and validation of learning outcomes could then be used and indirectly lead to formal qualifications). This concept is therefore distinguished from formal education and training, which: (a) typically takes place in (or, in the case of formal apprenticeships, dually involve) the system of schools, colleges and universities and other formal education institutions; (b) normally, although not necessarily, constitutes a continuous ladder of education for children and young people; (c) is directly relevant for the determination of the highest level of formal education attained. It is also distinguished from random and informal learning which are not intentional and/or not institutionalised. In AES-2011, non-formal education and training is captured by asking adults specific questions on their participation in training (training

([2]) Institutionalised is meant in the sense of being characterised by the presence of a provider and of learning arrangements.

courses, guided on the job training, workshops, seminars, and private lessons). As a consequence, in this context, non-formal education and training and non-formal training are two completely overlapping concepts.

Based on its main intended purpose, job-related non-formal education and training is defined as non-formal education and training undertaken to obtain knowledge and/or learn new skills for a current or future job, increase earnings, improve job and/or career opportunities in a current or another field and generally improve opportunities for advancement and promotion. It is therefore distinguished from education and training which is undertaken for personal, social, recreational, community or domestic purposes. In AES-2011 it is captured by asking respondents questions on the main purpose of their participation.

Participation in non-formal job-related adult education and training refers to participation in the 12 months prior to the interview.

In this report, participation in non-formal job-related education and training is investigated having particular, but not exclusive, regard to the employed adult population. The labour market status based on which adults can be distinguished as employed, unemployed or inactive is defined and operationalised coherently using the AES methodology.

Under this methodological framework, adult job-related non-formal education and training should be seen as labour-market-relevant training for adults. In a lifelong perspective, this can be seen as a labour-market-relevant addition, alternative or complementary to formal initial education and training, whose outcomes, although not directly recognised as formal, may lead to formal qualifications through recognition and validation processes. It is a concept very close to continuing vocational training, understood as relevant for both employed and not-employed adults.

The choice to focus on job-related non-formal education and training for adults is due to various reasons. The labour market relevance of education and training is a pillar of EU policies. In the domain of adult education and training, and under the opportunities of the AES methodological framework, this would have translated into an ideal target referring to adult job-related education and training. The methodological constraints of AES-2011 were nevertheless also considered.

From a technical point of view, in AES-2011, the purpose of adult education and training, i.e. whether it is job-related or not, is asked only with regard to non-formal experiences of adults. As a consequence, the possibility to isolate and investigate adult education and training which is job-related is limited to its non-formal component. On the other hand, this does not cause a major loss of

information, as adult participation in education and training is mostly in the form of non-formal training ([3]). Such a limitation can even improve, given the aim of the study, the relevance and the quality of findings. This is because adult participation in formal education and training is somehow inflated by young adults (e.g. those aged 25-34 years) who are still in initial formal education as older students, a phenomenon which, to a varying extent, is still present across countries. Neglecting the formal component prevents the introduction of an undesirable bias for international comparison and keeps the concept closer to continuing vocational training.

All in all, the choice adopted here allows for the production of specific findings for the job-related component of adult education and training (i.e. the more labour-market-relevant type). It allows for this to be done for the vast majority of participation in adult education and training, which, based on AES, is non-formal training. Only a very small part of interest is not captured, i.e. the continuing formal education which is carried out by adults following entry into the labour market and for job-related purposes.

The choice to focus on non-formal job-related education and training also allows to appropriately cover employer-sponsored adult training (fully or partly paid by adults, employers or taking place during their paid working time), without necessarily restricting the scope of the analysis to it. On the one hand, participation in employer-sponsored adult education and training largely overlaps with participation in non-formal job-related education and training, of which it constitutes the vast majority ([4]). The choice of having a wider scope allows to introduce a distinction between employed and non-employed adults and to have a slightly broader coverage of activities for employed adults (i.e. not only those sponsored by their employers).

As job-related adult education and training is mostly non-formal and it mostly takes the forms of training, the term job-related non-formal adult education and training is, in this report, sometimes replaced with the terms job-related training for adults and/or shortened by referring to job-related NFE for adults. This is for practical reasons.

([3]) Based on AES-2011 methodology and results, the 2011 EU average participation rate in the non-formal component of adult education and training is at 36.8% and primarily consists of training. It is much higher than the corresponding 6.2% for the formal education and training.

([4]) The data show that overlap between job-related and job-related employer-sponsored training is from 94% to 98% across countries, which means that most job-related training is employer-sponsored and therefore no differentiation between these two categories is made here.

2.2. The data and their source

The analysis is based on the data from the second wave of the adult education survey (AES-2011), which fits with the purpose of the analysis very well. Within the European statistical system, this is the only sample survey specifically designed to collect information on adult education and training from the individual perspective. The AES collects detailed information on adults and their education and training with an appropriate level of detail. It covers adult participation in education and training activities during a period of 12 months prior to the interview, it allows to capture and isolate the non-formal and job-related component of it; it includes relevant information for employed and non-employed adults as well as relevant information on education and training which is not only financed be employers but also by individuals, households, public authorities and other sources; it includes guided on-the-job training which is not accounted for in the labour force survey (LFS) and which is, based on CVTS findings, the second most frequent form of training in enterprises; it offers information on the socio-demographic characteristics of employed adults participating in training, which is difficult to collect in enterprise surveys; it considerably reduces the number of proxy respondents.

AES-2011 data are representative of 25 to 64 year-old adults living in private households. The reference year is 2011 ([5]). AES-2011 data analysed in this report cover adults living in 26 European countries: 25 EU Member States plus Norway. Croatia did not participate in the survey (and was not a Member State at that time). Data for Belgium and Ireland have been excluded as the authors assessed them as somehow affected by limited cross-country comparability ([6]). General aggregate findings refer to pooled data from the 26 countries analysed. When specifically stated, a restriction is applied to available data from EU countries considered in this report.

([5]) Eurostat: EU adult education survey. AES-2011 was carried out between July 2011 and June 2012 (depending on the country) with questions relating to learning taking place in the 12 months prior to the interview.
http://ec.europa.eu/eurostat/web/microdata/adult-education-survey

([6]) The assessment is made by the authors considering the following information. In Belgium, AES 2011 was integrated into the LFS. LFS has its own specificities. The option of using it as a vehicle for AES information has pros and cons. However, it has been assessed as a factor able to influence cross-country comparability and likely to imply an under reporting of participation. In Ireland, AES 2011 was carried out to collect information on participation in training, but detailed information on training, including its job-related purpose, was collected only by considering one training activity among those mentioned by respondents. This was also assessed as a factor able to influence results and comparisons (see Section 2.2.1 for more details on the importance of this aspect for capturing the job-related component).

2.2.1. The variable defining adults participation

The phenomenon under investigation in this report is adult participation in job-related non-formal education and training in the 12 months prior to the interview. The statistical modelling requires a variable distinguishing those who participated from those who did not.

This variable has been derived combining available information on adult participation in non-formal education and training and information on the purpose of it (i.e. job-related or not).

In AES-2011, respondents are asked questions to obtain information on whether they participated in non-formal education and training activities in the previous 12 months and, if so, how many activities of this kind they participated in. For each respondent, an ad hoc list of up to 10 non-formal learning activities is created and a selection of up to 3 of them is performed. Respondents are invited to provide more detailed information on these selected NFE activities, including their purpose (mainly job-related; mainly non-job-related). Activities for detailed reporting are randomly selected from the ad hoc list ([7]). All activities which are coded as guided on the job training are considered as job-related activities. A detailed description of the operational criteria used for identifying adults participating in job-related NFE, is given in Cedefop's previous report (Cedefop, 2015). An adult is considered as participating in job-related, non-formal education and training, when at least one of the NFE activities selected for in-depth investigation is a guided on-the-job training or it has a job-related purpose (NFEPURP) ([8]). The results available were transformed into a binary variable: 1 – at least some participation within the last 12 months; 0 – no participation within the last 12 months. This type of operationalisation is the same as that used by Eurostat for the data published in its dissemination database ([9]), generating coherent and almost identical results (with the exception of Hungary by 0.9 percentage points) ([10]).

([7]) In a number of countries (Belgium, Bulgaria, Estonia, Malta, the Netherlands, Poland, Slovenia, Slovakia), activities are not randomly selected, yet the effects of this abbreviation on the measurement of participation in job-related learning should not be very substantial. For a detailed analysis, see the corresponding Annex in Cedefop 2015.

([8]) In countries or instances with less than three NFE activities, information on available activities is used.

([9]) Eurostat dissemination database: http://ec.europa.eu/eurostat/web/education-and-training/data/database

([10]) The presence of missing cases in the variable was checked and the data revealed 857 missing cases on dependent variable (0.5% of the total sample). No remarkable differences were found in two different scenarios: one where calculations are carried

2.2.2. Variables defining individual adults' characteristics

In this study, participation patterns are investigated considering their variability according to individual characteristics. Individual characteristics are identified based on individual level variables/indicators and their categories. The set of individual level indicators includes variables describing the socio-demographic background of adults, their status on the labour market as well their job and workplace characteristics. First, the list of variables considered is provided, and then the rationale is explained:

(a) gender: this is coded into a dummy variable (females 1; males 0);

(b) age: this variable is recoded into a categorical variable with three categories: 25 to 34 year-olds; 35 to 54 year-olds; 55 to 64 year-olds ([11]);

(c) country of birth: this is used as a proxy measure of migrant status (or migrant background) and recoded into a dummy variable with two categories only: born in the country where the AES interview is conducted (0); not born in this country (1) ([12]);

(d) having young children in the household: in the AES microdata set, two distinct variables are used to differentiate adults with (a) young child(ren) in their household: presence of children aged 0-4; presence of children aged 5-13 ([13]). Both of them are used in the descriptive analysis. Only one variable is used in the statistical modelling: having children aged between 0 and 4 years old ([14]);

(e) highest level of formal education completed: this variable is based on the ISCED 97 classification. The analysis takes three broad categories into consideration: (1) pre-primary, primary and lower secondary education ISCED 0 to 2; (2) upper secondary and post-secondary non-tertiary education ISCED 3 and 4; (3) first and second stage of tertiary education ISCED 5 to 6.

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out with a list-wise deletion of missing observations on the dependent variable; the other where all missing cases are coded as 0.

([11]) Eurostat dissemination database for AES also offers the following breakdown for middle-aged groups: 35-44 and 45-54 year-olds.

([12]) A more refined level of detail is available but it is not used to ensure reliability of results based on sample sizes.

([13]) Respondents reporting that they have 0-4 year-old children could at the same time have 5-13 year-old children and vice versa.

([14]) The choice is done considering the need to have a clear reference category and considering that, preliminary investigations revealed lower participation for adults who have 0-4 year-old children in their household.

The main current labour market status is coded as follows: (a) employed (full-time and part-time); (b) unemployed; (c) inactive (all other categories, i.e. pupil, student, retired, disabled, fulfilling domestic tasks). The variable corresponds to the self-reported main current labour market status at the time of the interview. It does not necessarily correspond to the operationalisation adopted in labour force surveys. The reference time (the time of the interview) does not correspond to the reference time for the variables on participation (past 12 months).

For employed adults, the type of job they perform (occupation), the economic sector of activity and the size of their establishment are taken into account.

(a) occupation: this variable is based on the ISCO 08 classification (2-digit level) which is recoded into five categories:
   (i) legislators, senior officials, managers and professionals (ISCO 1 and 2);
   (ii) technicians and associate professionals (ISCO 3);
   (iii) clerical support workers, service and sales workers (ISCO 4 and 5); skilled manual workers (ISCO 6 to 8);
   (iv) elementary occupations (ISCO 9).

Eurostat uses a similar breakdown in the AES dissemination database, but it combines ISCO 1 and 2 with 3;

(b) economic sector of activity: this variable refers to the economic sector of activity in which the local unit where the respondent works mainly operates. It is based on the NACE Rev. 2 classification. The AES microdata set provide for a total of 21 categories. These categories are recoded based on a slightly modified version of the Singelmann scheme (Singelmann, 1978, pp. 1 227-1 234). The following categories are therefore derived:
   (i) extractive sector (agriculture, forestry and fishing; mining and quarrying);
   (ii) transformative sector (manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities; construction);
   (iii) distributive services (wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; information and communication);
   (iv) producer services (financial and insurance activities; real estate; professional, scientific and technical activities; administrative and support service activities);

(v) social – non health – services ([15]) (education; public administration and defence; compulsory social security; activities of extraterritorial organisations and bodies);
(vi) human health and social work activities;
(vii) personal services (accommodation and food service activities; arts, entertainment and recreation; other services; activities of households as employers; undifferentiated goods- and services-producing activities of households for own use). In the regression analysis, the social non health services sector is the reference category (for simplification purposes, it is also referred to as the social sector);

(c) establishment size: this is based on the number of persons working at the local unit where the interviewee works. There are enterprises with only one local unit, in which case there is correspondence between enterprises and local unit size. There are also enterprises with more than one local unit, in which case there is no such correspondence. Five main categories are taken into consideration in the AES microdata set:
(i) 1 to 10 persons;
(ii) 11 to 19 persons;
(iii) 20 to 49 persons;
(iv) 50 to 249 persons;
(v) 250 or more persons.

In addition, the AES-2001 microdata set provided for a specific category to distinguish partial non-responses (i.e. 'no answer, but have 10 or more persons at the local unit') ([16]). To simplify and account for some data quality issues, five categories for the establishment size are taken into consideration in the analysis:
(i) 1 to 10 persons;
(ii) 11 to 19 persons;
(iii) 20 to 49 persons;

([15]) In the Singelmann scheme, the social-services category also includes human-health and social-work activities. However, because of its policy relevance, human-health and social-work activities are analysed separately (Singelmann, 1978).

([16]) Some quality issues were found on this variable. In some countries a considerable amount of respondents are classified into the 7th category (for example 47.4% in the Netherlands, 18.2% in Bulgaria). The data set from Malta provided for a Code 6, which is not specified in the AES 2011 questionnaire or manual. Malta's national questionnaire has categories 50 to 99 and 100 or more persons; thus, Category 6 is likely to include working in establishments with 50 or more persons (no respondents in Categories 4 and 5). In the data set for Norway, no respondents were coded in Category 4 and 5. In the data set for the Netherlands no respondents were coded in Category 5.

(iv) 50 or more persons;
(v) no answer, but have 10 or more persons at the local unit.

The professional status (self-employed versus employee) and the distinction between part-time and full-time workers were also taken into consideration.

The absence of other variables in the AES further describing the workplace, such as propensity to innovate, international projection, presence/importance of social dialogue, human resource development practices is felt as a limitation to the analysis, which on the other hand is understandable considering the nature of the AES as a survey asking questions to individuals.

The selection of the individual level variables has been operated on the basis of policy interest, relevant research literature and qualified experts assessment. On this basis, a set of main hypotheses regarding inequalities in participation has been drawn which could be summarised as follows, listed hereafter as hypotheses 1 to 9 (H1 to H9):

(a) H1: ambiguous but mainly moderate inequalities by gender in participation in adult learning;
(b) H2: strong age inequalities in participation in adult learning;
(c) H3: mixed effect of migrant status in participation in adult learning;
(d) H4: having young children can reduce participation in adult learning, with a possible stronger effect on women as main caregivers;
(e) H5: strong effects of educational background on participation in adult learning whit lower participation for those who have low-level qualifications;
(f) H6: strong inequalities by occupation, with workers in higher occupational positions participating more often;
(g) H7: participation can be higher in more innovation-driven economic sectors (information and communication; professional, scientific and technological activities) and in the public sector where the proportion of high-skilled workers is larger. In some countries, parts of the public sector (education, health and public administration) could be obliged to train by national legislation;
(h) H8: strong inequalities by establishment size, with higher participation for workers in big firms;
(i) H9: effect of part-time work: with job-related training being mostly employer sponsored, it can be argued that part-time workers may participate less as they may be offered less training opportunities than those in full-time employment. It can also be argued that working fewer hours, as part-time workers, free some more time for training.

Box 1. **Selected references to literature and policy documents**

On the role of gender: some authors (Desjardins et al., 2006), have found a small, training participation gap by gender. Others have found significant differences. Differences are found in favour of women in the United Kingdom (Jones, Latreille and Sloane, 2008), but also in favour of men (Dieckhoff and Steiber, 2011), particularly; in the case of Belgium-Flanders (Boeren, 2011) and Sweden (Evertsson, 2004). Thus, results on the training gap by gender are mixed. Some studies emphasise the need to study gender and education interaction (Wozny and Schneider, 2014) or employment status and employer support (Desjardins et al., 2006).

On the role of migrant background: mixed findings are available on the differences in adult learning participation for minority groups, immigrant or language minorities, for instance as reported by Desjardins (Desjardins et al., 2006).

On the role of formal education and occupations: inequalities in adult learning based on levels of qualifications held and occupational groups are well documented. (Booth, 1991; Oosterbeek, 1998; Brunello and Medio, 2001; Desjardins et al., 2006; Wolbers, 2005; Bassanini and Brunello, 2007; Dieckhoff, Jungblut and O'Connell, 2007; Roosmaa and Saar, 2010; O'Connell and Byrne, 2012). On the other hand this calls for continuing attention to them, as well as for controlling them when studying other inequalities.

On the role of establishment size: the theme of training opportunities in small and medium-sized enterprises is present but does not often assume a key priority in the research and policy discourse. This is despite the fact that the European Commission already acknowledged, in 2005, the importance of giving employees in small and medium-sized enterprises more chances when it comes to access to continuing vocational training (European Parliament and Council of the EU (2005). Previous studies show that the participation of workers is strongly associated with the size of the firm where they work (Desjardins et al., 2006).

On the role of age: older adults are one of the main target groups for adult learning policies at EU level (Bruges communiqué). Their participation rates are low and often quoted stressing the need to raise them. This is an important and grounded pillar of adult learning policies in an ageing society. However, when it comes to continuing vocational training, the low level of participation for older adults should be studied taking into account whether they are still active in the labour market. According to Fouarge and Schils (Fouarge and Schils, 2009) adults approaching retirement age have fewer opportunities to train, employers are less motivated to invest in workers who have a short time to benefit from training or workers are less interested in training themselves.

CHAPTER 3.

Descriptive statistics

3.1. Methods for descriptive statistics

Participation rates in non-formal job-related education and training are calculated and expressed as percentages of adults. Calculations are performed by making use of appropriate weighting of sample data. Participation rates are calculated for all adults and then for specific groups (or categories). Inequalities are investigated contrasting participation rates across compared groups. Participation rates for two groups are contrasted by using differences and/or participation rates' ratios. Differences are obtained as absolute differences in participation rates. However, as participation rates are percentages, their absolute differences are also expressed in percentage points. They can be positive, negative or equal to zero. Ratios are obtained dividing two participation rates by each other. For example, the participation rate for men can be divided by the participation rate for women. The ratio with a value of 1 indicates no difference between compared groups (men and women) and a ratio above or below 1 indicates how many times one group participates in training more often than the other. It should be noted that a high ratio may correspond to a small difference in terms of percentages. For instance, the ratio between 6% and 3% is 2, while between 60% and 30% it is also 2.

3.2. Participation

Job-related, non-formal education and training forms the largest part of non-formal education and training and is largely sponsored by employers (Cedefop, 2015). This section presents a descriptive analysis on participation in job-related education and training according to: age, gender, country of birth, having young children, educational attainment, labour market status, occupation, economic sector and establishment size.

According to AES-2011, in 2011 in the EU, 30.9% of adults participate in job-related NFE. Overall participation in NFE is 36.8%, thus NFE is mostly job-related and more specifically employer-sponsored (27.5%) ([17]).

([17]) In the descriptive section, data on participation rates for the total population are based on the Eurostat dissemination database. Data for breakdowns according to gender, age, educational attainment, labour market status and occupation are

Countries with the highest participation rates are Sweden, Luxembourg, Norway, the Netherlands, Denmark, Finland, Germany, France and Estonia where the job-related NFE participation rate varies from about 60% in Sweden to 40% in Estonia (Figure 1) ([18]). These countries are followed by those where about 30-35% of the adult population is participating in job-related NFE: Austria, Slovakia, Malta, Hungary, Portugal, Cyprus, the Czech Republic and Spain. Job-related NFE participation is 25% or less in Italy, Slovenia, Latvia, Bulgaria, Lithuania, the UK and Poland. Greece and Romania have the lowest percentages, 6.9% and 5.6%.

3.3. Inequalities in participation by socio-demographic characteristics

In this section, job-related education and training participation is analysed by gender, age, country of birth and having young children in the household.

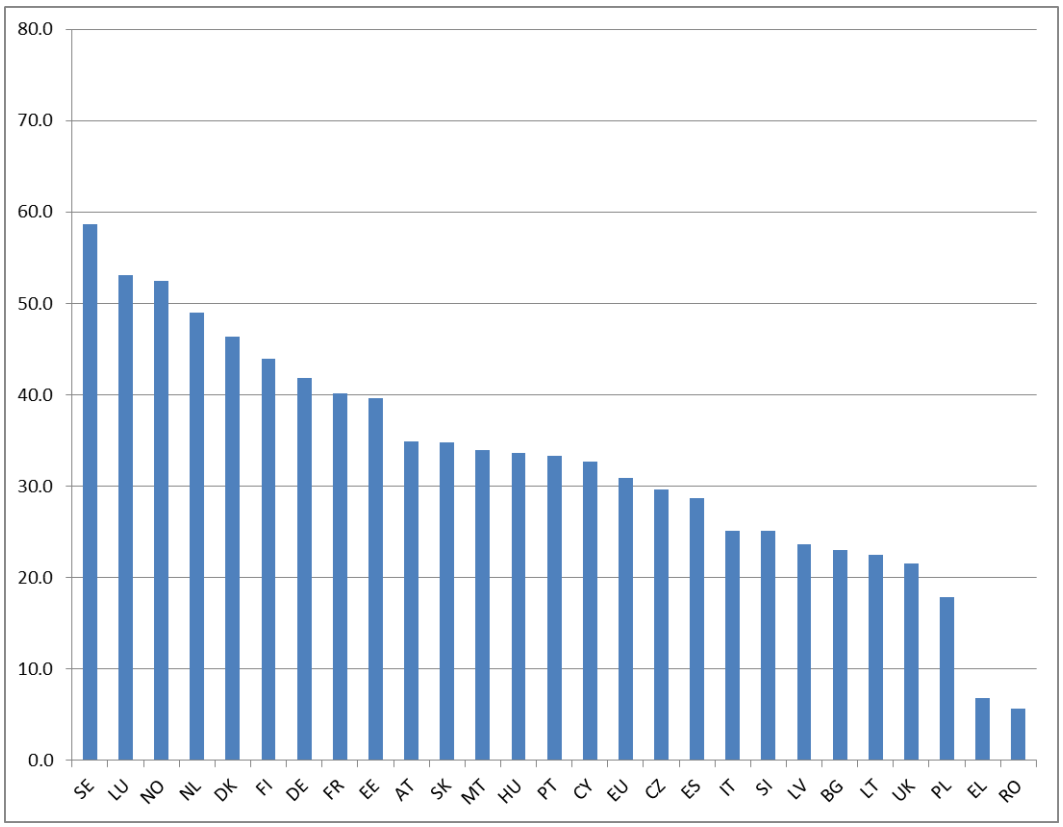
AES-2011 results indicate moderate gender differences in job-related NFE participation (in 14 countries out of 26). The average for analysed countries is 33% for men and 29% for women. Compared to women, men participate in job-related NFE more often participate in Luxembourg, the Netherlands, Germany and Italy (with a difference of about 8-10 percentage points) However, women participate in training considerably more than men in Finland, Latvia, Lithuania and Estonia (6-9 percentage point difference).

Looking at differences based on age, data show that participation rates in job-related training for the groups of 25-34 year-olds and 35-54 year-olds are on par: the average across countries is at 34% for both groups (Figure 2). For 55-64 year-olds, the respective participation rate is about two times lower at 18%. There is however remarkable cross-country variability.

calculated based on the AES 2011 microdata. Therefore in the latter cases, the EU averages represent the averages for the 25 EU countries included in the AES 2011 data set and selected for the analysis.

([18]) Among countries with high participation rates, Scandinavian countries are well represented and for them a strong record of public policy aimed to promote adult learning by establishing favourable institutional conditions has been noted in the literature (see Rubenson, 2006).

Figure 1. **Participation rates of adults (25-64 year-olds) in job-related non-formal education and training by country, 2011, %**



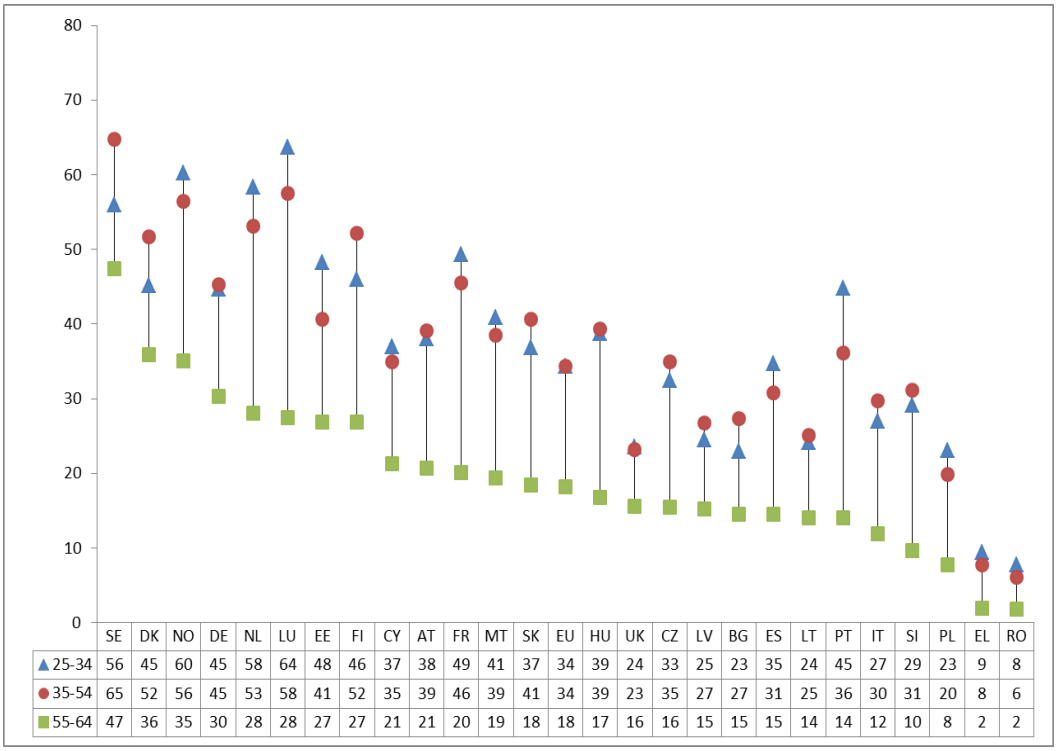
Source: Eurostat, AES-2011 microdata, own calculation.

Measured in terms of ratio between participation rates, inequality between 35-54 and 55-64 year-olds is highest in Greece, Romania and Slovenia, where participation of the older age group is about three to four times lower than that of 35-54 year-olds. The difference between these age groups is about 2 to 2.5 times in favour of the middle-age group in Poland, Portugal, Italy, the Czech Republic, Hungary, France, Slovakia, Spain, Luxembourg and Malta. The remaining 13 countries have a lower age inequality (Sweden, Denmark, Norway, Germany, the Netherlands, Estonia, Finland, Cyprus, Austria, United Kingdom, Bulgaria, Latvia, Lithuania). Similar results regarding a training gap by age were reported by Desjardins et al. (2006).

Information on the country of birth of adults is collected in AES-2011 and used here as proxy for their possible migrant background (or their belonging to an ethnic, minority-language group). Based on AES-2011 data for the countries analysed, on average, 32% of native-born adults participated in job-related NFE. The corresponding rate for those not born in the country was considerably lower at 26%. Thus, in general, inequality between the two groups does exist but it is not striking. Measured in term of ratios, inequalities in training participation rates

are higher in Greece, Cyprus, Germany, France, Estonia, Latvia, Slovenia Bulgaria, the Netherlands and Sweden (participation rates are 1.5 to 2 times higher for native born). In 15 out of 25 countries, inequalities reflecting migrant status are lower, but in Portugal, Malta, Hungary, and Romania ([19]) foreign-born workers are somewhat more likely to participate in job-related NFE. Data for the United Kingdom were not available.

Figure 2. **Participation rates of adults in job-related, non-formal education and training by age groups, 2011, %**



	SE	DK	NO	DE	NL	LU	EE	FI	CY	AT	FR	MT	SK	EU	HU	UK	CZ	LV	BG	ES	LT	PT	IT	SI	PL	EL	RO
▲25-34	56	45	60	45	58	64	48	46	37	38	49	41	37	34	39	24	33	25	23	35	24	45	27	29	23	9	8
●35-54	65	52	56	45	53	58	41	52	35	39	46	39	41	34	39	23	35	27	27	31	25	36	30	31	20	8	6
■55-64	47	36	35	30	28	28	27	27	21	21	20	19	18	18	17	16	16	15	15	15	14	14	12	10	8	2	2

Source: Eurostat, AES-2011 microdata, own calculation.

Having young children in the household could affect training participation depending on the availability of public childcare facilities and other family policies in the country. Studies show that women report that family or household-related barriers limit participation in adult education and training (Desjardins et al., 2006) considerably more often than men. Also, family obligations are interrelated with age as family creation mostly falls into early and middle adulthood, when adults are also very active in the labour market. Descriptive statistics indicate that, on average, participation rates for those who have children (of up to four years old)

([19]) Comparable rates in the case of Romania are very low: 7.2% for native-born and 5.6% for foreign-born.

in the household (35%) are higher than for those who do not (31%) (Table A3 in the Annex). It must be noted that there is country variability. For instance, much smaller differences are found in Germany and Sweden, while in Bulgaria, the Czech Republic and Slovakia, participation rates are higher for those who do not have young children. Descriptive statistics restricted to the employed population also suggest that in 14 countries (Austria, Slovakia, Lithuania, the Czech Republic, Sweden, Germany, Greece, Finland, Norway, Malta, Denmark, Poland, the Netherlands, Latvia), employed women living in households with small children participate less than women without small children living with them.

3.4. Inequalities in participation by educational attainment

In 2011, for the countries analysed, participation rates in job-related training averaged between 15% for adults with low education levels ([20]), 29% for those with medium education levels ([21]) and 49% for those with high education levels ([22]).

Participation rates for low-qualified individuals are highest in Luxembourg, Sweden and Denmark ranging from 30% to 40% (Figure 3). In eight countries, the participation rate of low-educated individuals is around 20% to 24% (Germany, France, Hungary, Malta, the Netherlands, Portugal, Finland and Norway). By using participation rate ratios, inequality results are high in seven countries (the Czech Republic, Greece, Latvia, Poland, Romania, Slovenia, Slovakia), where low-qualified individuals participate by about three to five times less in job-related NFE compared to those with medium-level qualifications. In 13 out of 26 countries, the participation rate for those with low educational attainment is about 2 to 2.5 times lower than that of medium educational attainment (Bulgaria, Estonia, France, Italy, Cyprus, Lithuania, Malta, the Netherlands, Austria, Portugal, Sweden, Norway, United Kingdom). Using the same metric, inequality between those educated to medium and high levels is highest in Lithuania, Romania, Greece and Poland (those with medium education levels participate by about three to four times less), but it is also remarkable in Latvia, Slovenia, Cyprus, the Czech Republic and Estonia (respective ratio is about 2 to 2.5). In the remaining 14 countries, adults with medium-level

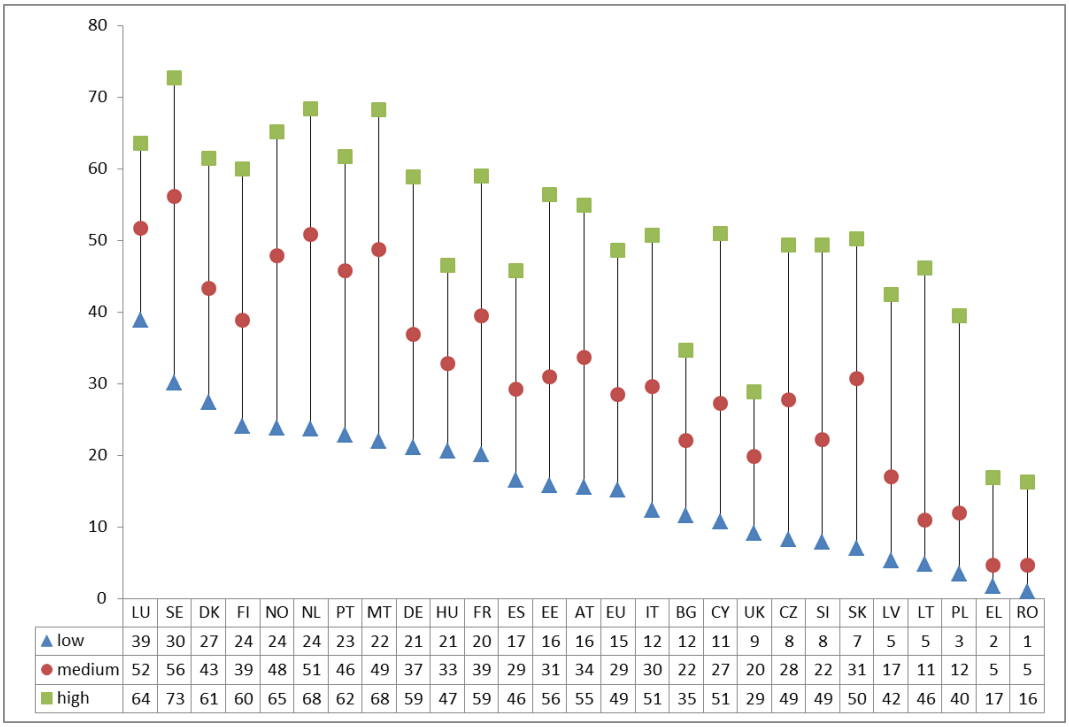
([20]) ISCED 97 0-2: pre-primary, primary and lower secondary education.

([21]) ISCED 97 3-4: upper secondary and post-secondary non-tertiary education.

([22]) ISCED 97 5-6: first and second stage of tertiary education.

qualifications participate in job-related NFE by 1.4 to 1.8 times less compared to those with high-level qualifications.

Figure 3. **Participation rates of adults in job-related, non-formal education and training by highest level of educational attainment, 2011, %**



	LU	SE	DK	FI	NO	NL	PT	MT	DE	HU	FR	ES	EE	AT	EU	IT	BG	CY	UK	CZ	SI	SK	LV	LT	PL	EL	RO
▲ low	39	30	27	24	24	24	23	22	21	21	20	17	16	16	15	12	12	11	9	8	8	7	5	5	3	2	1
● medium	52	56	43	39	48	51	46	49	37	33	39	29	31	34	29	30	22	27	20	28	22	31	17	11	12	5	5
■ high	64	73	61	60	65	68	62	68	59	47	59	46	56	55	49	51	35	51	29	49	49	50	42	46	40	17	16

Source: Eurostat, AES-2011 microdata, own calculation.

3.5. Inequalities in participation by labour market status

In this section, participation in job-related non-formal education and training is analysed according to labour market status, occupation, economic sector and firm size.

It is important to bear in mind that AES records participation during the 12 months preceding the time when the interview takes place. The information on the main current labour market status (and, for employed adults, the information on their job and workplace) refers instead to the time when the interview takes place.

Employed adults participate markedly more in job-related NFE compared to unemployed adults and especially compared to inactive adults. For 2011 and for the countries analysed, adult participation rates in job-related NFE averaged 41% for employed individuals, 16% for unemployed individuals and 6% for inactive ones. The highest participation rates for unemployed adults – about 30% to 35%

– are observable in Norway, Austria, Luxembourg, Malta and Denmark. Participation rates for unemployed individuals stand at 5% or lower levels in Slovakia, Greece, Lithuania, Poland, Romania and Bulgaria (Table A5 in the annex). Based on the metrics of ratios, inequality in participation among employed and unemployed adults is relatively low in these countries (ratios ranging from 1.5 in Austria and Malta to 2.2 in Luxembourg). Inequalities between employed and unemployed adults are also moderate in the Netherlands, Sweden, France, Germany and the Czech Republic (ratios around 2 to 2.5). On the other hand, inequalities measured by ratios are higher (about three to five times in favour of employed adults) in Hungary, Latvia, Cyprus, Portugal, Italy, Finland, Slovenia and the UK. Inequality in participation rates of employed and unemployed adults, once again based on their ratios, is highest in Slovakia, Lithuania, Poland and Estonia, where the latter participate roughly six to nine times less. In Bulgaria, this difference is even higher since only 1.8% of unemployed adults compared to 36% of employed adults participate in job-related adult learning. In most countries, job-related NFE participation rates for inactive adults are less than 10%, but in the following countries, participation is higher, ranging from approximately 11% to 15%: the Netherlands, Sweden, Denmark, Finland, Germany, Malta and Norway.

3.6. Inequalities in participation by job and workplace characteristics

There are considerable differences in participation in job-related NFE among adults in different occupational groups. In 2011, on average more than half of the managers, professionals ([23]) (56%) and technicians or associate professionals ([24]) (54%) in the EU participated in job-related NFE. The respective rates for clerks, service and sales workers ([25]) are 36%, 28% for skilled manual workers ([26]) and 21% for workers in elementary occupations ([27]) 21%.

([23]) According to ISCO 08 classification categories 1-2: legislators, senior officials, managers and professionals.

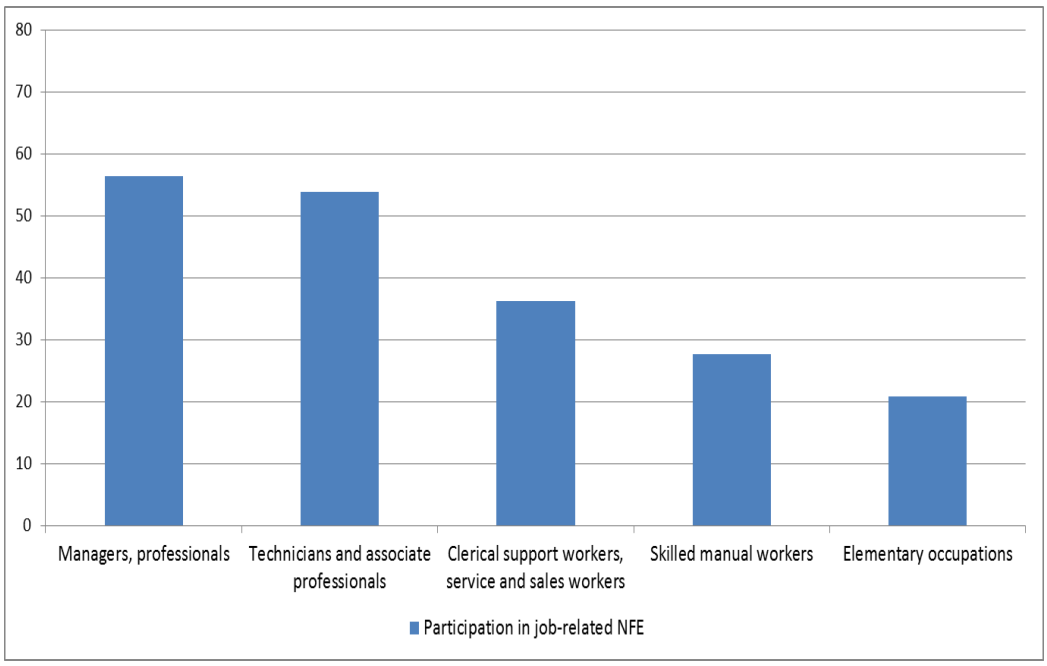
([24]) According to ISCO 08 classification category 3: technicians and associate professionals.

([25]) According to ISCO 08 classification categories 4-5: clerical support workers, service and sales workers.

([26]) According to ISCO 08 classification categories 6-8: skilled manual workers.

([27]) According to ISCO 08 classification category 9: elementary occupations.

Figure 4. **Participation rates of employed adults in job-related, non-formal education and training by occupational group, EU average, 2011, %**



Source: Eurostat AES-2011 microdata, own calculation.

At aggregate level, participation rates of managers and professionals are very similar to those of technicians and associate professionals. Based on descriptive ratios, moderate inequalities are evident in seven out of 26 countries where the participation rates of technicians and associate professionals are lower than those of managers and professionals (1.3 to 1.5 times lower): Spain, Slovenia, Latvia, Lithuania, Poland, Greece and Romania (Table A6 in the Annex).

Inequalities increase when the group of managers and professionals is compared to the group of clerks, service and sales workers. Based on ratios of participation rates, in Latvia, Poland, Greece, Romania and Lithuania the latter group is, compared to the former, particularly less likely to participate in job-related NFE (2.2 times to 3.6 times less likely). In three countries, the difference between two occupational groups is only about 1.2 times in favour of managers and professionals: Hungary, Bulgaria and the United Kingdom.

Inequalities in participation in job-related training rates are considerably higher between managers, professionals and skilled manual workers (ISCO 6-8). Thus, in 11 out of the 26 countries, managers and professionals have participation rates that are more than double those of skilled manual workers (ratios ranging between 2.1 in Estonia and 7.4 in Greece).

In Greece, Lithuania and Romania, the job-related NFE participation rate for adults employed in elementary occupations is below 10%. Compared to clerks,

service and sales workers, those working in elementary occupations are about three to four times less likely to participate in job-related training in Slovenia, Austria, the Czech Republic and Cyprus. In another 10 countries, the difference between two occupational groups is 2 to 2.6 in favour of clerks, service and sales workers (Luxembourg, Portugal, the Netherlands, Germany, Estonia, Malta, Latvia, Poland, Lithuania, Romania). However, in 12 countries, inequalities between ISCO 4-5 and ISCO 9 are lower (Bulgaria, Hungary, Denmark, France, the United Kingdom, Slovakia, Finland, Sweden, Italy, Spain, Greece and Norway).

Overall, differences in job-related training intensity are quite large among economic sectors (Figure 5). In 2011, on average across the countries analysed, participation in job-related training is high for workers employed in the social services sector ([28]) (57%); this is particularly so in the health and social work sector (58%). The average participation of employed adults is lower in other sectors: it is estimated at 48% in the producer services sector ([29]), at about 36-37% in both the transformative ([30]) and distributive services ([31]) sectors, at around 30% among those working in personal services ([32]), at 19% (lowest) in the extractive sector ([33]). Sectoral results at country level are presented in the Annex (Table A7) along with comments highlighting key findings.

([28]) Social services include the following economic activities: education, public administration and defence, compulsory social security, activities of extraterritorial organisations and bodies.

([29]) Producer services include following economic activities: financial and insurance activities, real estate, professional, scientific and technical activities, administrative and support service activities.

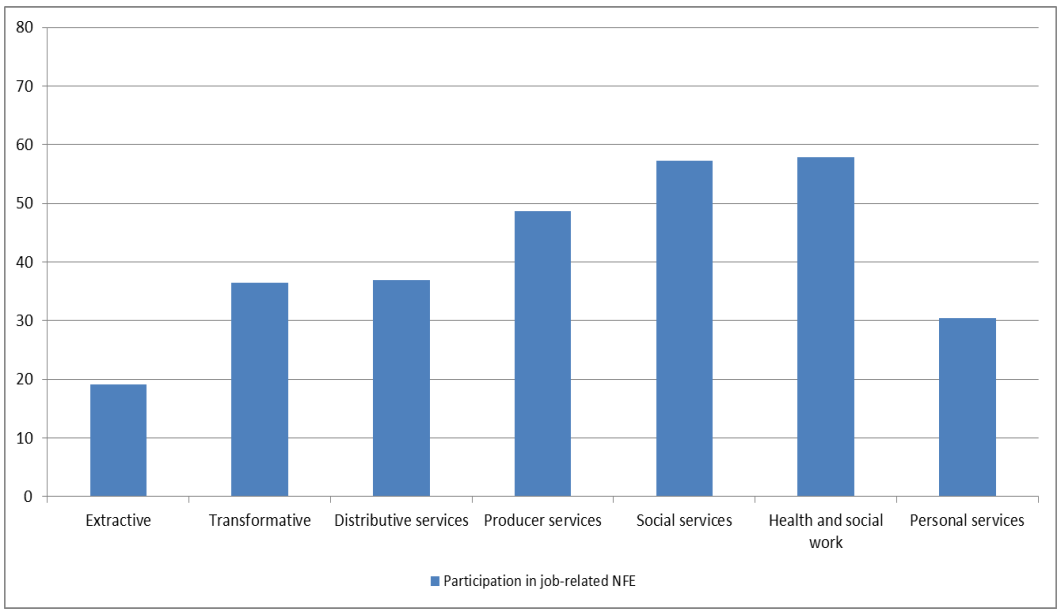
([30]) The transformative sector includes: manufacturing; electricity, gas, steam and air conditioning supply, water supply, sewerage, waste management and remediation activities, construction.

([31]) Distributive services include: wholesale and retail trade, repair of motor vehicles and motorcycles, transportation and storage, information and communication.

([32]) Personal services include: accommodation and food service activities, arts, entertainment and recreation, other services, activities of households as employers, undifferentiated goods- and services-producing activities of households for own use.

([33]) The extractive sector includes: agriculture, forestry and fishing, mining and quarrying activities.

Figure 5. **Participation rates of employed adults in job-related non-formal education and training by economic sector of activity, EU, 2011, %**

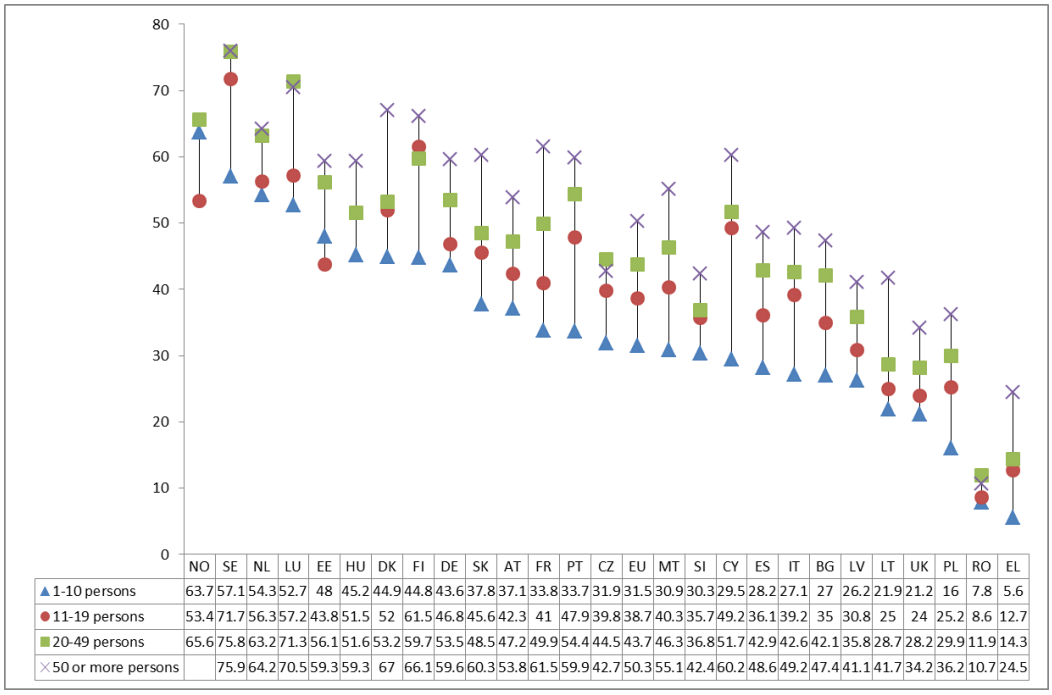


Source: Eurostat AES-2011 microdata, own calculation.

Descriptive findings also identify large inequalities in participation rates of employed adults in job-related training based on the size of the establishment where they work ([34]). Average participation rates are estimated at the lowest level (31%) for employed adults working in micro establishments (employing 1 to 10 persons). Participation rates increase according to the establishment size, being at 39%, 44% and 50% among adults working in establishments employing 11 to 19 persons, 20 to 49 and 50 and more persons respectively (Figure 6).

([34]) See Section 2.2 on data and methodology regarding issues on measuring firm size.

Figure 6. **Participation rates of employed adults in job-related, non-formal education and training by establishment size class, 2011, %**



	NO	SE	NL	LU	EE	HU	DK	FI	DE	SK	AT	FR	PT	CZ	EU	MT	SI	CY	ES	IT	BG	LV	LT	UK	PL	RO	EL
▲1-10 persons	63.7	57.1	54.3	52.7	48	45.2	44.9	44.8	43.6	37.8	37.1	33.8	33.7	31.9	31.5	30.9	30.3	29.5	28.2	27.1	27	26.2	21.9	21.2	16	7.8	5.6
●11-19 persons	53.4	71.7	56.3	57.2	43.8	51.5	52	61.5	46.8	45.6	42.3	41	47.9	39.8	38.7	40.3	35.7	49.2	36.1	39.2	35	30.8	25	24	25.2	8.6	12.7
■20-49 persons	65.6	75.8	63.2	71.3	56.1	51.6	53.2	59.7	53.5	48.5	47.2	49.9	54.4	44.5	43.7	46.3	36.8	51.7	42.9	42.6	42.1	35.8	28.7	28.2	29.9	11.9	14.3
×50 or more persons		75.9	64.2	70.5	59.3	59.3	67	66.1	59.6	60.3	53.8	61.5	59.9	42.7	50.3	55.1	42.4	60.2	48.6	49.2	47.4	41.1	41.7	34.2	36.2	10.7	24.5

Source: Eurostat, AES-2011 microdata, own calculation.

Participation rates in job-related NFE of workers in micro establishments are high (and above 50%) in Norway, Sweden, the Netherlands and Luxembourg and low (below 10%) in Romania and Greece.

Inequalities in job-related training participation are large when workers of micro-establishments are compared to those working in medium-sized and large establishments (50 and more persons). Participation in training is about two times higher in medium-sized and large firms in Spain, France, Portugal, Malta, Italy, Bulgaria, Lithuania, Cyprus and Poland (ratios range from 1.7 in France to 2.3 in Poland). Again, differences in training participation rates between micro and medium-sized to large firms are highest in Greece (ratio 4.4) but respective percentages are relatively low. In 15 out of 26 countries, the ratio of participation rates of workers in micro and medium-sized to large firms ranges from 1.2 to 1.6 (Czech Republic, Denmark, Germany, Estonia, Latvia, Luxembourg, Hungary, the Netherlands, Austria, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom).

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CHAPTER 4.

Multivariate regressions models

4.1. Methods: for multivariate analyses and their interpretation

In this chapter, inequalities in participation in job-related NFE are analysed by making use of multivariate statistical models (i.e. multivariate binary logistic regressions), whereby participation in non-formal job-related education and training is regressed against a set of key variables.

In statistical terms participation in job-related training would be typically referred to as the outcome, dependant or Y variable. The other variables would be typically referred to as factors, regressors, or in alternative independent, explanatory, predictive or control variables. For practical reasons, this terminology is also used here, although the models do not intend to provide evidence for prediction, causation or explanation.

The main aim of the models is to support an in-depth statistical investigation of the variability of participation based on a joint set of key factors at individual level. In particular, the models allow for the investigation of inequalities based on one factor while simultaneously controlling others ones (i.e. keeping them constant). Although the presentation of results is done by dealing with one factor at a time, results for that factor always control the set of the remaining ones. This is as a complementary and more nuanced way to study inequalities as compared to descriptive statistics.

For the analysis, two types of logistic regression models have been estimated: model A and model B.

Model A has been developed mainly to investigate inequalities in participation in job-related training of adults, based on their employment status (employed, unemployed or inactive), while controlling other factors. Model B has been developed targeting employed adults only and investigating any inequalities in terms of their participation in job-related training based on a joint set of key variables of interest.

Both model A and B have been estimated for a pooled analysis of all country cases at European level. In addition, both model A and B have been

estimated at country level ([35]). An analysis of the pooled data set, with observation from all countries, has been implemented taking into account multi-level specifications (Hox, 2010), accounting for possible correlation between observations from the same country. Results are calculated and presented both for the individual countries and for the pooled data set.

The analysis has been carried out considering the possible impact of individual respondents sample weights on the final results. The weights are provided by Eurostat (RESPWEIGHT). Two variants for each model have been investigated: a weighted variant and an unweighted variant. Therefore in the report, reference is made to: model A(uw) (results from model A, not using weights); model A(w) (results from model A using weights); model B(uw) (results from model B, not using weights); model B(w) (results from model B, using weights).

Results of single country models on both unweighted and weighted data are provided in full in Table A11 in the Annex. In this chapter, results for single country analysis are presented based on the weighted variant because this ensures comparability with the descriptive analysis and the Eurostat dissemination database. When using unweighted or weighted data, the results only differ to a minor extent. For models A and B in the joint country analysis (pooled data set with observations from all countries taken into consideration), calculations are made and presented based on the non-weighted data set only. Overall aggregate findings are influenced by the situation in big countries to a lesser extent, and they should be interpreted as an average of results across countries where all countries are attributed a relatively similar weight on the calculations.

Results include background information on the models: number of cases (N), simple logistic regression models (pseudo R-squared), Log-Likelihood and Inter-Class Correlation (ICC) for multi-level, logistic regression models.

([35]) In other words, the models are not estimated on a unique basis with countries accounted for by means of dummy variables. Models are instead estimated separately for each country.

Box 2. **Overview on the models for multivariate analysis**

Model A:

- technique: multivariate binary logistic regression;
- units of analysis: all adults (25-64). Y variable: participation in job-related non-formal education and training;
- regressors: gender (male, female), age (25-34; 35-54; 55-64), highest educational attainment (ISCED 0-2, ISCED 3-4; ISCED 5-6, migrant background (born versus not born in the country of the survey), children up to four years of age in the household (no versus at least one child aged up to four); employment status (MAINSTAT) (employed, unemployed, inactive);
- implementation: separate country data sets and pooled data set (the latter benefiting from multilevel specifications at the country level);
- variants: A(uw) (unweighted variant) and A(w) (weighted variant, using individual level weights).

Model B:

- technique: multivariate binary logistic regression;
- unit of analysis: employed adults (25-64 employed according to MAINSTAT);
- Y variable: participation in job-related non-formal education and training;
- regressors: gender (male, female) age (25-34; 35-54; 55-64), highest educational attainment (ISCED 0-2, ISCED 3-4; ISCED 5-6), migrant background (born versus not born in the country of the survey), children up to four years of age in the household (no versus at least one child aged up to four); occupational group (ISCO 1-2; 3, 4-5, 6-8, 9); economic sector (extractive; transformative; distributive, social non health services, health and social work services, personal services, establishment size, i.e. employees working in the local units where the interviewee works (1-10, 11-20, 21-49, 50 and more, unknown but more than 10; self-employed), weekly hours worked (full versus part-time), professional status (self-employed, employee);. implementation: separate country data sets and pooled data set (the latter benefiting from multilevel specifications at country level).
- variants: B(uw) (unweighted variant) and B(w) (weighted variant, using individual weights).

Key results concerning inequalities have been produced using different metrics: odds ratios, predicted probabilities and average marginal effects. Odds ratios are the typical output of binary logistic regressions. As they are difficult to communicate and interpret, they are only used in some parts of the annexes ([36]).

([36]) Odds are related to the probability that an even occur (which could here be considered the relative frequency with which it occurs). They are obtained by dividing the probability of an event to occur by the probability that such an event does not occur. In this case, the event is the participation in non-formal job-related education and training. In this case, odds ratio results from statistical models: these show the odds that participation occurs in an observed group (e.g. older adults) relative to the odds in another reference group (e.g. young adults) keeping all other

To facilitate the interpretation of findings, results in Chapter 4 are presented by privileging the use of model-based estimations of the average marginal effects (AME) as a measure of inequalities. The average marginal effect can be interpreted as the simple difference between the model-based predicted probability of participation in job-related NFE across two compared groups (e.g. employed and inactive), controlling all other factors in the model, i.e. keeping them constant ([37]). In the tables, average marginal effects are expressed as the result from the software output (probabilities may vary in theory between 0 and 1, the average marginal effect may vary in theory between -1 and 1). In the textual comments, these values are often multiplied by a factor of 100: this way, average marginal effects are simple differences between two percentage values (and are expressed in percentage points).

Statistical tests are performed on the average marginal effect to check whether they are significantly different to zero. Statistically significant average marginal effects are highlighted by making use of standard conventions based on p values. Differences which are not statistically significant can be so either due to their small magnitude or due to the small sample sizes (i.e. the number of observations they are based on). The average marginal effects may also be compared to one another to derive an idea of stronger inequalities. Predicted probabilities of participation for comparing two groups can also be related to each other by means of ratios.

Predicted probabilities were calculated by post-estimation procedure based on the models and in line with the estimated average marginal effects (Williams, 2012). It must be noted that the term probabilities is a term inherited by the literature and associated with this type of methodologies, which can indeed estimate and predict them. However, in this study, estimations and averaging of

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predictors in the model constant, i.e. controlling their possible influence (e.g. gender, educational attainment, etc.). The odds ratio of 1 shows that the odds are equal, the odds above 1 indicate that the odds of the observed category are higher than the odds of the reference category, the value (for ex-ample, 1.1) shows how many times higher the odds of the observed category is compared to the odds of the reference category. The odds ratio below 1 indicates how many times less the odds of the observed category are compared to the odds of reference category in participating in job-related, non-formal training.

([37]) An average marginal effect equal to zero suggests, controlling other factors, that there is no inequality between the two compared groups. An average marginal effect can be less than zero: this suggests that, after controlling other factors in the model, there are inequalities in terms of participation between the groups compared and that, in relation to the reference group, the other one has a disadvantage (i.e. participation is lower). The opposite applies to positive average marginal effects.

predicted probabilities have been carried out only as a mean to derive measures of inequality in frequency of participation. Similarly, the term average marginal effect is used, following the standard terminology. This study does not pretend to investigate causality and average marginal effects are simply presented as a possible refined measure to look at inequalities.

The results presented in Table 1 show the main effects of various individual level indicators on job-related training participation for the pooled data set. They drive the analysis in this chapter. The entry point of the analysis is constituted of the individual level variables. Aggregate findings for the pooled data set (as shown in Table 1) are commented on accordingly and complemented with information at country level. Tables supporting country level analysis are provided in the Annex (and namely Table A11 for average marginal effects, Table A12 and A13 for model-based predicted probabilities). A more systematic approach by country is adopted in Chapter 5.

Box 3. **The importance of the models**

When comparing, for example, adults of different age groups, and observing differences in participation rates, it is crucial to keep in mind that younger and older age groups might differ, for example, by the structure of their educational attainment, their labour-market activity, their dispersion across occupational groups and economic sectors and so on. For example, compared to young adults, the disadvantage of older adults participating in training can also be linked to the lower educational attainment and to the lower activity rates which often characterise older cohorts and which are in turn associated to lower participation. When investigated through descriptive statistics, levels of inequality (for instance between young and old adults), are valid, but also incorporate the influence of other factors. When investigated through statistical models, levels of inequality between them are more honestly associated with age, as the models control other factors and the differences in the composition of the groups (older and younger). Thus, inequalities which may not be found though descriptive investigation can emerge and others which were found can fade, be reverted or confirmed.

Table 1. **Adult participation in job-related non-formal education and training: estimated average marginal effects (AME) and relevant statistical significance (sig.) of individual level characteristics (results from multivariate logit regression models on a pooled 26 countries data set)**

	Model A (total adult population; 25-64)		Model B (employed only; 25-64)	
	ame	sig.	ame	sig.
Individual level				
Female (Ref = Male)			-0.01	**
Age				
25-34 (Ref)				
35-54			0.00	
55-64			-0.06	**
County of birth				
Not born in the country			-0.05	**
Born in the country (Ref)				
0-4 year-old child(ren) in the household			0.00	
Educational attainment				
Primary level (ISCED 0-2)			-0.15	**
Secondary level (ISCED 3-4)			-0.08	**
Tertiary level (ISCED 5-6) (Ref)				
Employment status				
Employed	0.41	**		
Unemployed	0.16	**		
Inactive (Ref)				
Occupational group				
Managers and professionals (ISCO 1-2) (Ref)				
Technicians. associate professionals (ISCO 3)			-0.04	**
Clerks. service and sales workers (ISCO 4-5)			-0.12	**
Skilled manual workers (ISCO 6-8)			-0.16	**
Elementary occupations (ISCO 9)			-0.25	**
Economic sector				
Extractive sector			-0.08	**
Transformative sector			-0.09	**
Distributive services			-0.09	**
Producer services			-0.02	**
Social services (Ref)				
Health and social work services			0.03	**
Personal services			-0.10	**
Establishment size				
1-10 persons (Ref)				
11-19 persons			0.06	**
20-49 persons			0.10	**
50 persons or more			0.15	**
Type of employment				

Full-time (Ref)				
Part-time			-0.06	**
Model information				
N	164 351		105 258	
ICC	0.09		0.17	
LL	-76484.3		-59677.1	

NB: Dependent variable: participation in job-related education and training during 12 months (1;0). Full model specifications are provided in Box 2.

Model A is estimated for a whole sample of adults; for model A only ame for the employed status are displayed in the table but the model controls gender, age, country of birth, young children in the household and educational attainment.

Model B is estimated only for employed adults in the sample. For model B, ame are displayed with respect to all variables included, with the exception of professional status (which is also included in the model as a control).

The table displays results from unweighted variants of the models.

+p < 0.10 (significant),

*p < 0.05 (highly significant)

**p < 0.01 (extremely significant.)

N, number of cases, pseudo R-squared for simple logistic regression models and Log-Likelihood and ICC (Inter-Class Correlation).

Analysis is performed on a pooled data set merging observations from 25 EU Member States and Norway. Belgium, Ireland Croatia are not covered.

Source: Eurostat; AES-2011 microdata, own calculation.

4.2. Inequalities in participation by labour market status (model A)

This section is based on results from model A. Table 1 includes results for model A (unweighted variant implemented on the pooled European data set). These indicate that when taking all countries together, and controlling other individual level variables in the model (gender, age, migrant status, having young children and educational attainment), the probability to participate in job-related training for employed adults is 41 percentage points higher than for inactive adults. They also indicate that for unemployed adults the likelihood of participation is 16 percentage points higher compared to inactive adults. Thus, the estimated difference between chances of participation of employed and unemployed adults is 25 percentage points in favour of employed adults. Not only is employment status strongly associated with participation in job-related training, but it has one of the strongest associations in a comparative perspective with other factors taken into consideration in the modelling and the strongest one within model A (Table A10 in the Annex). This applies to all countries analysed (Table A11 in the Annex).

At country level, having controlled the above-mentioned variables, the effect of employment status is wide and statistically significant in all 26 countries. Differences in predicted probabilities of training participation between employed and inactive adults are widest in Denmark, Estonia, Luxembourg,

Hungary, Slovakia, Sweden and Norway. In these seven countries, the predicted probability of employed adults participating in job-related NFE is 40 to 54 percentage points higher compared to inactive adults (marginal effects range from 0.40 to 0.54, full models by countries in Table A11 in the Annex). In 17 countries, the difference in training-participation probabilities range from 22 to 39 percentage points: Bulgaria, Czech Republic, Germany, Spain, France, Italy, Cyprus, Latvia, Lithuania, Malta, the Netherlands, Austria, Poland, Portugal, Slovenia, Finland and the United Kingdom.

Predicted probabilities differ the least in Romania and Greece, where employed adults are less likely to participate in training, when compared to inactive adults, by 7 and 8 percentage points respectively. These smaller gaps are not encouraging as they are found where levels of related predicted probabilities are low: to simplify, there is low gap but also low probability of participation. Comparatively high training-participation probabilities for unemployed adults appear in Germany, France, Luxembourg, Denmark, Sweden, Malta, the Netherlands, Austria and Norway.

The difference of predicted probabilities of participating in training between unemployed and inactive adults is highest in nine countries: Denmark, Spain, France, Luxembourg, Malta, the Netherlands, Austria, Sweden and Norway. In these countries, predicted probabilities of participating in training among unemployed and inactive adults differ from 15 to 27 percentage points (also controlling other individual level characteristics in model A(w)). The difference between unemployed and inactive adults is moderate (8 to 13 percentage points) in: the Czech Republic, Germany, Italy, Cyprus, Hungary, Portugal, Slovenia and Sweden. The lowest training gap with a 2 to 6 percentage point difference in probabilities is evident in 10 out of 26 countries: Bulgaria, Greece, Estonia, Lithuania, Latvia, Poland, Romania, Slovakia, Finland and the United Kingdom. In Bulgaria, Romania and Greece this low training gap means that inactive persons have practically very small chances of participating in job-related NFE compared to unemployed persons.

When taking into consideration the chances unemployed adults have to participate in job-related NFE in relation to those of employed adults, it is important to take into account important background methodological information. First, at country level, estimates relating to unemployed are to be interpreted with caution considering the relatively small number of observations in the sample (mostly composed by employed people). Second, the difference between the chances of unemployed adults participating in job-related NFE and those of employed adults may be high in a given country not only and not mainly because unemployed adults show low participation, but simply because

employed adults have very high chances. It is also important to bear in mind that, based on the AES methodology, there could be instances where adults are recorded as employed at the time of the interview and as having participated in training, even though the training was undertaken while they were unemployed: this is a disadvantage of having a misalignment between the time of reference for the labour market status, i.e. at the time of the interview, and the reference time for the participation in the training activities, i.e. in the past 12 months. In countries where the labour market is more favourable (lower unemployment and shorter unemployment spell), and/or where training provision for unemployed adults is more favourable (more frequent, more immediate and more conducive to employment), the differences in chances of participation between employed and unemployed adults may end up being overestimated to a certain extent.

However, the results are assessed as overall robust to these issues. The statistical model reveals strong differences between participation levels of employed and unemployed adults in favour of the former, while controlling important factors. This confirms and makes the findings based on descriptive statistics robust. Nevertheless, it enables refining descriptive findings in a slightly more encouraging way. The gap in participation between employed and unemployed individuals also stems from the fact that unemployed individuals tend to present characteristics attached to lower training opportunities such as low educational attainment for instance, more often than others. As the statistical model is correct for these compositional effects, the predicted probability for participating in job-related training for the currently unemployed adults is typically higher than shown by descriptive statistics. In five countries (Germany, Malta, the Netherlands, Austria and Sweden), the predicted probability of unemployed adults participating in job-related NFE is 5 to 8 percentage points higher than shown by the descriptive statistics. In a further five countries, the predicted probability is between 3 and 4 percentage points higher (Denmark, Spain, France, Finland and Norway) than the descriptive statistics. In no country does the model predict a significantly lower participation rate for unemployed adult than that provided in the descriptive statistics.

4.3. Inequalities in participation among employed adults by socio-demographic characteristics (model B)

The following analysis is based on model B. It is carried out on the subsample of employed adults (i.e. the majority of participants in non-formal job-related

training). For employed adults, model B is used to investigate inequalities based on (and simultaneously controlling) gender, age, country of birth, presence of young children in the household, educational attainment, occupation, economic sector of activity, establishment size, part time work ([38]).

When considering data from all countries together, and controlling other individual level characteristics, among female adult workers the predicted probability of participation in job-related training is 1 percentage point lower compared to their male counterparts (average marginal effect -0.01, model B). A statistically significant negative effect on participation in training for women is observable in seven out of 26 countries: Spain, France, Italy, Luxembourg, the Netherlands, Poland and Slovenia (Table A11 in the Annex). Women in these countries have 3 to 6 percentage point lower chances of participating in training (respective average marginal effects -0.03 to -0.06). For example, in the Netherlands, men have a 65% and women a 59% predicted probability of participation in training; in Italy, the respective probability for men is 39% and for women it is 35%. Meanwhile, in Poland or in France, the difference between men and women participation probabilities is even smaller, but still statistically significant (in Poland 28% likelihood for men and 25% for women; in France 51% and 48% likelihood respectively) (Table A13 in the Annex). In Latvia and in Finland, the trend is reversed – women have a somewhat higher probability to participate in training (respective marginal effects 0.03 and 0.07).

Aggregate results by age indicate that there is no substantial difference in the probability to participate in job-related NFE between employed adults aged 25-34 and those aged 35-54 (average marginal effect 0.00 when taking all countries into account). However, the training probability for 55-64 year-olds compared to 25-34 year-olds is 6 percentage points lower. Thus, as expected, there is a negative association between age and participation. However, if compared to descriptive findings, the model, which restricts the analysis to employed adults and controls other factors, suggests that differences in participation by age are much smaller. This is partly because descriptive statistics are typically calculated for all adults, including inactive and retired adults, which is not ideal for analysing job-related training (model B instead restricts the focus to employed adults only). This is also because multivariate regression better isolates the association between participation and age, as it controls other factors (e.g. low educational attainment), which spuriously influence the figures for older adults. Among employed adults, inequalities in

([38]) Professional status (self-employed or employee status is used in the regression, but only as a control variable).

training participation for the group of 55 to 64 year-olds compared to 25 to 34 year-olds is evident in 13 out of 26 countries: the Czech Republic, Germany, Estonia, Greece, Spain, France, the Netherlands, Poland, Portugal, Romania, Slovakia, Finland and Norway. Among six countries with stronger negative age effect (average marginal effects from -0.11 to -0.18: Estonia, France, the Netherlands, Portugal, Finland and Norway) training-participation probability for older age group ranges between 37% in Portugal and 53% in the Netherlands. In seven countries with a weaker age effect (marginal effects from -0.02 to -0.09: Czech Republic, Germany, Spain, Malta, Poland, Romania, Slovakia) the probability for the older age group to participate in training ranges between 6% in Romania and 23% in Poland to 47% in Germany.

When compared to native-born workers, employed adults with a migrant background (i.e. foreign-born) have a 5 percentage point lower probability of participating in job-related NFE (Table 1, model B, controlling other individual level characteristics). A negative average marginal effect of migrant background is found to be statistically significant in 10 out of 25 countries (relevant data were not available for the United Kingdom). Measured by means of average marginal effects, the negative association between migrant background and training participation is particularly strong in France, Cyprus, Estonia, Sweden, Germany, Finland and the Netherlands (average marginal effects are from -0.10 to -0.16, Table A11 in the Annex). However, in these countries, strong inequalities for foreign-born workers are combined with different levels of participation. For foreign-born workers, in Cyprus, the predicted probability of participating in job-related training is 34% and for native-born workers it is 44%. In Germany, Estonia and France, the likelihood of non-natives participating in training is about 40% and for natives it is around 50%. Also, in Finland, foreign-born workers have 40% chances of participating in training, but for native-born workers the probability stands at 56%. In the Netherlands, the probability is 49% for natives and 64% for non-natives. In Sweden, although the probability of participation is lower for foreign-born workers than for native-born workers, for the former the estimated probability of participation is one of the highest across countries analysed – 59%, compared to 71% for native-born workers. Only in Luxemburg, the model estimates a higher participation for non-native workers than for native workers (but the difference is small in magnitude and not statistically significant, 68% versus 70%). Weaker relationships between migrant background and participation in job-related NFE are found in three countries (average marginal effects from -0.04 to -0.06). These are Italy, Spain and Austria where, as far as foreign-born workers are concerned, the probability

of participation is estimated at 33%, 34% and 41% respectively (Table A13 in the Annex).

Having young children (0 to 4 year-olds) in the household does not associate with a smaller likelihood of participation in job-related training (average marginal effect 0.00, controlling for other individual characteristics). Still, the negative effect of having young children is statistically significant in Romania and Slovakia, where adults with young children compared to those who do not have young children have a 2 to 4 percentage points lower probability of participating in training respectively (Table A11 in the Annex). It is however acknowledged that an interaction term between gender and presence of young children would probably have brought more insight on participation in job-related training form women.

4.4. Inequalities in participation among employed adults by educational attainment (model B)

Results confirm a strong association between the highest level of education attained and participation in job-related NFE: the highest the level of education of workers, the higher their probability of participating in job-related training. Only in Luxembourg and in the United Kingdom are there differences between highly and medium qualified as well as between highly and low qualified individuals; however, these are not significant from a statistical point of view. Another divergent country is Romania, where relatively small but statistically significant differences in training participation can be predicted by educational levels.

Based on aggregate results among employed adults, the probability of participation in job-related training for those with medium-level education (upper secondary and post-secondary, non-tertiary qualification) is estimated to be 8 percentage points lower than for those with high-level education (first and second stage of tertiary education). In 22 out of 26 countries, medium qualified individuals are significantly less likely to participate in training compared to high qualified individuals. Small differences in predicted probabilities between the two groups are only found in Latvia, Luxembourg, Sweden and the United Kingdom (marginal effects vary from -0.01 in the United Kingdom to -0.04 in Latvia, Table A11 in the Annex). In four countries, the probability of participating in training for medium qualified compared to high qualified individuals differs to a moderate (but still statistically significant) extent. These are France, Romania, Finland and Norway, with average marginal effects estimated to range from 3 to 6 percentage points. In many other countries, the disadvantage in participation

for workers with medium levels of education, ranges from 7 to 14 percentage points compared to adults with high levels of education (Bulgaria, Czech Republic, Denmark, Germany, Estonia, Greece, Spain, Italy, Cyprus, Lithuania, Hungary, Malta, the Netherlands, Austria, Poland, Portugal, Slovenia and Slovakia). Among these countries, the probability of participation for adult workers with medium level qualifications is estimated to stand at very different levels: quite low in Greece (8%), medium-low, in Bulgaria, Lithuania, Poland and Slovenia (23 to 34%); medium-high in the Czech Republic, Spain, Estonia, Italy, Cyprus, Hungary, Malta, Austria, Portugal and Slovakia (37 to 49%) and quite high in Germany, Denmark and the Netherlands (50 to 61%).

Inequalities in participation in job-related training are wider for workers with low levels of education (pre-primary, primary and lower secondary education): their probability of participation is estimated to be 15 percentage points lower than for those with tertiary education. Only in four out of 26 countries, are differences among workers with high and low level qualifications not statistically significant: these are Luxembourg, Lithuania, Hungary, and the United Kingdom. Differences between these two groups range from 17 to 22 percentage points in 14 countries (Czech Republic, Denmark, Germany, Estonia, France, Cyprus, Malta, the Netherlands, Austria, Poland, Portugal, Slovenia, Slovakia and Norway). The probability of participation for those with low education levels is estimated at quite different levels in these countries. For example, the Netherlands, Denmark and Norway have a predicted probability of training participation for low qualified individuals of about 50%. In Slovenia, the respective probability is 25% and in Poland it is 15%. In the remaining eight countries, low educated individuals are, by 4 to 16 percentage points, less likely to participate in training compared to high educated individuals (Bulgaria, Greece, Spain, Italy, Latvia, Finland, Romania and Sweden). Also, this group of countries is very diverse; in Sweden the probability of low educated individuals participating in training is at 61%, while in Greece and Romania this likelihood is only about 5%.

4.5. Inequalities in participation among employed adults by job and workplace characteristics (model B)

The occupational position is another important indicator associated with inequalities in participation in job-related NFE and results of the regression analysis confirm descriptive findings. Employed adults working in high skills

intensive occupations tend to participate more than those working in low skills intensive occupations. There are remarkable inequalities and relative disadvantages in participation for workers in elementary occupations and for skilled manual workers, even when controlling other key variables in the models.

In comparison to the group of managers and professionals, technicians and associate professionals are estimated to have a lower probability of attending job-related training. At aggregate level, the difference is estimated at 4 percentage points (Table 1). This negative effect is statistically significant in eight countries: Greece, Spain, France, Italy, Latvia, Lithuania, Poland and Sweden. The difference in predicted probabilities of participation between the group of managers and professionals and the group of technicians and associate professionals varies from 4 percentage points in France to 15 percentage points in Latvia. However, an opposite pattern prevails in Bulgaria – technicians and associate professionals are estimated to have a 5 percentage point higher probability of participating in training.

Compared to managers and professionals, the probability of participating in job-related training for the group of clerical, service and support workers is estimated to be on average 12 percentage points lower. At country level, inequalities are found to be statistically significant in 20 out of 26 countries. They are widest in Latvia and Lithuania, where average marginal effects are estimated to be 22 and 26 percentage points respectively. More moderate differences between the two occupational groups – average marginal effects ranging from 6 to 16 percentage points – are found in 16 countries: the Czech Republic, Denmark, Germany Estonia, Spain, Italy, France, Cyprus, Luxembourg, Austria, Poland, Slovenia, Slovakia, Finland, Sweden and Norway. In Portugal and Romania, the difference is only 5 percentage points but this difference is statistically significant.

On average, compared to managers and professionals, the probability of participating in job-related NFE for skilled manual workers (ISCO6-8) is estimated to be 16 percentage points lower. At country level, although varying in magnitude, negative marginal effects of this type are found to be statistically significant in 23 countries. The training gap between managers, professionals and skilled manual workers is widest in Latvia and Lithuania, as in both countries the latter have 27 percentage points lower chances of participation. In Germany, Austria, the United Kingdom, Sweden and Norway, negative average marginal effects range from 18 to 21 percentage points. In the other 15 countries, the participation gap ranges from 7 to 17 percentage points: the Czech Republic, Denmark, Estonia, Greece, Spain, France, Italy, Cyprus,

Luxembourg, Malta, Poland, Portugal, Slovenia, Slovakia and Finland. Nevertheless, in some of these countries, the probability of participation for skilled manual workers exceeds 50%: Finland, Denmark, Norway, Sweden and Luxembourg. In Romania, skilled manual workers have a 5 percentage point lower probability of participating in job-related training compared to managers and professionals. The result is statistically significant but is combined with lower participation levels.

The strongest inequality based on the occupational group is found for adults working in elementary occupations. In the pooled analysis, they are estimated to have a 25 percentage point gap compared to managers and professionals. Thus, the predicted probability of training participation is 29% for elementary occupations and 54% for managers and professionals. At country level, results should be interpreted with caution due to the relatively small size of the group of elementary workers. However, negative marginal effects for them are found to be statistically significant in 23 out of 26 countries. Widest inequalities for the group of elementary workers are found in the Czech Republic, Cyprus, Latvia, Lithuania, Luxembourg, Austria and Sweden, where they are estimated to have a predicted probability of participation which is lower by 36-37 percentage points compared to managers and professionals. The respective training gap is 20 to 33 percentage points in Estonia, France, Italy, Malta, the Netherlands, Poland, Portugal, Slovakia and Norway. The lowest difference – 11 to 17 percentage points – occurs in Denmark, Spain and the United Kingdom. In the Netherlands, a strong and negative average marginal effect only exists for workers in elementary occupations; in Malta and the United Kingdom only for workers in elementary occupations and skilled manual workers. In Romania, the two groups of managers/professionals and elementary workers have the lowest difference in terms of predicted participation probabilities (average marginal effect -0.06). This is statistically significant but is combined with overall low levels of participation. Despite a notable training gap compared to managers and professionals, the probability of participation in job-related training for elementary workers is estimated at high levels in Denmark (55%), Sweden (44%), but also in Luxembourg, France, Norway, the Netherlands, Finland, Germany, Estonia, Portugal and Slovakia (31% to 39%).

Results confirm a strong positive association between participation in job-related training of workers and the size of the establishment where they work.

Workers of establishments employing 1 to 10 persons are assumed as the reference category and have the lowest probability of training ([39]).

At aggregate level, the probability of participating in job-related training is on average 15 percentage points higher for adults working in large establishments (50 and more persons employed) than for those working in micro establishments (1-10 persons employed). In 23 countries, this inequality, although varying in magnitude, is found to be statistically significant. Relevant inequalities and average marginal effects are found to be highest in Bulgaria, Greece, France, Cyprus, Malta, Portugal, Slovakia and Finland, ranging from 15 to 21 percentage points. A difference in favour of large establishments is also found in 14 other countries, but it is estimated to be lower (average marginal effects ranging from 8 to 14 percentage points): Czech Republic, Denmark, Germany, Estonia, Spain, Italy, Latvia, Lithuania, Luxembourg, Hungary, Poland, Slovenia, Sweden, and the United Kingdom.

The training gap of workers in micro establishments (1-10 persons) is smaller when they are compared to adults employed in establishments with 20 to 49 persons. The latter have an advantage compared to the former; this is estimated at 10 percentage points (average marginal effect at aggregate level). The advantage is found to be statistically significant in 19 countries and particularly strong (average marginal effects 0.10 to 0.18) in Portugal, Cyprus, Luxembourg, Sweden, France, Malta, Bulgaria, Finland, the Czech Republic, and the Netherlands.

The predicted probability of participating in job-related training for workers in micro establishments (1-10 persons) is more in line with (although lower than) that of workers in establishments employing 11 to 19 persons. Compared to the former, the latter have a participation probability which is estimated to be higher by 6 percentage points. Although of varying magnitude, statistically significant average marginal effects of this type are found in 14 out of 26 countries. Particularly big ones are found in Finland, Portugal, Cyprus, Sweden and Italy (average marginal effect ranging from 9 to 14 percentage points). Inequalities found in these countries, however, can be combined with different situations, in terms of levels: for micro-establishment workers, predicted participation probabilities range from high levels, such as in Sweden (61%) or in Finland

([39]) The analysis has been carried out taking into consideration some data limitations. In the case of Norway, data on firms with 50 and more employees were not available. In the Netherlands and Bulgaria the variable precision was affected by partial item- non responses (48% and 18% of answers regarding establishment size respectively were found in the category 'no answer, but 10 or more persons work there').

(48%) to considerably lower levels such as in Portugal, Cyprus and Italy (33 to 36%). Lower gaps between workers in establishments with 11 to 19 employees and workers in micro-establishments are found in the Czech Republic, Poland, Bulgaria, France, Hungary, Slovakia, Austria, Greece and Spain (average marginal effects ranging from 5 to 8 percentage points in favour of the former). In Norway, the effect is reversed: workers in firms with 11 to 19 persons have a 6 percentage point lower predicted probability of participating in job-related training compared to those working in micro-establishments, although respective participation probabilities are high for both groups (57% and 63%).

For adults in part-time work, compared to those in full-time work, a 6 percentage point lower probability of participation in job-related education training is estimated (Table 1). A significant negative association between participation in job-related training and part-time work is found in 16 out of 26 countries, being strongest in Cyprus, Italy, Luxembourg, Slovakia, Finland and Sweden, where the disadvantage of part-time workers is estimated to range from 10 to 15 percentage points. A smaller disadvantage (3 to 9 percentage points) also exists in the following 10 countries: Denmark, Estonia, Spain, France, Latvia, Malta, Austria, Poland, Portugal and Norway. Still, in several of these countries, participation probabilities for part-time workers are among the highest (50% to 60%) across countries, such as in the case of Denmark, Norway, Sweden and Luxembourg. Participation probabilities for part-time workers are also relatively high in Germany, Hungary and the Netherlands, where there is, however, no statistically significant difference between full-time and part-time workers.

In the analysis by economic sector of activity, the category assumed as a reference is that of workers in the sector of social (non-health) services which mainly includes public administration and education.

At aggregate level, and compared to the reference sector, statistically significant different probabilities to participate in job-related training are found for workers in all other sectors. Remarkable negative marginal effects (and therefore considerably lower participation probabilities) are found for adults employed in the majority of the other sectors taken into consideration, ranging from 8 to 10 percentage points. In particular, average marginal effects are estimated as follows: in the extractive sector (-8 percentage points), in the transformative sector (-9), in the distributive services sector (-9) and in the personal services sector (-10). These sectors differ from the reference sector, but participation is quite similar among them. However, two other sectors show more similar patterns compared to the reference sector. For the producer services sector which includes finance, real estate, professional, scientific and

technical activities, a small, yet negative marginal effect is found (probability of participation in job-related training is very similar to the reference sector, yet somehow lower). For workers in the health and social work sector a slightly positive average marginal effect is found instead (probability of participation in job-related training is similar and indeed a little higher than in the reference sector). These findings suggest that even when controlling other key variables in the model, the specificities of skills intensive sectors, such as the producers' service sector, the health and social work sector, education and public administration continue to exist. These findings are however better contextualised when country-level results are taken into consideration and sectors are looked into separately.

At aggregate level, compared to the reference sector, the probability of participating in job-related training is lower for workers in almost all other sectors, with the exception of those working in the health and social work sector, scoring 3 percentage points higher than the predicted probability of training (Table 1). However, at country level, a statistically significant pattern in this sense is only found in four countries where the training-participation probability for workers in health and social work is estimated at very high levels, ranging from about 50% in the Czech Republic, Italy and Cyprus to 63% in Germany – Table A13 in the Annex). Lithuania has the opposite association because working in the health and social work sector is associated with a lower probability of participation (by 6 percentage points) compared to social-service jobs. It is safe to conclude that the two sectors taken into consideration do not differ substantially: participation is similar and at a high level.

At aggregate level, the smallest training gap appears between workers in the reference sector and workers in the producers services sector (finance, real estate, professional, scientific and technical activities, etc.) where the probability of participation is lower by only 2 percentage points. Statistically significant negative average marginal effects associated with producer services are found in seven countries (Estonia, Spain, Latvia, Lithuania, Austria, Slovenia, Finland) with marginal effects ranging from -0.05 in Spain to -0.17 in Estonia (Table A11 in the Annex). In Greece (0.08), the Czech Republic (0.07) and Italy (0.06) but to some extent also in Portugal (0.04), the training-participation probability in producer services is higher than in social services. It is safe to conclude that the two sectors examined do not differ substantially: participation is similar and at a high level.

Working in extractive services (agriculture, forestry, fishing, mining and quarrying) is associated with a training-participation probability reduced by 8 percentage points compared to social services. In 9 out of 25 countries, the

predicted probability of participation in job-related training for workers in the extractive services sector is estimated to be between 4 and 29 percentage points lower than in the reference sector. A stronger negative effect exists in Estonia, Spain and the Netherlands, while the effect is lower in the Czech Republic, Greece, Lithuania, Romania, Slovakia and Poland.

Workers employed in transformative activities (mainly manufacturing, construction, electricity, gas, water supply, sewage, waste management) and in distributive services (mainly wholesale, retail trade, transportation, information and communication) have a 9 percentage point lower probability of participation in job-related training compared to those employed in the reference sector. Statistically significant negative marginal effects associated with the transformative and distributive services (average marginal effects ranging from 4 to 28 percentage points) are found in Denmark, Germany, Estonia, Spain, France, Italy, Latvia, Lithuania, the Netherlands, Austria, Poland, Romania, Slovenia, Finland and Sweden. They are particularly big in magnitude in Estonia, Lithuania, Latvia, Slovenia, the Netherlands and Finland. In Greece, the average marginal effects for the transformative and distributive services sectors are positive and compared to the reference sector, their workers are estimated to have a higher probability of participation, by 4 and 6 percentage points respectively.

Compared to the reference sector, workers employed in personal services (mainly accommodation and food services, arts, entertainment, recreation), are estimated to have a lower probability of participation: at aggregate level the training gap is estimated at 10 percentage points. For workers in personal services activities, again compared to those of the reference sector, lower probabilities of participation in job-related training (and statistically significant negative average marginal effect) are found in 17 out of 25 countries for which data were available. Negative average marginal effects are estimated to range between 5 and 25 percentage points in Germany, Estonia, Spain, France, Italy, Latvia, Lithuania, Luxembourg, Hungary, the Netherlands, Austria, Poland, Romania, Slovenia, Slovakia, Finland and Norway. They are highest in Estonia (-0.25). They are also particularly high in Austria, the Netherlands, Slovenia, Slovakia, Lithuania, Latvia, Hungary, Luxembourg, Finland, Spain, Sweden and Norway (ranging from -0.10 to -0.18). Only in Denmark is the probability of participating in job-related training estimated to be higher for workers in personal services than in the reference sector (average marginal effect 0.10).

CHAPTER 5.

Country level

5.1. Methods

The following chapter summarises the results of the analysis carried out in the previous chapters at country level.

To facilitate the presentation and organisation of results in a compact way, countries are grouped into six main groups which are labelled as follows:

(a) group 1: Nordic countries (Denmark, Finland, Sweden, Norway);
(b) Group 2: west (United Kingdom) and central European countries (Germany, Luxembourg, the Netherlands, Austria, Slovenia);
(c) Group 3: West Mediterranean countries (Spain, France, Italy, Portugal);
(d) Group 4: south Mediterranean countries (Greece, Cyprus, Malta);
(e) Group 5: Visegrad countries (Czech Republic, Poland, Slovakia, Hungary);
(f) Group 6: Baltic countries (Estonia, Latvia, Lithuania) and South East European countries (Bulgaria, Romania).

There is no intention to classify, label, rate or rank countries.

As in other recent European Union studies, the grouping is ostensibly based on geographic proximity (see, for example, European Commission 2014, Chapter 6). However, the grouping also fits relatively well with a range of typologies, which are generally used to cluster countries based on their different system settings in the various domains of economy (e.g. approach to capitalism), welfare, skills formation, employment and industrial relations systems. A discussion on the relevant literature is beyond the scope of this chapter, but recent reviews are available (Morgan et al., 2010; Schröder, 2009, 2012; Thelen, 2012, 2014; Saar et al., 2013).

Each subsection focuses on one group of countries. For each country, a set of indicators on inequality in participation in job-related NFE is presented in the form of a table. Particular attention is paid to the outcomes of the estimation models for the whole population (model Aw) and the employed population (model Bw). They are also contrasted to indicators on inequality based on descriptive statistics.

The following main information is presented for each country:

(a) inequalities in participation in job-related training for adults (25-64 year-olds) according to their employment status (employed, unemployed, inactive), both according to model Aw and to descriptive statistics (row [2] of the table);

(b) inequalities among employed adults in participation in job-related training, based on various socioeconomic characteristics and according to model Bw ([40]). For each country, key results are highlighted taking two approaches into consideration. The first is a 'within-country approach': for a given country, largest inequalities in participation between groups of employed adults are selected (row [3] of the table). The second one is a 'cross-country approach': for a given country, key findings from model Bw are highlighted taking into consideration comparisons with other countries and reporting on identified country peculiarities in a comparative perspective (row [4] of the table).

(c) differences between the level of inequality as estimated by the models and those shown by descriptive statistics are also highlighted, again presenting the identified country peculiarities as resulting from a cross-country comparative perspective (row [5] of the table).

5.1.1. Key information to read and understand the tables in this chapter

The content of the rows should be understood as follows:

Row [1]: two elements of information are presented for each country: the participation rate of employed adults (25-64) in job-related non-formal education and training as well as the rank of the country in a relevant league table of 26 countries starting with the country with the highest participation rate. Information is based on descriptive statistics.

Row [2]: the level of inequalities in participation between unemployed and employed adults is presented along with the corresponding one for inactive and employed adults. Figures are based on model Aw predicted probabilities of participation for these groups. The differences in predicted probabilities are presented in percentage points: they represent the average marginal effect (ame) of being unemployed (or inactive) on the probability of participation: the effects are relative to being employed and control for other characteristics included in the model. Predicted probabilities for the groups, based on model Aw, are also associated with each other to produce estimated ratios (er) of probabilities. The model-based estimated ratio (er) is complemented with the ratio resulting from descriptive participation rates (dr). Both 'er' and 'dr' ratios

([40]) Main groups are identified on the basis of individual level variables considered in the study, including socio-economic background characteristics (gender, age, highest educational attainment, migrant background, living in a household with a child of up to four years of age) as well as job and workplace characteristics (occupational group, economic sector, size of the enterprise and extent of working time (full- /part-time)).

take into consideration the employed adult advantage; 'ame' takes into consideration the non-employed adult disadvantage.

Row [3] the three largest inequalities in participation are reported based on the largest average marginal effects (in percentage points) according to model Bw;

Row [4] a selection of marked peculiarities by cross-country comparison is made, referring to differences in predicted probabilities according to one socioeconomic dimension; DS+/-: stronger(+)/weaker(-) than usual differences between the strata compared in predicted probabilities;

Row [5] a selection of marked peculiarities by cross-country comparison is made, referring to differences between predicted probabilities and results of descriptive statistics (assumed as the reference starting point): DPD – marked patterns in the differences between ratios for predicted probabilities and ratios according to descriptive statistics.

+: $p < 0.10$ (significant)

*: $p < 0.05$ (highly significant)

**: $p < 0.01$ (extremely significant).

Some differences may be mentioned and reported to be not statistically significant. Differences are not statistically significant when their magnitude or the size of the samples on which they are based is small.

Full country results can be found in the Annex.

5.2. Group 1: Nordic countries

Results are presented for Denmark, Finland, Sweden and Norway. They are well-known for the exceptionally high levels of participation in adult learning, which are consistently mirrored both by the structural indicator on lifelong learning and by the most recent waves of the adult education survey. The participation rates for all four countries are well above the EU average. Economic conditions are favourable in all four countries with GDP per capita being above the EU average. Generous welfare states, a strong commitment to active labour market policies and below-average differences in wages contribute to the favourable conditions for adult learning. Finally, since the late 1970s, consecutive policy reforms have strongly encouraged adult learning in all four countries, partly building on long established legacies in religious and liberal adult education, which have been referred to as the Nordic model of lifelong learning (Rubenson, 2006).

In Denmark, estimates based on model Aw, suggest that, compared to employed individuals, unemployed individuals suffer a disadvantage in terms of

participation in job-related NFE by 23 percentage points; the ratio of the two estimated probabilities is at 1.7 (approximately in line with the ratio of descriptive participation rates and comparatively low compared to other countries). This type of inequality is present in Denmark, but it is smaller than in other countries. The model-based estimated probability of participation in job-related NFE for inactive adults is 40 percentage points lower than for employed adults). According to model Bw, for employed adults, the disadvantage is significant for those who are low-qualified (ISCED 0-2) and for those who work in lower occupational groups (Table 2). Part-time workers also suffer some disadvantage (-9 percentage points compared to full-time workers). Yet, estimates of participation rates for employed adults remain comparatively high across all social strata studied. In the cross-country comparison, the weak effects of the size of the employer organisation and the sector stand out. Among employed adults, migrant background, proxied by the country of birth, is only associated with a weak disadvantage for foreign-born workers. When controlling the various variables (model Bw), differences between genders tend to fade and the disadvantage for low-qualified, older employed individuals and migrants become much weaker.

In Finland, according to model Aw, being unemployed is associated with a much lower average probability of participating in job-related NFE than being employed (-32 percentage points). The estimated disadvantage for inactive adults is similar, yet slightly bigger (-38 percentage points compared to employed adults). Based on model Bw, employed adults working in elementary occupations (ISCO 9) participate in job-related training to a much smaller extent than managers and professionals (ISCO 1-2). Adults employed in the transformative sector participate markedly less than those in the social-service sector. Being a migrant is associated with considerably lower levels of participation in job-related NFE, even when controlling other variables. However, estimates participation estimates are considerably high even for the most disadvantaged groups. When controlling multiple factors, the majority of differences between adults with different levels of educational attainments, shown by descriptive statistics, tend to become much smaller.

Table 2. **Inequality of participation in job-related non-formal education (25-64 year-olds): key descriptive and model-based findings for Nordic countries**

			DK	FI	SE	NO
[1]	Participation of employed adults in job-related NFE – Country rate and rank (descriptive statistics)		46.4% - 5/26	43.9% - 6/26	58.7% - 1/26	53.4% - 3/26
[2]	Inequalities by labour market status in the country (model Aw)	unemployed/employed	ame: -23%** er: 1.7 (dr: 1.9)	ame:-32%* er: 2.5 (dr:3.2)	ame:-35%** er: 2.1 (dr:2.5)	ame: -20%** er: 1.5 (dr:1.7)
		inactive/employed	ame: -40%** er: 3.8 (dr: 4.2)	ame: -38%** er: 3.5 (dr: 4.2)	ame: -51%** er: 4.0 (dr: 5.1)	ame: -45%** er: 4.1 (dr: 5.6)
[3]	Three largest significant inequalities among employed adults in the country (average marginal effects in percentage points) (model Bw)		ISCED 0-2/5-6 (ame: -18%**)	ISCO 9/ISCO 1-2 (ame: -27% **)	ISCO 9/ISCO 1-2 (ame: -37%**)	ISCO 9/ISCO 1-2 (ame: -33%**)
			ISCO 5-6/ISCO 1-2 (ame: -15**)	Transformative sector (social services sector) (ame: -18%**)	ISCO 6-8/ISCO 1-2 (ame: -21%)	Age 55-64 to 25-34 (ame: -20%**)
			ISCO 9/ISCO 1-2 (ame: -14%**)	Migrants/non-migrants (ame: -16%**)	ISCO 4-5/ISCO 1-2 (ame: -14**)	ISCED 0-2 to ISCED 5 -6 (ame: -18%**)
[4]	Inequalities among employed adults in the country: identified marked country peculiarities compared to all other countries (model Bw)		(DS-) Low role of employer size and economic sector (DS-) Low role of migrant background	(DS-) Low role of formal educational attainment (DS+) Strong disadvantage for migrants (ame:-16%**)		(DS-) Low role of employer size and economic sector
[5]	Inequalities among employed adults in the country: identified differences in findings resulting from descriptive statistics and model Bw based statistics: marked peculiarities compared to all other countries		(DPD) Unequal to more equal participation according to age (55-64), educational attainment (ISCED 0-2), gender and migrant-background	(DPD) Unequal to much less unequal participation according to educational attainment (ISCED 0-2 and ISCED 5-6) (DPD) Unequal to much more equal participation for workers of the extractive sector	(DPD) Unequal to much less unequal participation according to educational attainment (ISCED 0-2 and ISCED 5-6) (DPD) Unequal to much more equal participation for workers in the extractive sector	(DPD) Unequal to less unequal participation according to migrant status

N.B: Key information to read and understand the table is provided in Section 5.1.1.

Source: AES-2011 microdata, own calculations.

In Sweden, according to model Aw, unemployed adults have a lower probability of participating in job-related NFE than employed adults (-35 percentage points); however, their estimated participation is still much higher than that of inactive adults. For the latter, the estimated disadvantage compared to employed adults is -51 percentage points. The statistical modelling points to particularly strong differences in terms of participation between occupational groups, with a strong disadvantage for adults in elementary occupations (ISCO 9) and other manual occupations (ISCO 6-8). A pronounced disadvantage is found with respect to migrant background, part-time work and low educational attainment. Estimated participation rates remain, by cross-country comparative standards, high, even for groups with attributes linked to disadvantages. The predicted participation probability differs markedly from descriptive values when observing the effects of the highest educational attainment.

In Norway, being unemployed is associated with an estimated disadvantage in participation of 20 percentage points compared to being employed (model Aw). For the inactive, the respective value is 45 percentage points. When controlling the other attributes, working in an elementary occupation, being 55-64 years old and having low educational attainment (ISCED 0-2) are associated with the strongest inequalities within the country. As for other Nordic countries, participation in job-related learning is estimated to be high across the strata studied. When controlling other characteristics, enterprise size (measured by number of employed adults) and economic sector of activity play a comparatively weak role in determining inequalities. Migrants are disadvantaged in participation, yet, when moving from descriptive statistics to model B based findings, controlling other key variables, this disadvantage becomes considerably smaller.

5.3. Group 2: United Kingdom and Central European countries

Results are presented for selected Central European countries, including Germany, Luxembourg, the Netherlands, Austria and Slovenia. Central European countries are typically grouped together by various typologies in use, which often refer to them as conservative welfare states or co-ordinated market economies. Slovenia is included in this group as it appears to have more features in common with this group than with others. In particular, it is considered to have experienced a markedly different pathway to a capitalist system than other post-socialist societies (Feldmann, 2008; Bohle and Greskovits, 2012). Belgium could potentially belong to this group, but it was not

covered in the analysis. The section also includes information on the United Kingdom, which together with Ireland, is often referred to as presenting a 'liberal' welfare state and liberal variants of capitalism (Schroeder, 2009).

In the United Kingdom, according to model Aw, being unemployed (-16 percentage points) and being inactive (-22 percentage points) is associated with a disadvantage in participation as compared to being employed. Based on the applied modelling (model Bw), differences in participation in job-related training for employed adults are strongly associated with occupational level (with those in the occupational groups ISCO 6-8 and ISCO 9 disadvantaged compared to ISCO 1-2) and to the size of the company, while differences for compared pairs of other socioeconomic groups are rather low. Estimated participation rates in job-related NFE for disadvantaged groups is considerably low, for example, for skilled manual workers 15% (which is the third lowest level among the countries compared, lower only for Greece and Romania). The model applied suggests that occupational status – the position within a work organisation marked by high levels of skill polarisation (Oesch, 2013) – is associated with a particularly strong disadvantage in access to job-related NFE.

In Germany, according to model Aw, individuals who are currently unemployed suffer an estimated disadvantage in terms of participation in job-related NFE by 22 percentage points, while the inactive population suffers an even bigger one (by 35 percentage points) compared to employed adults. Among employed adults, according to model Bw, a strong disadvantage in participation is associated with the occupational position (workers in elementary occupation and skilled manual workers compared to managers and professionals) and to having a low educational attainment (ISCED 0-2). As in all central European countries, mainly characterised by occupational labour markets and high proportions of the population with VET degrees on ISCED 3 level or above, being employed in elementary occupations (ISCO 9) or not having completed any upper secondary education implies a considerable disadvantage in terms of access to job-related NFE (-31 percentage points compared to those employed in the ISCO 1-2 occupational group. Disadvantages are also considerably high for foreign-born workers compared to native-born workers and for part-time compared to full-time workers.

Table 3. **Inequality of participation in job-related non-formal education (25-64 year-olds): key descriptive and model-based findings for the United Kingdom and Central European countries**

			UK	DE	LU	NL	AT	SI
[1]	Participation of employed adults in job-related NFE – Country rate and rank (descriptive statistics)		21.6% - 23/26	41.8% - 7/26	53.1% - 2/26	49.0% - 4/26	34.9% 10/26	25.1% - 9/26
[2]	Inequalities in participation by labour market status in the country (model Aw)	unemployed/ employed	ame: -16%* er: 2.3 (dr: 2.6)	ame: -22%% er: 1.8 (dr: 2.3)	ame: -33%** er: 2.0 (dr 2.2)	ame: -22%* er: 1.6 (dr: 2.3)	ame: -8%** er: 1.2 (dr: 1.5)	ame: -17%** er: 2.1 (dr:2.7)
		inactive/ employed	ame: -22%** er: 5.0 (dr: 5.6)	ame: -35%** er: 3.5 (dr:4.0)	ame: -54%** er: 5.9 (dr:7.6)	ame: -37%** er: 2.8 (dr: 4.2)	ame: -35%** er: 5.6 (dr: 6.8)	ame: -29%** er:10.7 (dr: 16.4)
[3]	Three largest significant inequalities in participation among employed adults in the country (average marginal effects in percentage points) (model Bw)		ISCO 6-8 vs ISCO 1-2 (ame: -18%**)	ISCO 9 vs ISCED 1-2 (ame: -31%**)	ISCO 9 vs ISCED 1-2 (ame: -37%**)	ISCO 9 vs ISCED 1-2 (ame: -32%**)	ISCO 9 vs ISCED 1-2 (ame: -36%**)	ISCO 9 vs ISCED 1-2 (ame: 29%**)
			ISCO 9 vs ISCED 1-2 (ame: -12%**)	ISCED 0-2 vs ISCED 5-6 (ame: -20%**)	ISCO 6-8 vs ISCO 1-2 (ame: -17%**)	Extractive vs social services sector (ame: -29**)	ISCED 0-2 vs ISCED 5-6 (ame: -21%**)	Transformative vs social services sector (ame: -20**)
			Size 1-10 vs 50+ (ame: -11%)	ISCO 6-8 vs ISCO 1-2 (ame: -19%**)	Personal vs social services sector (ame: -14%**)	Transformative vs social services sector (ame: -19**)	Personal vs social services sector (ame: -18%**)	Distributive vs social services sector (ame: -18%**)
[4]	Inequalities in participation among employed adults in the country: identified marked country peculiarities compared to all other countries (model Bw)		[DS+] Strong inequality according to occupational group [DS-] low inequality according to ISCED level	[DS+] Considerably high difference between migrants/ natives (ame: -13%**) and between part-time and full-time (ame: -9%**)	[DS+} Considerable difference between part- and full-time workers (ame: -11%**) (DS-) Disadvantage for low educated adult workers (ISCED0-2) is found not to be statistically significant (on * level)	[DS+] Considerably high difference between migrants/natives (ame: -14%**) and 25-34 and 55-64 years old: (ame: -13%**)		[DS+] Strongest disadvantage (-5%) for women
[5]	Inequalities in participation among employed adults in the country: identified differences in findings resulting from descriptive statistics and model Bw based statistics: marked peculiarities compared to all other countries		[DPD] Inequalities between low qualified (ISCED 0-2) and highly qualified (ISCED 5-6) are much smaller in the model					[DPD] Advantage for females based on descriptives turn into disadvantage based on model estimates

N.B: Key information to read and understand the table is provided in Section 5.1.1.
Source: AES-2011 microdata, own calculations

In Luxembourg, unemployed individuals have a probability to participate in job-related NFE – according to model Aw – which is by 33 percentage points lower than for employed individuals; for inactive individuals, the disadvantage is lower by 54 percentage points. According to model Bw, the strongest inequalities are found when comparing those employed in occupational groups at the lower end of the ISCO classification to those employed in the group of ISCO 1-2. Furthermore, considerable inequalities concern workers of the personal service sector compared to those of the reference sector (i.e. the social services sector, mainly including public administration and education). By comparison, and as in other central European countries, the estimated disadvantage for part-time work is considerably high (-11 percentage points).

In the Netherlands, according to model Aw, unemployed individuals suffer a disadvantage in terms of access to job-related NFE, in the range of 22 percentage points compared to employed individuals. For inactive individuals, the respective value is 37 percentage points. When looking at employed adults, according to model Bw workers in elementary occupations are strongly disadvantaged, in their access to job-related training (-32 percentage points). Differences between economic sectors play an important role in terms of access to job-related NFE. Migrant background is also associated with a strong disadvantage, even when controlling differences in the composition of the two groups being compared. In line with the strong consensus on work-time reduction as a legitimate social tool for overcoming imbalances on the labour market, part-time work is not linked to a significant disadvantage compared to full-time work.

In Austria, compared to employed adults, the disadvantage experienced by unemployed adults in terms of access to job-related NFE, is very low (the lowest). Model Aw estimates that they have a probability of participation which is, by8 percentage points lower than that of employed adults. However, the disadvantage experienced by inactive adults, is 35 percentage points. Among employed adults, the disadvantage is linked to social groups in quite a similar way as in Germany. Workers in elementary occupations, low-qualified adults (ISCED 0-2) experience the strongest disadvantage in terms of access to job-related NFE, according to the estimates of model Bw. Working in the personal services sector is also associated with a marked disadvantage (estimated -18 percentage points compared to the social services sector).

In Slovenia, according to model Aw, unemployed individuals also have a smaller probability of participating in job-related NFE, which is 17 percentage points lower than for employed individuals (for inactive individuals, the disadvantage amounts to 29 percentage points. Among employed individuals

(model Bw), the disadvantage in terms of access to job-related NFE is strongly associated to occupation, with workers in elementary occupations being the most disadvantaged group (-29 percentage points compared to ISCO 1-2). The economic sector of activity also plays a large part in explaining differences in terms of access to job-related NFE, with the transformative sector and personal services being associated with a strong disadvantage. Having non-completed upper secondary education is also associated with a considerable inequality (-17 percentage points for those with qualifications at levels ISCED0-2 compared to those with qualifications at levels ISCED 5-6). Employed women is Slovenia have a moderate disadvantage in terms of access to job-related NFE; however, this is the strongest among the countries compared.

5.4. Group 3: West Mediterranean countries

This section discusses results for the three West Mediterranean countries, Spain, Italy and Portugal together with the results for Spain, France, Italy and Portugal are often grouped together for their similarities in system settings which characterise their welfare-states and, to some extent, their education systems, their industrial-relation systems and their highly dualised labour markets. France is regarded as a special case which defies classification under the most often used typologies. France is often grouped together with other central European countries based on its welfare state model, but this becomes more difficult when considering its labour market and industrial relations system. According to prior research, West Mediterranean countries and France combine moderate levels of participation in adult learning with considerably high differences in participation across social strata (Roosmaa and Saar, 2010). Estimates of the current study put this assessment into perspective.

Table 4. **Inequality of participation in job-related non-formal education (25-64 year-olds): key descriptive and model-based findings for West Mediterranean countries**

			FR	ES	IT	PT
[1]	Participation of employed adults in job-related NFE – Country rate and rank (descriptive statistics)		40.1% - 8/26	28.6% - 17/26	25.2% - 18/26	33.3% - 14/26
[2]	Inequalities in participation by labour market status in the country (model Aw)	unemployed/employed	ame: -16%** er: 1.5 (dr: 1.9)	ame: -8%** er: 1.3 (dr: 1.6)	ame: -21%** er: 2.6 (dr: 3.1)	ame: -27% (**) er: 2.7 (dr: 3.2)
		inactive/employed	ame: -39%** er: 6.2 (dr: 10.8)	ame:-24%** er: 3.6 (dr: 5.6)	ame:-29%** er: 7.6 (dr: 12.3)	ame:-38%** er: 10.1 (dr: 17.6)
[3]	Three largest significant inequalities in participation among employed adults in the country (average marginal effects in percentage points) (model Bw)		Size 1-10 vs size 50+ (ame: -21%**)	ISCO 9 vs ISCO 1-2 (ame: -17%**)	ISCO 9 vs ISCO 1-2 (ame: -26%**)	ISCO 9 vs ISCO 1-2 (ame: -21%**)
			ISCO 9 vs ISCO 1-2 (ame: -20%**)	Extractive vs social services sector (ame: -16%**)	ISCO 6-8 vs ISCO 1-2 (ame: -16%**)	Size 1-10 vs size 50+ (ame: -20%**)
			ISCED 0-2 vs ISCED 5-6 (ame: -17%**)	ISCED 0-2 vs ISCED 5-6 (ame: -15%**)	ISCED 0-2 vs ISCED 5-6 (ame: -16%**)	ISCED 0-2 vs ISCED 5-6 (ame: -18%**)
[4]	Inequalities in participation among employed adults in the country: identified marked country peculiarities compared to all other countries (model Bw)		(DS+) Strong differences between 25-34 and 55-64 years olds (ame: -13%**); large difference between adults working in micro work places (Size 1-10 employee) vs large work-place (50+ employee), the largest across all countries			
[5]	Inequalities in participation among employed adults in the country: identified differences in findings resulting from descriptive statistics and model Bw based statistics: marked peculiarities compared to all other countries			(DPD) Female disadvantage (ame:-5%**) in the model estimates not visible in the descriptive; much lower differences for migrants/non-migrants than in the descriptives	(DPD) Large differences in descriptive statistics for migrants, no significant differences according to the model	

N.B: Key information to read and understand the table is provided in Section 5.1.1.

Source: AES-2011 microdata, own calculations

In France, according to model Aw, unemployed and inactive individuals have a probability to participate in job-related NFE, the said probability being lower than that of employed individuals (by 16 and 39 percentage points respectively). Among employed individuals (model Bw), estimates suggest an important association between participation in job-related NFE and the size of the workplace, with the strong inequalities between those employed in micro workplaces (1-10 employees) and those employed in large ones (with 50 and more employed). Inequalities in participation based on occupation and educational attainment are also remarkable, with those working in elementary occupations (ISCO 9) or having a low level of education (ISCED0-2) being disadvantaged compared to managers/professionals or highly educated adults. Estimates also suggest that foreign-born workers are at a disadvantage in terms of access to job-related NFE (-10 percentage points).

In Spain, according to the estimates of model Aw, job-related learning is somewhat less dependent on employment status than in other southern countries. In particular, estimated differences in participation between employed and unemployed individuals are low (-8 percentage points). Among employed adults, Spain, such as other West Mediterranean countries, finds its inequalities in participation in job-related NFE mainly associated to occupation (with workers in elementary occupations – ISCO 9 – being particularly disadvantaged) and to educational attainment (with those with qualifications at levels ISCED 0-2 being particularly disadvantaged). Workers of the extractive sector, including farming, are also at a strong disadvantage compared to those working in the reference sector (i.e. the social services sector mainly including public administration and education). Overall, the differences between the strata with the highest and the strata with the lowest participation rates are comparatively moderate. When controlling all factors, estimates point to a small, yet significant disadvantage for women in participation in job-related NFE, hidden by compositional effects in descriptive statistics alone. The estimates also point to the fact that the disadvantage in participation associated to a migrant background becomes smaller when controlling individual characteristics.

In Italy, according to model Aw, being unemployed is associated with a probability of participation which is lower, by 21 percentage points, than it is for employed individuals. For the inactive population compared to employed individuals, the disadvantage is estimated at 29 percentage points. Among the employed population, estimations (model Bw) point to a strong disadvantage for workers in elementary occupations (ISCO 9) and manual skilled workers (ISCO 6-8) and for low-qualified adults (with qualifications at levels ISCED 0-2). Controlling individual factors, estimated differences according to workplace size

are comparatively small. Foreign-born workers show lower participation rates based on descriptive statistics, but when controlling other variables, the migrant background is not associated with a significant disadvantage in participation in job-related education and training.

In Portugal, estimates from model Aw suggest that participation in job-related NFE is characterised by a strong disadvantage for those currently unemployed (27 percentage points as compared to those employed) and a very strong disadvantage for those currently inactive (37 percentage points). In Portugal, according to the estimations of model Bw, main inequalities in participation among employed adults emerge based on occupation, educational attainment and workplace size, with participation being reduced for those working in elementary occupations, having low-level qualifications and being employed in small establishments.

5.5. Group 4: South Mediterranean countries

Among the South Mediterranean countries, Greece and Cyprus are often typified as sharing the features of the Mediterranean welfare states (Ferrera, 2005; 2010). Malta does not easily fit into any of the typologies available because it is characterised by historical legacies as a former British colony and features the southern European family welfare state model (Malta). Following a geographical criterion, they are presented together.

In Greece, model Aw estimates probabilities of participation in job-related training which are lower, by 3 percentage points, for unemployed adults (and lower by 8 percentage points for the inactive) than for employed adults. Such small inequalities, measured in terms of absolute differences, should be seen in light of the exceptionally low participation rates in job-related NFE in Greece. According to the estimation model Bw, there is a considerable disadvantage in participation for those employed in small establishments, formally low qualified and manual skilled workers (ISCO 6-8). The very low level of participation in job-related learning is combined with and partly explains the small magnitude of differences across groups: range of estimated participation rates is considerably small.

Table 5. **Inequality of participation in job-related non-formal education (25-64 year-olds): key descriptive and model-based findings for South Mediterranean countries**

			EL	CY	MT
[1]	Participation of employed adults in job-related NFE – Country rate and rank (descriptive statistics)		6.9% - 25/26	32.7% - 15/26	33.9 %- 12/26
[2]	Inequalities in participation by labour market status in the country (model Aw)	unemployed/employed	ame: -3%** er: 2.3 (dr 2.3)	ame: -25%** er: 2.7 (dr: 3.5)	ame: -6%** er: 1.2 (dr: 1.5)
		inactive/employed	ame: -8%** er: 11.8 (dr: 22.3)	ame: -36%** er: 12.7 (dr: 20.3)	ame: -23%** er: 2.3 (dr: 3.5)
[3]	Three largest significant inequalities in participation among employed adults in the country (average marginal effects in percentage points) (model Bw)		Workplace size (1-10 employee vs 50+) (ame: -16%**)	ISCO 9 vs ISCO 1-2 (ame: -36%**)	ISCO 9 vs ISCO 1-2 (ame: -25%**)
			ISCED 0-2 vs ISCED 5-6 (ame: -11%**)	Workplace size (1-10 emp. vs 50+) (ame: -20%**)	ISCED 0-2 vs ISCED 5-6 (ame: -22%**)
			ISCO 6-8 vs ISCO 1-2 (ame: -9%**)	ISCED 0-2 vs ISCED 5-6 (ame: -17%**)	Workplace size (1-10 emp. vs 50+) (ame: -17%**)
[4]	Inequalities in participation among employed adults in the country: identified marked country peculiarities compared to all other countries (model Bw)		[DS] The disadvantage for ISCO 9 workers is found not to be statistically significant	[DS+] Strongest disadvantage across countries for part-time workers (ame:-15%**)	
[5]	Inequalities in participation among employed adults in the country: identified differences in findings resulting from descriptive statistics and model Bw based statistics: marked peculiarities compared to all other countries				[DPD] The disadvantage for males is much weaker according to estimates than according to descriptives

N.B: Key information to read and understand the table is provided in Section 5.1.1.

Source: AES-2011 microdata, own calculations

In Cyprus, compared to employed individuals, unemployed individuals suffer a disadvantage in participation which is estimated at 25 percentage points (model Aw). The disadvantage for inactive compared to employed individuals is at 36 percentage points. As far as employed individuals are concerned, and according to estimates from model Bw, Cyprus shows a rather similar pattern to Greece, with strong inequalities for workers in elementary occupations (compared to workers in the occupational group ISCO 1-2), workers employed in micro establishments, sized 1-10 employees, compared to large ones (i.e. 50+) and formally low qualified adults (compared to adults with high-level qualifications). It must be noted, however, that Cyprus, compared to Greece, has much higher participation rates, also when the comparison to Greece is restricted to the disadvantaged categories mentioned above. Part-time work is associated with a comparatively high disadvantage in participation in job-related NFE (-15 percentage points).

In Malta, according to model Aw, unemployed individuals suffer a comparatively small disadvantage compared to employed individuals participating in job-related NFE (6 percentage points less). An estimated 23 percentage point disadvantage characterises inactive individuals compared to employed individuals. Estimates for employed individuals in Malta show a rather similar pattern as for Cyprus, with the strongest inequalities in terms of participation in job-related NFE identified for those who are formally low-qualified (qualification at levels ISCED 0-2) and employed in micro establishments (1-10). However, overall participation is not low.

5.6. Group 5: Visegrad countries

Four countries in eastern central Europe are labelled as Visegrad countries. These are the Czech Republic, Hungary, Slovakia and Poland. They are part of the Visegrad group ([41]) and share several historic and institutional features.

([41]) The Visegrad group: http://www.visegradgroup.eu

Table 6. **Inequality of participation in job-related non-formal education (25-64 year-olds): key descriptive and model-based findings for Visegrad countries**

			CZ	SK	HU	PL
[1]	Participation of employed adults in job-related NFE – Country rate and rank (descriptive statistics)		29.7% - 16/26	34.7% - 11/26	33.6% - 13/26	17.9% - 24/26
[2]	Inequalities in participation by labour market status in the country (model Aw)	unemployed/employed	ame: -20%** er: 2.2 (dr: 2.5)	ame: -38%** er: 7.6 (dr: 8.9)	ame: -38%** er: 4.5 (dr: 4.6)	ame: -19%** er: 4.5 (dr: 6.5)
		inactive/employed	ame: -33%** er: 10.0 (dr: 12.1)	ame: -41%** er: 18.6 (dr: 24.7)	ame: -44%** er: 14.4 (dr: 16.3)	ame: -22%** er: 12.1 (dr: 19.6)
[3]	Three largest significant inequalities in participation among employed adults in the country (average marginal effects in percentage points (model Bw)		ISCO 9 vs ISCO 1-2 (ame:-37%**) ISCED 0-2 vs ISCED 5-6 (ame: -17%**) ISCO 6-8 vs ISCO 1-2 (ame: -14**)	ISCED 0-2 vs ISCED 5-6 (ame: -22%**) ISCO 9 vs ISCO 1-2 (ame: -21%**) Size 1-10 vs size 50+ (ame: -18%**)	Personal vs social services sector (ame: -13%**) Size 1-10 vs size 50+ (ame:-11%**) ISCED 3-4 vs ISCED 5-6 (ame: -8%**)	ISCO 9 vs ISCO 1-2 (ame: -24%**) ISCED 0-2 vs ISCED 5-6 (ame:-19%**) ISCO 6-8 vs ISCO 1-2 (ame: -17**)
[4]	Inequalities in participation among employed adults in the country: identified marked country peculiarities compared to all other countries (model Bw)		(DS-) The disadvantage for ISCO 9 workers is the largest across all countries (-37%**)		(DS-) The disadvantages for low-qualified (ISCED 0-2) and for ISCO 9 workers are found not to be statistically significant (on * level)	
[5]	Inequalities in participation among employed adults in the country: identified differences in findings resulting from descriptive statistics and model Bw based statistics: marked peculiarities compared to all other countries					

NB: Key information to read and understand the table is provided in Section 5.1.1.

Source: AES-2011 microdata, own calculations.

In the Czech Republic, unemployed individuals suffer an estimated disadvantage of 20 percentage points in terms of participation in job-related training compared to employed individuals (model Aw). The respective disadvantage for inactive individuals is 33 percentage points. According to the estimates (model Bw), and when compared to the reference groups, inequalities in access to job-related NFE for employed adults are strongest when taking occupation into consideration (for workers in elementary occupations and skilled manual workers) as well as for adults with no upper secondary education.

In the Slovak Republic, being unemployed is associated with a predicted disadvantage in participation in job-related NFE of 38 percentage points, hardly smaller than the respective disadvantage for inactive individuals (41 percentage points less than employed individuals). Among employed individuals (model Bw), the strongest disadvantages are found for formally low qualified adults (compared to highly qualified at levels ISCED 5-6) and for workers in elementary occupations (ISCO 9). Being employed in a micro establishment is, according to the estimates, also strongly and negatively associated with participation in job-related training.

In Hungary, the estimated disadvantage for unemployed individuals and inactive individuals compared to employed individuals is as large as in the Slovak Republic (38% less for the unemployed and 44% less for the inactive according to model Aw). Model Bw estimates for the employed adult population suggest that the strongest inequalities are found for workers in the personal services sectors and for workers in micro establishments (1-10 persons employed). A further – although comparatively small – disadvantage is estimated for formally medium qualified (ISCED3-4) to highly qualified workers (ISCED 5-6). Hungary is one out of three countries, where the disadvantage in participation experienced by those with low formal educational attainment (ISCED0-2) is not found to be statistically significant (as a combined result of the magnitude of differences and sample sizes issues).

In Poland, according to estimates from model Aw, unemployed individuals (19 percentage points less) and inactive individuals (22 percentage points less) show comparatively similar levels of disadvantage compared to employed individuals. When studying the employed population, according to the estimates of model Bw, the strongest inequalities are found in the disadvantage experienced by workers in elementary occupations (ISCO 9) and manual skilled workers (ISCO 6-8) as well as having achieved only a low level of educational attainment (ISCED 0-2). Poland is among the countries studied with the strongest differences among the social strata compared.

5.7. Group 6: Baltic countries and South-East European countries

In this section, results are summarised, for the three Baltic countries – Estonia, Lithuania and Latvia – as well as for two countries in the southern part of Eastern Europe (Bulgaria and Romania).

In Estonia, model Aw estimates a sharp disadvantage for the unemployed and the inactive adult population (with chances of participation in job-related NFE being 37 percentage points and 42 percentage points lower than for employed individuals respectively). According to the estimates for the employed population (model Bw), in Estonia, the widest inequalities in participation are estimated for workers in an elementary occupation (ISCO 9) or employed in the transformative or the personal service sector

In Latvia, unemployed and inactive individuals are, according to model Aw, estimated to suffer a disadvantage of 21 and 27 percentage points respectively compared to employed individuals in terms of their probabilities of participation. For employed individuals (model Bw), estimates point towards the type of job performed (i.e. the occupational position) as the most significant dimension associated to inequalities in participation in job-related NFE. Workers in elementary occupations, skilled manual workers and clerks are at a substantial disadvantage in terms of participation in job-related NFE compared to managers and professionals. Furthermore, having not completed upper secondary education is also associated with a substantial disadvantage with regard to participation in job-related learning.

In Lithuania, the estimated disadvantage in participation (model Aw) for unemployed and inactive individuals, compared to employed individuals, is 21 and 26 percentage points respectively (results are in line with those for Latvia). For the employed adult population (model Bw), as for Latvia, estimates suggest a dominating importance of the occupational dimension in determining inequalities in participation in job-related NFE, with workers in elementary occupations, skilled manual workers and clerks facing a strong disadvantage compared to managers and professionals.

Table 7. **Inequality of participation in job-related non-formal education (25-64 year-olds): key descriptive and model-based findings for Baltic and South-East European countries**

			EE	LV	LT	BG	RO
[1]	Participation of employed adults in job-related NFE – Country rate and rank (descriptive statistics)		39.6% - 9/26	23.6% - 20/26	22.5% - 22/26	23.1% - 21/26	5.6% - 26/26
[2]	Inequalities in participation by labour market status in the country (model Aw)	unemployed/employed	ame: -37+ er: 4.3 (dr: 5.6)	ame: -21** er: 3.2 (dr: 4.4)	ame: -21** er: 4.2 (dr: 7.3)	ame: -33** er: 18.4 (dr: 20.3)	ame: -4** er: 2.1 (dr: 2.5)
		inactive/employed	ame: -42%** er: 7.2 (dr: 9.6)	ame: -27%** er: 9.8 (dr: 13.8)	ame: -26%** er: 13.4 (dr: 24.3)	ame: -35%** er: 94.7 (dr:110.0)	ame: -7%** er: 26.0 (dr: 44.1)
[3]	Three largest significant inequalities in participation among employed adults in the country (average marginal effects in percentage points (model Bw)		ISCO 9 vs ISCO 1-2 (ame: -28%**) Transformative vs social services sector (ame: -28%**) Personal vs social services sector (ame: -25%**)	ISCO 9 vs ISCO 1-2 (ame: -36%**) ISCO 6-8 vs ISCO 1-2 (ame: -27%**) ISCO 4-5 vs ISCO 1-2 (ame: -22%**)	ISCO 9 vs ISCO 1-2 (ame: -37%**) ISCO 6-8 vs ISCO 1-2 (ame: -27%**) ISCO 4-5 vs ISCO 1-2 (ame: -26%**)	1-10 vs 50+ (ame: -16%**) Distribute vs social services sector (ame: -8%**) ISCED 3-4 vs ISCED 5-6 (ame: -8%**)	Extractive vs social services sector (ame: -11%**) Personal vs social services sector (ame: -6%**) ISCO 9 vs ISCO 1-2 (ame: -6%**)
[4]	Inequalities among employed adults in the country: identified marked country peculiarities compared to all other countries (model Bw)		[DS+] Strong inequality between 25-34 and 55-64 year old (ame: -13%**)		(DS-) The disadvantage for low qualified (ISCED 0-2)	(DS-) The disadvantage for low qualified (ISCED 0-2) is found not to be statistically significant (on * level))	(DS-) The disadvantage for low qualified (ISCED 0-2) is found not to be statistically significant (on * level); low disadvantage for ISCO 9 workers (ame: -0.06%**)
[5]	Inequalities among employed adults in the country: identified differences in findings resulting from descriptive statistics and model Bw based statistics: marked peculiarities compared to all other countries		[DPD] A marked disadvantage of male according to descriptives turn into an advantage according to model estimates		[DPD] A marked disadvantage of male according to descriptives turn into an advantage according to model estimates		

NB: Key information to read and understand the table is provided in Section 5.1.1.

Source: AES-2011 microdata, own calculations

In Bulgaria, inactive and unemployed individuals have a much lower probability of participating in job-related NFE than employed adults (according to model Aw, these are estimated to be 33 percentage points and 35 percentage points lower than for employed individuals). Model Bw for employed adults estimates the largest inequalities in association with the size of the establishments where they work, with those working in small enterprises (1-10 employed individuals) being strongly disadvantaged compared to those working in enterprises with 50+ employed individuals. Furthermore, a strong disadvantage is found for those employed in the distributive service sector and holding a medium-level qualification (compared to high-level qualification). Inequality in participation in job-related NFE among the employed is low in Bulgaria, but participation is also low.

In Romania, differences in participation in job-related NFE have to be studied against the background of outstanding low participation rates. According to model Aw, unemployed (4 percentage points less) and inactive (7 percentage points less) individuals have a lower probability of participating in job-related NFE than employed individuals. Estimates from model Bw in Romania suggest that, as far as employed adults are concerned, the strongest inequalities in terms of access to job-related NFE are found on the basis of the economic sector of activity, with the extractive sector and the personal service sector being particularly disadvantaged in comparison to the social service sector (reference group). Working in an elementary occupation is also associated with a substantial disadvantage. Also for Romania, low participation levels are combined with inequality levels.

List of abbreviations

AES AES-2011	adult education survey 2011 round of the adult education survey
ALMP	active labour market policies
BIBB	Bundesinstitut für Berufsbildung [Federal institute for vocational education and training]
Cedefop	European centre for the development of vocational training
CIRCABC	communication and information resource centre for administrations, businesses and citizens
CME	coordinated market economy
CRANET	Cranfield network on international strategic human resource management
CRELL	centre for research in lifelong learning
CVET	continuing vocational education and training
CVT	continuing vocational training
CVTS	continuing vocational education and training survey
ECS	European company survey (conducted under the lead of Eurofound
ECVET	European credit transfer system for vocational education and training
EQF	European qualifications framework
ETF	European Training Foundation
EU	European Union
EWCS	European working conditions survey
FAE	formal adult education
GDP	gross domestic product
HE	higher education
HRD	human resource development
HRM	human resource management
ISCED 97	international standard classification of education (1997)
ISCO	international standard classification of occupations
IVET	initial vocational education and training
IVT	initial vocational training
LCS	(European) labour cost survey
LFS	labour force survey
LLL	lifelong learning
LM	labour market
LME	liberal market economy
N/A	not applicable
NFE	non-formal adult education
NOS	national occupation standard
NP	did not participate
NQF	national qualifications framework
NSI	national statistical institute
NUTS	nomenclature of territorial units for statistics

OR	odds ratio
PPP	purchasing power parity
UOE	Uneseco – OECD – Eurostat, the joint, register-based data basis on participation in formal education
VET	vocational education and training

List of country abbreviations

EU-28	European Union (28 countries)
BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
HR	Croatia
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom
NO	Norway

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Unequal access to job-related learning: evidence from the adult education survey

This report provides an in-depth analysis of adults' participation in non-formal job-related education and training in Europe, having particular but not exclusive regard to employed adults. It investigates its variability and in/equality based on key factors at individual level, including socio-demographic background, education, labour market status, jobs and workplace characteristics. The report selects, presents and analyses internationally comparable data from the 2011 adult education survey. Basic descriptive statistics are enriched with findings from multivariate statistical modelling to provide a statistical picture of inequalities in Europe and at country level.

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