



## JRC TECHNICAL REPORTS

# Building up evidence on work-based learning in VET

*A reflection on sources  
for possible indicators or  
benchmarks on  
work-based learning*

Flisi, S.

2020



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#### **Contact information**

Sara Flisi  
European Commission – Joint Research Centre  
Via E. Fermi 2749, I-21027 Ispra (VA), Italy  
[Sara.FLISI@ec.europa.eu](mailto:Sara.FLISI@ec.europa.eu)

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JRC118196

EUR 29883 EN

PDF ISBN 978-92-76-12117-6 ISSN 1831-9424 doi10.2760/645199

Luxembourg: Publications Office of the European Union, 2020

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How to cite this report: Flisi, S., *Building up evidence on work-based learning in VET*, EUR 29883 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-12117-6, doi:10.2760/645199, JRC118196

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## **Acknowledgements**

This report is part of the “Towards the development of analytical and monitoring frameworks for VET, adult learning, skills and tasks (VAST)” Administrative Agreement between DG EMPLOYMENT, SOCIAL AFFAIRS AND INCLUSION (EMPL) and DG JOINT RESEARCH CENTRE (JRC). Its content, “*Statistical analysis of work-based learning (WBL) in VET across the EU*”, is stipulated under Task 1 of the Technical Annex accompanying the VAST Agreement.

The author would like to thank Mantas Sekmokas, Dana-Carmen Bachmann (DG EMPL) and Enrique Fernández-Macías (DG JRC) for their useful comments and suggestions to improve earlier versions of this report, as well as colleagues from DG ESTAT (in particular Elodie Cayotte, Sabine Gagel, Malgorzata Stadnik, Alessandro Albano, Ines Kolakovic and Mélina Antuofermo) and members of the OECD INES Network (in particular Pascale Poulet-Coulibando of the French Ministry of Higher education, and Research and Innovation) for providing supporting information and special extractions.

## **Authors**

Sara Flisi  
European Commission – Joint Research Centre  
Via E. Fermi 2749, I-21027 Ispra (VA), Italy  
Email: [Sara.FLISI@ec.europa.eu](mailto:Sara.FLISI@ec.europa.eu)

## **Abstract**

Work-based learning (WBL) has been high on the policy agenda of the European Commission for many years. Given the priority attributed to work-based learning in vocational education and training (VET) across the EU, the Commission is currently exploring different options for supporting its further development and tracking progress in this field. One of the options is the development of indicators or a benchmark to monitor work-based learning in formal VET. This report provides evidence in support of this process. After elaborating the main definitions relevant to the work-based learning domain, it presents an overview of the main data sources currently available to monitor country performance in WBL. It also provides an assessment of the strengths and weaknesses of the sources that could underpin a possible indicator or benchmark on work-based learning.

# 1 Introduction

Vocational education and training (VET) represents a fundamental component of education and lifelong learning systems, providing individuals with the knowledge, skills and competences required on the labour market. Enhancing provision and access to high-quality learning opportunities has been at the heart of European education, training and employment policies for many years. One of the main priorities in the European Commission's VET policy has been the promotion of work-based learning (WBL) and apprenticeships schemes in VET systems, as tools to deliver labour market relevant skills, ease transitions to labour market, and contribute to reducing youth unemployment.

The 2002 Copenhagen Declaration launched the European strategy for enhanced cooperation in VET, commonly referred to as the "Copenhagen process". In 2010, the Bruges Communiqué on enhanced European cooperation in VET for 2011-2020 was adopted <sup>(1)</sup>, defining common objectives for 2020 and outlining a series of actions to increase the quality of VET in Europe in order to make it more accessible and relevant to the labour market. The Bruges Communiqué provided that "work-based learning carried out in partnership with businesses and non-profit organisations should become a feature of all initial VET courses."

European cooperation on VET was further enhanced by the 2015 Riga Conclusions, where Ministers in charge of VET together with the EU Social Partners and the Commission agreed to "promote work-based learning in all its forms, with special attention to apprenticeships, by involving social partners, companies, chambers and VET providers, as well as by stimulating innovation and entrepreneurship".

In the New Skills Agenda for Europe <sup>(2)</sup>, the European Commission committed, in cooperation with Member States, social partners and education and training providers, to "support the implementation of the Riga Conclusions for quality and labour market relevant vocational skills and qualifications, by: supporting opportunities for learners to undertake a work-based learning experience as part of their studies; increasing opportunities for VET learners to combine learning experiences acquired in different settings [...]; improving data availability on labour market outcomes of VET".

In March 2018, the Council adopted a Recommendation on a European Framework for Quality and Effective Apprenticeships <sup>(3)</sup>. The recommendation foresees different common criteria for the quality and effectiveness of apprenticeships, aimed at helping Member States to develop and promote their national apprenticeship schemes.

Given the priority attributed to work-based learning in VET across the EU, the Commission is currently exploring different options for supporting its further development and tracking progress in this field. One of the options that could be pursued in this respect is the development of an indicator(s) and/or a benchmark to monitor work-based learning in formal VET <sup>(4)</sup>.

This report is aimed at providing evidence in support of this process. After providing the main definitions relevant to the work-based learning domain, it will present an overview of the main data sources currently available to monitor country performance in WBL. It will also provide an assessment of the strengths and weaknesses of the sources that could underpin a possible indicator(s) or benchmark on work-based learning.

The rest of the report is structured as follows. Section 2 provides the definition of the main concepts related to WBL. Sections 3 and 4 present an overview of what can be considered as the main sources to monitor the prevalence of work-based learning and its related outcomes (i.e. the Labour Force Survey and the joint UNESCO-UIS/OECD/EUROSTAT data collection on education statistics), while Section 5 describes other potential sources of information that could be taken into account for monitoring purposes. Section 6 provides a preliminary assessment of all the potential data sources, while Section 7 analyses further the strengths and weaknesses of the main candidate data sources for a potential indicator or benchmark. Section 8 concludes.

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<sup>(1)</sup> The Bruges Communiqué on enhanced European Cooperation in Vocational Education and Training for the period 2011-2020. [https://www.eqavet.eu/Egavet2017/media/Documents/brugescom\\_en.pdf](https://www.eqavet.eu/Egavet2017/media/Documents/brugescom_en.pdf)

<sup>(2)</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016DC0381>

<sup>(3)</sup> <http://data.consilium.europa.eu/doc/document/ST-6779-2018-INIT/en/pdf>

<sup>(4)</sup> VET can take place either during initial formal education (normally at upper secondary level, before beginning working life) – in which case it is generally defined **initial vocational education and training (IVET)** – or as **continuing VET (CVET)**, that is after initial education and training, or after beginning working life. The current document focuses on IVET only.

## 2 Definition of work-based learning

According to Cedefop (2014), work-based learning (WBL) can be defined as the “acquisition of knowledge and skills through carrying out – and reflecting on – tasks in a vocational context, either at the workplace (such as alternance training) or in a VET institution”. In line with the Rethinking Education Communication <sup>(5)</sup>, European Commission (2013) identifies three main models of WBL:

1. **Alternance schemes or apprenticeships:** in these programmes, learners spend a significant time on training in companies; in parallel, or in "alternating" periods, they acquire general and occupation-related knowledge and often complementary practical skills and key competences in VET schools or other education/training institutes. These programmes are therefore fundamentally based on the integration of companies as training providers together with VET schools or other education/training institutes. They are typically known in Austria and Germany as the "dual system". Although the terms alternance and apprenticeship are often used interchangeably, according to Cedefop (2014) the latter could be considered as a specific form of the former:
  - a. **Alternance training** is defined as education or training combining periods in an educational institution or training centre and in the workplace. The alternance scheme can take place on a weekly, monthly or yearly basis. Depending on the country and applicable status, participants may be contractually linked to the employer and/or receive a remuneration.
  - b. **Apprenticeships**, on the other hand, are systematic, long-term trainings alternating periods at the workplace and in an educational institution or training centre. They are therefore typically characterised by a long-term training period and higher amount of training in the workplace in comparison to other forms of alternance training. Moreover, the apprentice is contractually linked to the employer, and receives remuneration (wage or allowance). The employer assumes responsibility for providing the trainee with training leading to a specific occupation.
2. **School-based VET which includes on-the-job training periods in companies.** On-the-job training periods typically cover internships, work placements or traineeships that are incorporated as a compulsory or optional element of VET programmes leading to formal qualifications. They can be of varying duration but typically represent less than 50% of the training programme duration (often around 25-30% or less). They are primarily intended as effective school-to-work transition mechanisms that allow young people to familiarise themselves with the world of work and thus facilitate their transition from education to employment.
3. **WBL that is integrated in a school-based programme**, through on-site labs, workshops, kitchens, restaurants, junior or practice firms, simulations or real business/industry project assignments.

Countries often combine these different models of WBL to some extent, and terminology and definitions tend to vary, so that the same term can have different connotations and underlying concepts. It is therefore not easy to operationalise the concept of WBL and its categories for the purposes of collecting data on this phenomenon. As a result, comparative statistics on WBL are still scarce, and comparable data is hard to come by.

A few alternative data sources can provide information on prevalence and outcomes of WBL in VET. Each of them can be valuable in providing insights into a particular aspect, category or target group for WBL, although the fragmentation of data sources makes them hardly comparable. This document will look into the main data sources currently available to monitor country performance in WBL (or some aspects of it), with the purpose of evaluating their strengths and weaknesses.

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<sup>(5)</sup> Commission Staff Working Document on *Vocational education and training for better skills, growth and jobs*, accompanying the Communication from the Commission on *Rethinking Education: Investing in skills for better socio-economic outcomes*, 2012. SWD(2012) 375 final.  
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012SC0375>

### 3 Overview of the 2016 LFS AHM on young people on the labour market

One of the main candidate data sources for monitoring WBL is the European Union Labour Force Survey (EU-LFS). The **2016 EU-LFS Ad-Hoc Module (AHM) on young people on the labour market** provides new data on the prevalence and associated outcomes of work-based learning (understood in this case in the narrow sense as learning by doing actual work in an external company or institution). In particular, the AHM provides information about the extent to which young people, during their highest level of completed formal education, acquired real-world work experience; if this experience was paid or not; what type of experience it was (e.g. if it was an apprenticeship); if it was part of or linked to the curriculum. The availability of this information in the LFS survey allows analysing several types of outcomes, primarily those related to the labour market. While these data allow for now just a one-off measure of WBL, the relevance of this data source for a possible indicator(s) or benchmark is due to the fact that in the future, similar information will be available on a yearly basis. As a matter of fact, it was agreed that under the upcoming Integrated European Social Statistics Framework Regulation (IESS FR), the variable "**work experience at a workplace as part of HATLEVEL**" (**HATWORK**) will be included into the **core LFS as from 2021**. This will imply a constant collection of information on WBL, allowing monitoring country progress in this domain. As will be explained in Section 7.5, the future HATWORK variable will not be entirely comparable to the variables currently available in the 2016 LFS AHM; however, it will be based on the same main dimensions on which the AHM information is built, which justifies the use of the currently available data to explore its relevance. In the rest of the report, LFS AHM and LFS HATWORK will be used to indicate this type of information.

Detailed information on the content of the 2016 AHM can be found in the Commission Implementing Regulation <sup>(6)</sup>, as well as in the detailed specifications of the AHM 2016 (Eurostat, 2016b).

The target group of the LFS Ad-Hoc Module 2016 is persons aged 15-34 living in private households. The first sub-module, in collecting information on the educational background of young people, includes the two variables that are fundamental to identify WBL, namely WORKEXP and WORKSTUD.

The first one, WORKEXP (Work experience during studies), is aimed at capturing if the highest level of completed formal education (HATLEVEL) included any practical work experience, with two separate questions for the paid and unpaid work. The resulting categories are:

1. Both paid and unpaid work experience;
2. Paid work experience only;
3. Unpaid work experience only;
4. No work experience during HATLEVEL.

If the individual had working experience (whether paid or unpaid) during HATLEVEL (i.e. if WORKEXP=1-3), the second variable, WORKSTUD, identifies the type of work-based learning experience accrued during the highest level of education. In particular, it ascertains whether the work experience was part of the curriculum or not, i.e. whether it had a relation to the content of the highest educational programme completed or not. The categories identified are the following:

1. Apprenticeship;
2. Mandatory traineeship;
3. Mandatory work-based training where distinction between 1 and 2 is not possible;
4. Optional traineeship (part of education);
5. Work outside the curriculum.

**Apprenticeship** is defined in this context as mandatory work-based learning with a total duration of at least 6 months and paid. Persons having been apprentices during their HATLEVEL education are practically defined in the LFS AHM as those who (1) had working experience, where (2) training was a mandatory part of their curricula, (3) the period spent doing on-the-job training had a total duration of at least 6 months, and (4) received payment for that work. The distinction between apprenticeship and **mandatory traineeship** is based on duration and payment; when it is not possible to make such distinction, code 3 applies.

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<sup>(6)</sup> Commission Implementing Regulation (EU) 2015/459 of 19 March 2015 specifying the technical characteristics of the 2016 ad hoc module on young people on the labour market provided for by Council Regulation (EC) No 577/98. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R0459&from=EN>

In order to provide an overview of data from the 2016 LFS AHM, this report relies on the figures available in the Eurostat website under the *lfs0\_16* series, and those obtained through special extractions provided by Eurostat.

In the *lfs0\_16* series of tables, Eurostat identifies six relevant categories of people, based on the payment, duration and link to education breakdowns explained above; the six categories are the following:

- no work experience: not carried out any form of work (neither paid nor unpaid) while being a student or pupil;
- outside curriculum: did carry out work while being a student or pupil, but the work was not connected to the person's ongoing studies;
- apprenticeship: had working experience which was a mandatory part of the curriculum, the work lasted at least 6 months and it was paid;
- mandatory traineeship: had working experience which was a mandatory part of the curriculum, the work lasted at least 6 months and it was not paid;
- mandatory work-based learning: had working experience which was a mandatory part of the curriculum, but no further information is available on the length of time, or if it was paid or not;
- optional traineeship: had working experience which was an optional part of the curriculum, and no further information is available on the length of time, or if it was paid or not.

Given the low underlying sample size, and therefore low reliability of figures for some of these individual categories, three main groups are identified based on work experience during studies, distinguishing between (a) work-based learning; (b) experience outside the curriculum; and (c) no work experience. Work-based learning is considered as the sum of apprenticeship, mandatory traineeship, mandatory work-based learning, and optional traineeship; within this broader group, apprenticeships are identified as the most relevant category whenever feasible, leaving "Other WBL" as residual category.

The rest of the section will provide an overview of the prevalence and outcomes associated with participation in work-based learning for young people aged 15-34 <sup>(7)</sup>. Three different groups can be distinguished by level and orientation of the highest qualification attained: those who have an upper secondary or post-secondary non-tertiary degree (i.e. levels 3-4 of the International Standard Classification of Education (ISCED), which can be considered as medium education) with vocational orientation as the highest level of education; those who have a degree at the same ISCED level but with general orientation; and those who attained a tertiary education degree (i.e. ISCED 5-8, classified as higher education) <sup>(8)</sup>. After providing a snapshot of the prevalence and type of work experience during studies for the different educational attainments, the section will look into patterns related to continuation of studies, and then describe the main labour market outcomes of young people.

### 3.1 An overview of work experience during studies in the EU

Figure 1 shows the percentage of people in the age group 15-34 who had **work experience while studying for their highest attained level of education**. In the EU as a whole, 67.1% of young people with a vocational medium-level education degree had some type of work experience during their studies; the share is

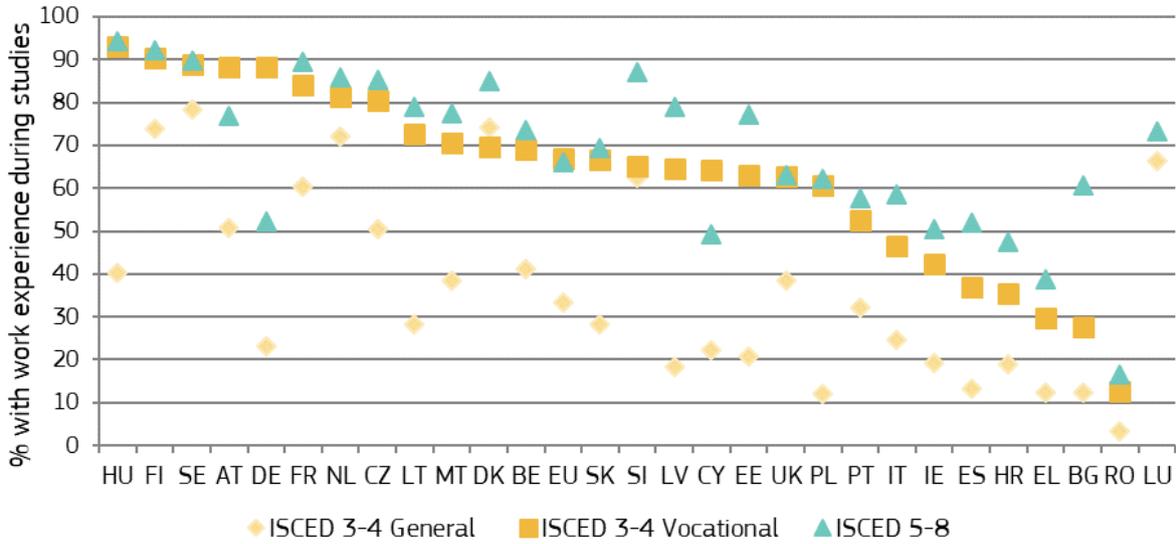
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<sup>(7)</sup> It should be highlighted that given current data availability, it is however impossible to establish whether the differences found between the sub-groups in the analysis are statistically significant.

<sup>(8)</sup> Besides the variable HATLEVEL, collecting information on the highest level of education successfully completed, the LFS collects information on the orientation of the programme completed at the highest education level in the variable HATVOC for medium levels of education (levels 3-4, see Eurostat, 2016a). This variable distinguishes between general and vocational orientation of educational programmes. **General orientation** programmes are those that are designed to develop learners' general knowledge, skills and competencies, as well as literacy and numeracy skills, often to prepare participants for more advanced education programmes at the same or a higher ISCED level and to lay the foundation for lifelong learning; these programmes are typically school- or college-based. General education includes education programmes that are designed to prepare participants for entry into vocational education but do not prepare for employment in a particular occupation, trade or class of occupations or trades, nor lead directly to a labour market-relevant qualification. **Vocational programmes**, on the other hand, are designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation, trade, or class of occupations or trades. Such programmes may have work-based components (e.g. apprenticeships, dual-system education programmes). Successful completion of such programmes leads to labour market-relevant vocational qualifications acknowledged as occupationally-oriented by the relevant national authorities and/or the labour market.

very close to this level for higher education, where 2/3 of graduates gained some work experience, while it is much lower for those who studied for a general programme at ISCED 3-4 level (33.5%). In the vast majority of countries, the highest share of work experience while studying is found among tertiary graduates, followed by individuals with a vocational medium-level degree, with graduates from general medium-level education showing the lowest rates. This pattern across education levels sees few exceptions, namely AT, DE and CY (where work experience is most common among graduates from vocational ISCED 3-4 programmes) and DK (where these graduates had the lowest rates). The countries where it is most common for graduates from vocational medium-level education and from tertiary education to have accrued some work experience are HU, FI and SE (with shares for both levels around or above 90%). At the opposite end of the distribution, the country with the highest share of graduates who did not work at all during studies is by far RO.

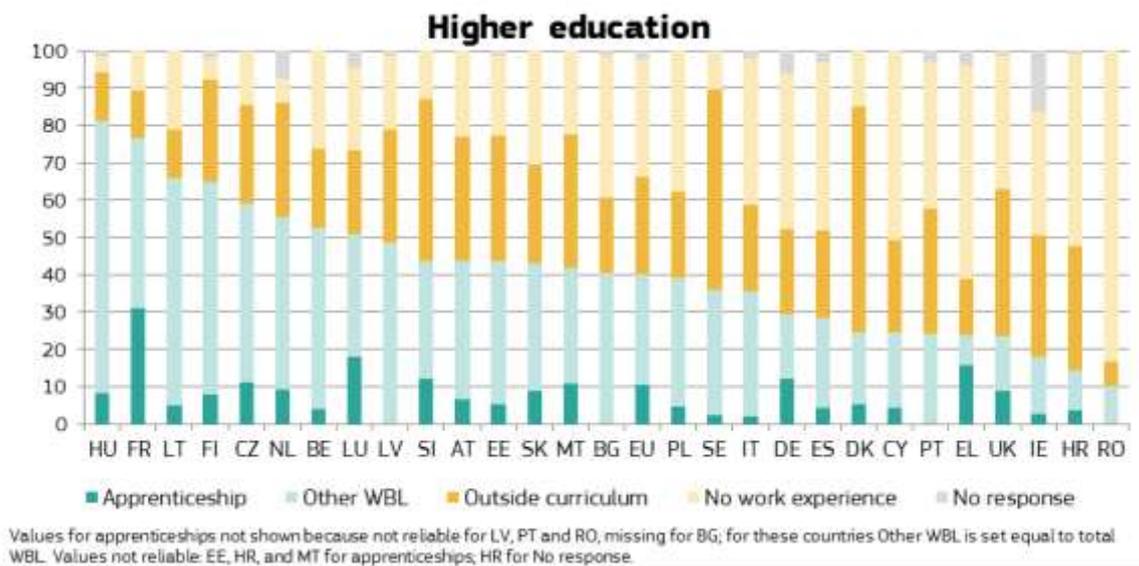
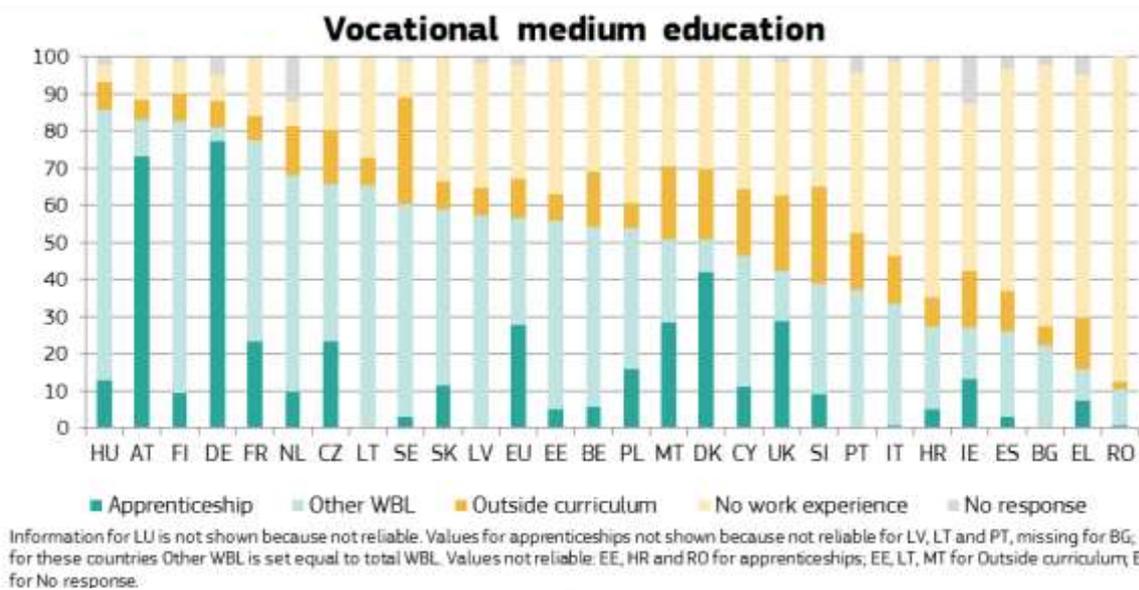
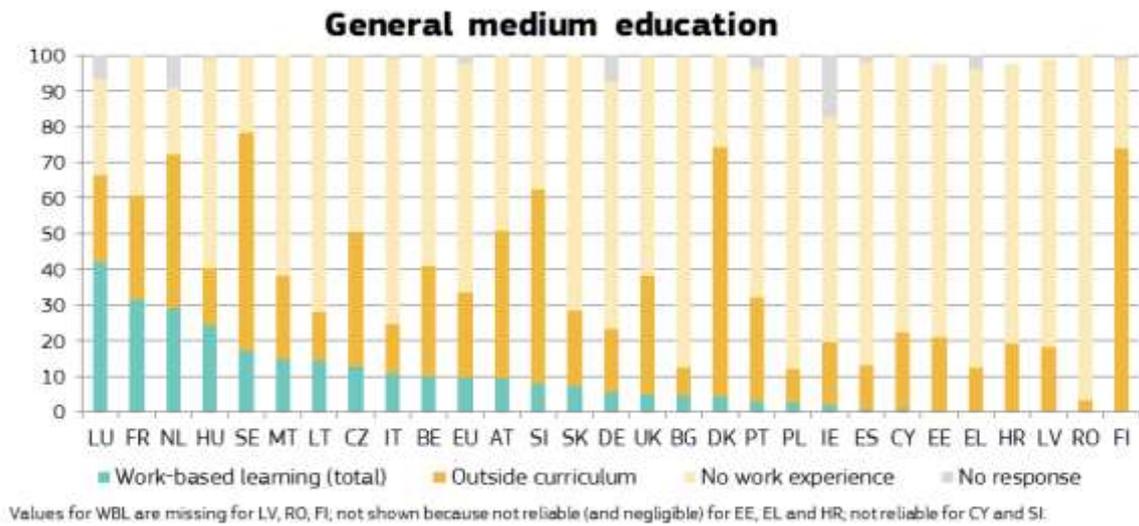
**Figure 1. People with work experience while studying for their highest qualification, by educational attainment, 2016 (% of people aged 15-34 who completed formal education above ISCED2)**



Source: own elaborations on Eurostat data from LFS AHM 2016. Online data code: [lfs\_16feduc].  
 Notes: countries are ordered by decreasing percentage of people with work experience while studying at vocational ISCED 3-4 level. Figures for vocational medium education for LU not reliable. Individuals who did not respond to questions on work experience while studying are included in the denominator.

Figure 2 provides an overview of the different **categories of work experience during studies** – and in particular of the prevalence of WBL – at different ISCED levels. It clearly shows how the prevalence of work-based learning (captured by the blue/green parts of the bars) is higher among those with an ISCED 3-4 vocational degree and a higher education one. At the EU level, 56.7% of graduates with an ISCED 3-4 vocational degree had a WBL experience during their studies; the prevalence of WBL is around 40% among those who attained a tertiary education degree, while it is considerably lower among those with a general ISCED 3-4 degree (below 10%). Cross-country differences are wide; the prevalence of WBL among graduates from vocational medium education ranges from values above 80% in HU, AT, FI and DE, to around 10% in RO. The top values are lower at ISCED 5-8 level, with HU still around 80%, followed by FR with 76.7% and LT with 65.8%. In the vast majority of the countries, the prevalence of WBL is higher at ISCED 3-4 vocational than in higher education; the main exceptions are BG, EL and SI.

**Figure 2. Work experience during studies and type of experience, by educational attainment, 2016  
(% of people aged 15-34)**



Source: own elaborations on Eurostat data from LFS AHM 2016. Online data code: [\[lfs\\_16feduc\]](#).

Notes: countries are ordered by decreasing prevalence of work-based learning. Non-response rates are also reported to highlight cases where there might be a bias.

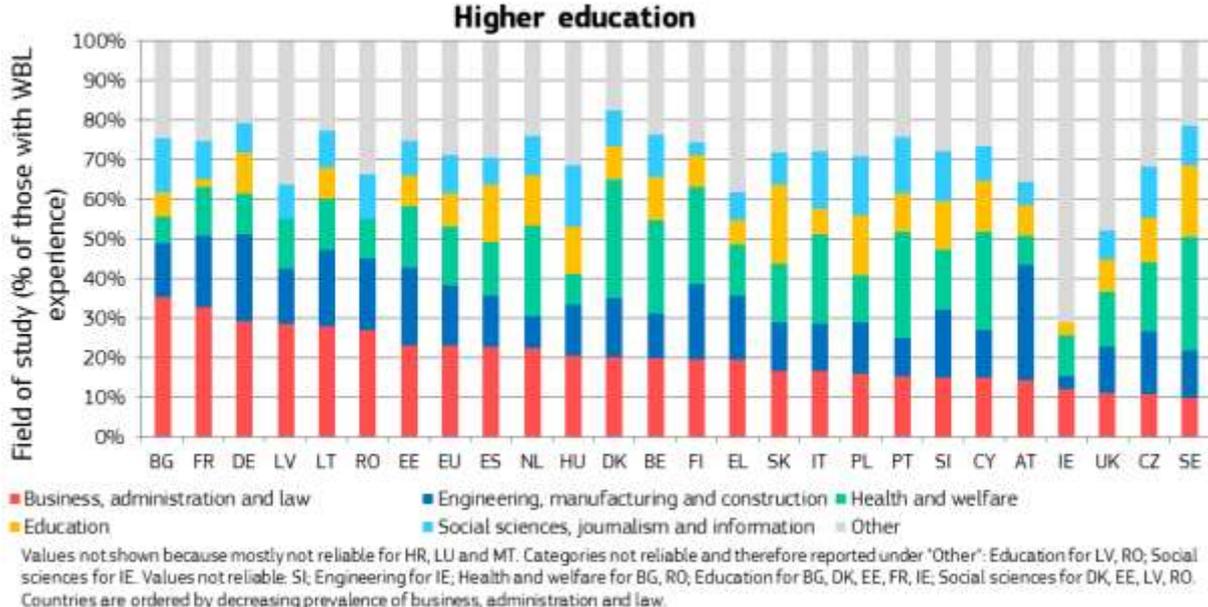
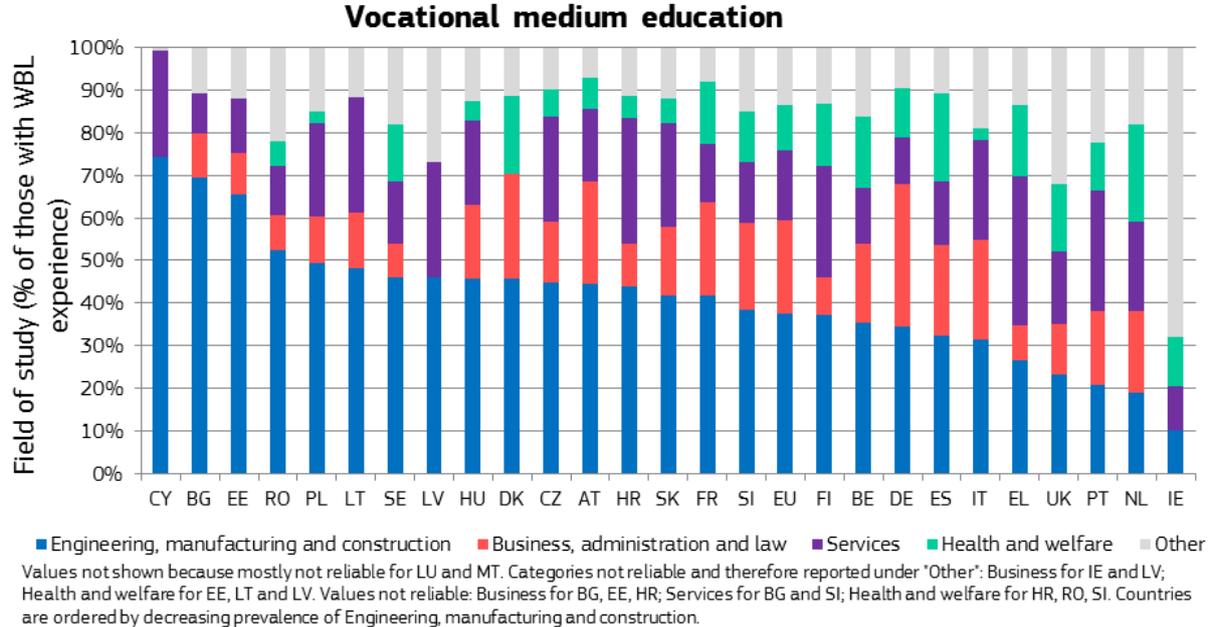
Among graduates from vocational medium-level education <sup>(9)</sup>, for the EU28 as a whole, around half WBL experiences take place through an apprenticeship. The incidence of apprenticeships varies a lot between countries; in DE, AT and DK this category represents 80% or more of WBL experiences, while in some other countries it is negligible (below 5% in IT or RO). The relevance of apprenticeships is also significant among tertiary graduates, with around a quarter of WBL experiences in higher education taking place in this form; particularly high percentages are found for EL (66.2%), DE and FR (around 40%). Finally, it is also interesting to see what percentage of the young population worked outside the curriculum; on average in the EU, one out of four graduates from both medium-level general education and higher education had such work experience.

The distribution of **field of study among individuals with WBL** during studies varies greatly depending on the educational attainment; among those with vocational medium education, most individuals who had a WBL experience attended programmes in “engineering, manufacturing and construction”, “business, administration and law”, or “services”. As shown in Figure 3, in the EU as a whole, 3 out of 4 individuals were in one of these programmes, with percentages being especially high in CY, BG, EE and LT. The most common field of study for those with WBL at this education level was by far engineering, manufacturing and construction. More diversity in programmes is found among those who did WBL in higher education; on average in the EU, just over half individuals were enrolled in the three most common fields (i.e. “business, administration and law”, “engineering, manufacturing and construction”, and “health and welfare”). Other relevant ones are “education” and “social sciences, journalism and information”. It should be noted however that these figures reflect two different components, i.e. the popularity of the individual fields of study in each country, and the prevalence of WBL in each field in each country. Indeed, a similar distribution of individuals with WBL experiences by field of study in two countries could hide a completely different relative importance of WBL across fields of study at the national level. As an example, among graduates from vocational medium education with WBL experience, CZ and AT show a similar prevalence of “engineering, manufacturing and construction”; as reported in Table A 1 in the Annex, they also have similar relevance of this field of study among all graduates from vocational ISCED 3-4 programmes; however, within this field, the prevalence of WBL is very different in the two countries, from 68.7% in CZ to 93.3% in AT. A similar situation applies among higher education graduates to LT and LV, which – as reported in Table A 2 – despite similar shares of “business, administration and law”, have very different levels of WBL among graduates in this field (60.3 and 44.0% respectively). This shows that all the different components should be taken into account when drawing conclusions on the distribution of WBL across fields of study.

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<sup>(9)</sup> For the majority of the countries, no reliable information is available on the relevance of apprenticeships for graduates from general medium-level education programmes. The distinction between this category and other WBL is therefore provided only for vocational ISCED 3-4 programmes and higher education ones.

**Figure 3. Field of study among individuals with WBL experience during studies, by educational attainment, 2016 (% of people aged 15-34 who completed vocational medium education or higher education)**

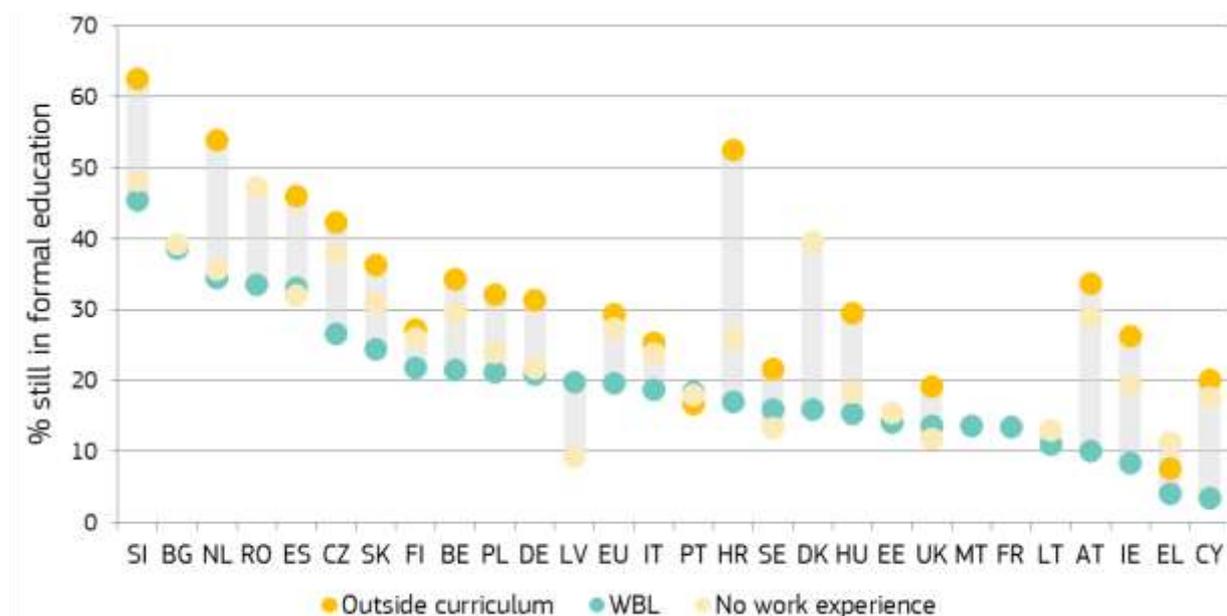


Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.  
 Notes: general medium education not shown because of small sample size.

### 3.2 Choices after graduation

A first outcome of interest when looking at young individuals graduating from upper-secondary VET, concerns the **choice between entering the labour market or continuing studies at a higher level**, and whether this varies depending on the presence of work experience during studies. It is well-known that continuation of studies depends on the level and orientation of education attained, and that medium-education VET programmes are traditionally aimed at fostering the immediate employability of individuals and facilitate school-to-work transition. It is therefore interesting to see how the accrual of work experience for those with this type of qualification is associated with the choice to participate in further studies. Figure 4 shows that within the group of 20-24 years-old who attained a vocational ISCED 3-4 degree as highest qualification, those who had a work-based learning experience as part of their curriculum are normally less likely to be still in formal education; at the EU level, only 19.5% of this group continues studying. At the opposite end, the likelihood to continue studying is highest among those who had a work experience outside of their education curriculum (with a rate of participation in formal education of 29.3%). Among those with no work experience during studies, just above  $\frac{1}{4}$  continue formal education. This general pattern applies to the vast majority of EU countries, although the difference between groups varies greatly, ranging from around 20 p.p. in NL to marginal differences in e.g. EL. Few exceptions to this pattern emerge, such as in ES, SE and the UK, where the continuation rate is lowest among those with no work experience at all.

**Figure 4. Young people in formal education by work experience during studies, 2016 (% of people aged 20-24 who have vocational ISCED 3-4 as highest qualification attained)**



Source: own elaborations on Eurostat data from LFS AHM 2016. Online data code: [\[lfs\\_16feduc\]](#)

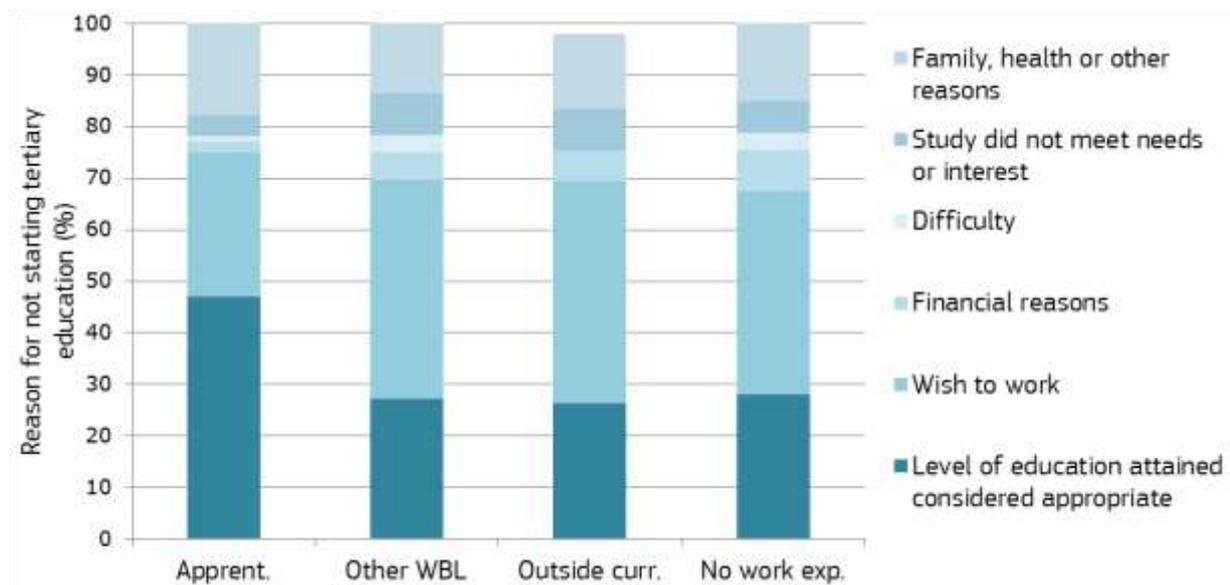
Notes: countries are ordered by decreasing share of individuals with WBL experience during studies continuing formal education. Missing values are not reliable. All figures reported are unreliable for CY, DK, EE, HR, LT, LV, MT, SI; figures for outside curriculum and WBL are unreliable for BG, EL, IE; figures for outside curriculum and no work experience are unreliable for AT, DE, FI, FR, HU; figures for outside curriculum are unreliable for PT and RO; figures for no work experience are unreliable for SE.

The choice to enter the labour market after graduation from upper-secondary VET can be driven by different reasons. Figure 5 shows the self-reported **reasons behind this choice** for individuals who attained a vocational ISCED 3-4 degree. At the EU level <sup>(10)</sup>, 47.1% of those who did an apprenticeship during studies did not continue to further education because they considered their attained level as appropriate. The same share is 27.2% for those who had another type of WBL experience, and 26.3% for those who had a work experience outside of their curriculum. This somehow suggests that participation in apprenticeships is associated with a stronger feeling of preparation for entering the labour market. Overall, 74.9% of those who had an

<sup>(10)</sup> Given the limited sample sizes for this indicator, results by country are not reliable and are therefore not reported here.

apprenticeship did not continue either because they considered their level attained high enough or because they wanted to start working, and not because of specific circumstances not allowing or favouring continuation. This percentage is visibly lower for all the other groups, between 67% and 70%.

**Figure 5. Reason for not starting tertiary education by work experience during studies, EU28, 2016 (% of people aged 15-34 who have vocational ISCED 3-4 as highest qualification attained and who are not in formal education)**



Source: own elaborations on Eurostat data from LFS AHM 2016. Online data code: [\[lfs\\_16ymqnedns\]](#).

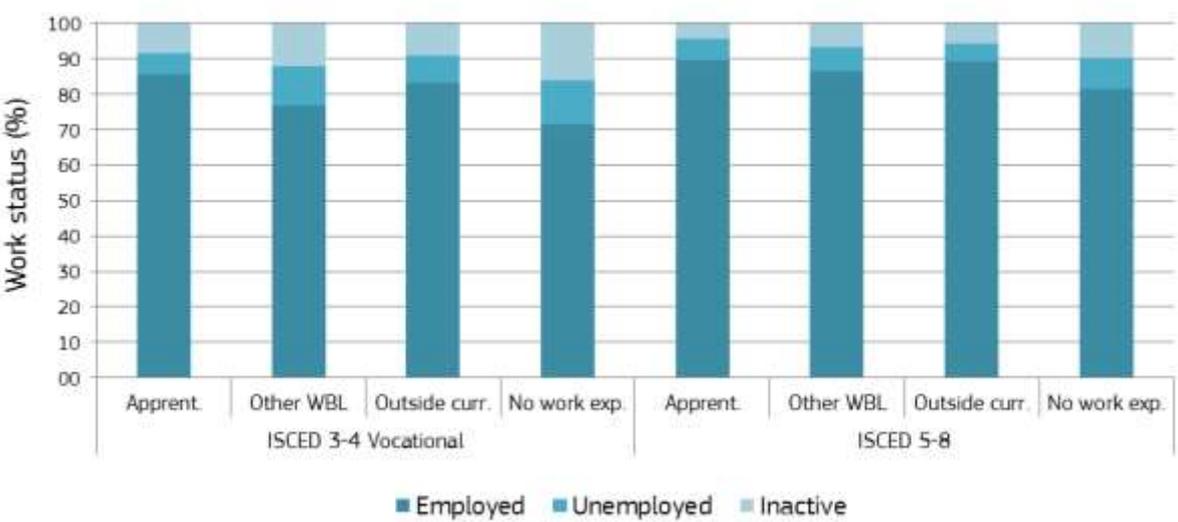
Notes: figures for reason being "Difficulty" unreliable for apprenticeship and not reported because unreliable for work experience outside curriculum.

The next sections will look into the labour market outcomes of young people, showing how they vary depending on accrual of work experience during studies. They will focus on two of the three education qualifications considered so far, i.e. vocational medium-level education and higher education. As a matter of fact, these are the two education streams that can be considered as preparing individuals for a transition to employment. In order to take into account only individuals who are reasonably out of formal education, the age group 20-34 will be considered.

### 3.3 Labour market outcomes

Figure 6 provides a first overview of the **labour market status** of young people aged 20-34 and not in formal education, distinguishing between the two main streams of education, and the type of work experience during studies. For both education levels, individuals who had an apprenticeship during their studies show higher employment rates and lower inactivity rates than their peers. Interestingly, work experiences outside the curriculum appear to be associated with slightly better outcomes than work-based learning ones other than apprenticeships; this might be linked to some particular personal motivation driving individuals to work, possibly reflecting a higher level of effort on the labour market. Alternatively, it may also be linked to potentially higher likelihood of individuals, coming from better socio-economic background or those with better educational performance, of finding a job already during their studies or before graduation. The worst performance is found among individuals who had no work experience at all. This suggests that work-based learning could indeed pave the way to better labour market outcomes, but only when carried out under specific conditions, which possibly allow higher quality of the on-the-job training experience.

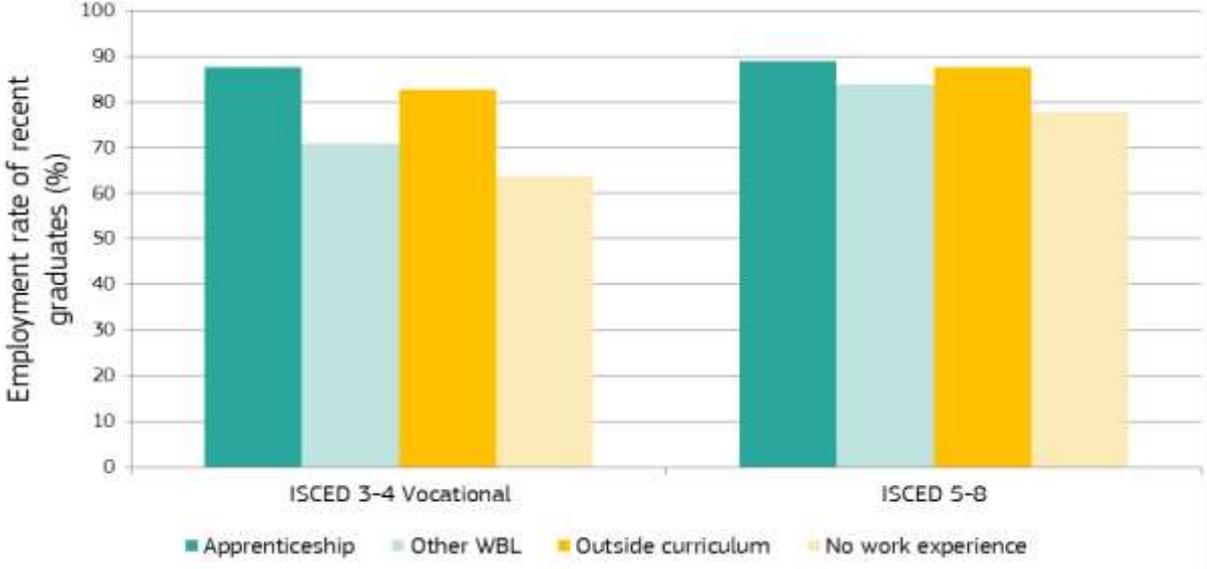
**Figure 6. Labour market status by educational attainment and work experience during studies, EU28, 2016 (% of people aged 20-34 who are not in formal education)**



Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.

While work status can give a broad impression of the labour market performance of individuals, more targeted indicators could provide useful insights into the school-to-work transition patterns of young people. A first outcome of interest is the **employment rate of recent graduates**. This indicator is defined as the share of employed population among those aged between 20 and 34 who graduated 1 to 3 years before the reference year, and who are not currently enrolled in any further (formal or non-formal) education or training activity; it is aimed at helping evaluate the success rate in the labour market of young people with different levels of educational attainment in the first years after graduation, and can be valuably used also to investigate differences in performance between individuals with and without work experience during studies. Figure 7 shows a similar pattern to Figure 6: for the EU as a whole, the level of employability of recent graduates is highest among those who had an apprenticeship during their studies, followed by those who had work experience outside the curriculum. The lowest employment rates are found among those with no work experience at all. These patterns hold both for vocational medium education and for higher education graduates, but differences between groups appear to be much larger for the former (possibly due to the overall higher levels of employment of higher education graduates).

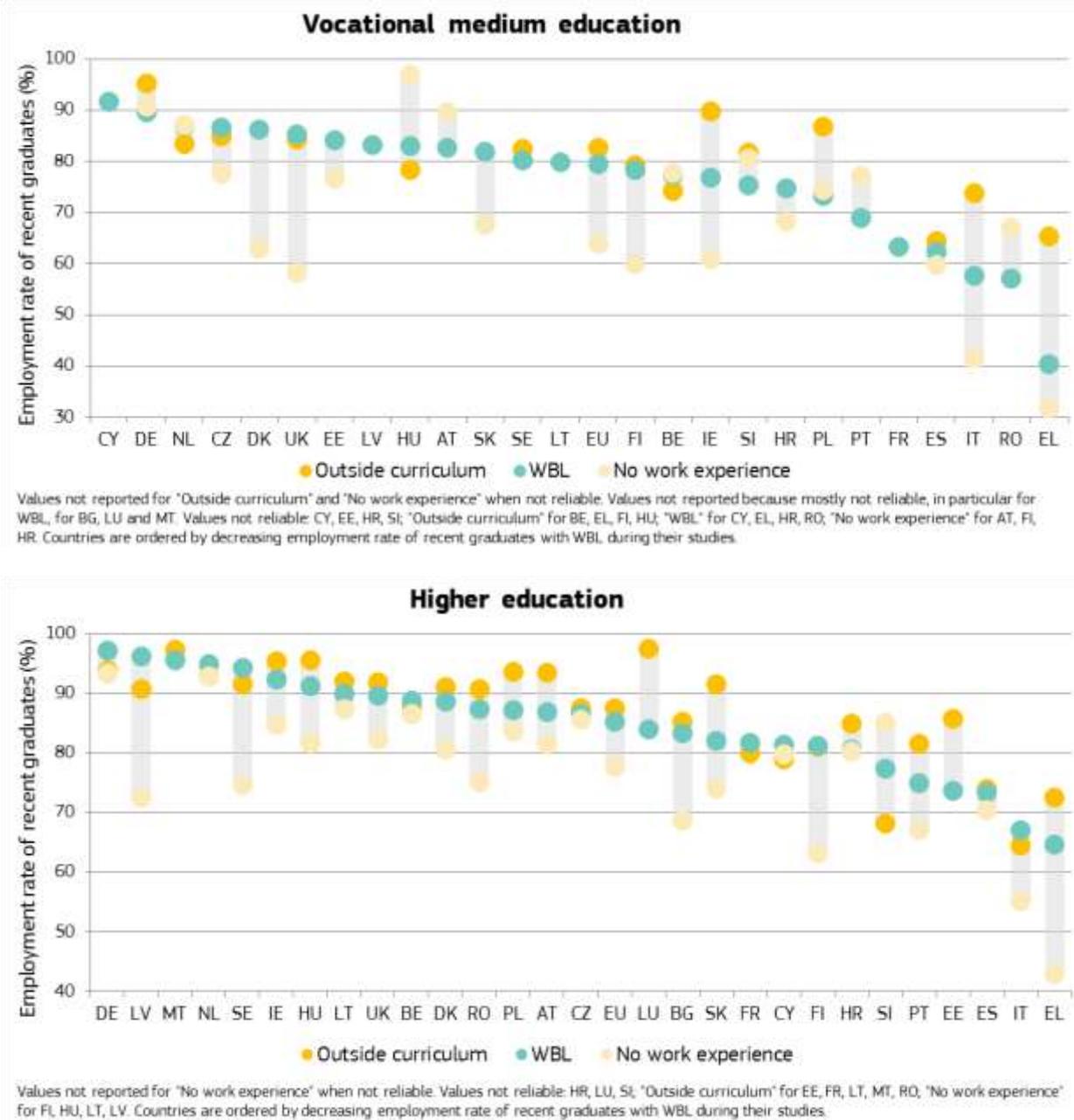
**Figure 7. Employment rate of recent graduates by educational attainment and work experience during studies, EU28, 2016 (% of people aged 20-34 who completed vocational medium education or higher education 1 to 3 years before and are not in formal or non-formal education or training)**



Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.  
 Notes: the employment rate of recent graduates is defined as the share of employed people among those aged 20-34 having successfully completed upper secondary or tertiary education 1 to 3 years before the reference year of the survey, and who are no longer in (formal or non-formal) education or training.

These EU-level figures are likely to hide a considerable underlying variation across countries. Figure 8 tries to investigate these differences further; however, when moving to the national level, sample sizes often do not allow distinguishing the performance of those with different types of work-based learning experience; these are therefore reported together in the following figure. The figure shows that indeed patterns – and performance gaps – can differ greatly across countries; however, the advantage of having some work experience over the studies is confirmed in most of the cases. Table 1 reports employment rates for individuals with some form of WBL, distinguishing between apprenticeships and other types of work-based learning; the table shows that – at least for countries where a reliable comparison can be made – in most of the cases, having been an apprentice is indeed associated with better employment rates.

**Figure 8. Employment rate of recent graduates by educational attainment and work experience during studies, 2016 (% of people aged 20-34 who completed vocational medium education or higher education 1 to 3 years before and are not in formal or non-formal education or training)**



Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.  
 Notes: the employment rate of recent graduates is defined as the share of employed people among those aged 20-34 having successfully completed upper secondary or tertiary education 1 to 3 years before the reference year of the survey, and who are no longer in (formal or non-formal) education or training.

**Table 1. Employment rate of recent graduates by educational attainment and type of WBL experience during studies, 2016 (% of people aged 20-34 who completed vocational medium education or higher education 1 to 3 years before and are not in formal or non-formal education or training)**

Country	ISCED 3-4 Vocational				ISCED 5-8			
	Apprenticeship		Other WBL		Apprenticeship		Other WBL	
	%	Flag	%	Flag	%	Flag	%	Flag
<b>EU28</b>	<b>87.5</b>		<b>70.9</b>		<b>88.8</b>		<b>83.9</b>	
BE		x	77.0		91.7	u	88.5	
BG				x			83.3	
CZ	94.8		81.9		90.8		85.4	
DK	89.3			x		x	87.3	
DE	89.3			x	96.0		98.3	
EE		x	82.8	u		x	71.7	u
IE	87.1	u	71.1		100.0	u	91.3	
EL	56.7	u		x	77.7		45.4	
ES	76.8	u	60.4		85.7		72.0	
FR	75.9	u	59.3		82.9		80.7	
HR		x	72.1	u		x	79.2	u
IT		x	57.2		72.9	u	66.8	
CY		x	89.2	u	86.1	u	80.1	
LV			83.3			x	96.2	
LT		x	78.6			x	89.5	
LU		x		x		x		x
HU	81.6		83.2		86.0		92.0	
MT		x		x		x	94.4	u
NL	89.5		86.5		94.1		95.1	
AT	83.1		77.1	u	92.1	u	85.5	
PL	81.7		69.7		88.8		87.0	
PT		x	68.2			x	74.2	
RO		x	62.1	u		x	87.1	
SI	64.5	u	79.7	u	98.0	u	69.1	u
SK	93.6		77.0		89.0		79.7	
FI	84.8		77.6		96.1		79.4	
SE		x	80.3			x	94.0	
UK	88.9		79.0		95.8		86.0	

Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.

Notes: (x) not publishable because of very low reliability; (u) unreliable. The employment rate of recent graduates is defined as the share of employed people among those aged 20-34 having successfully completed upper secondary or tertiary education 1 to 3 years before the reference year of the survey, and who are no longer in (formal or non-formal) education or training.

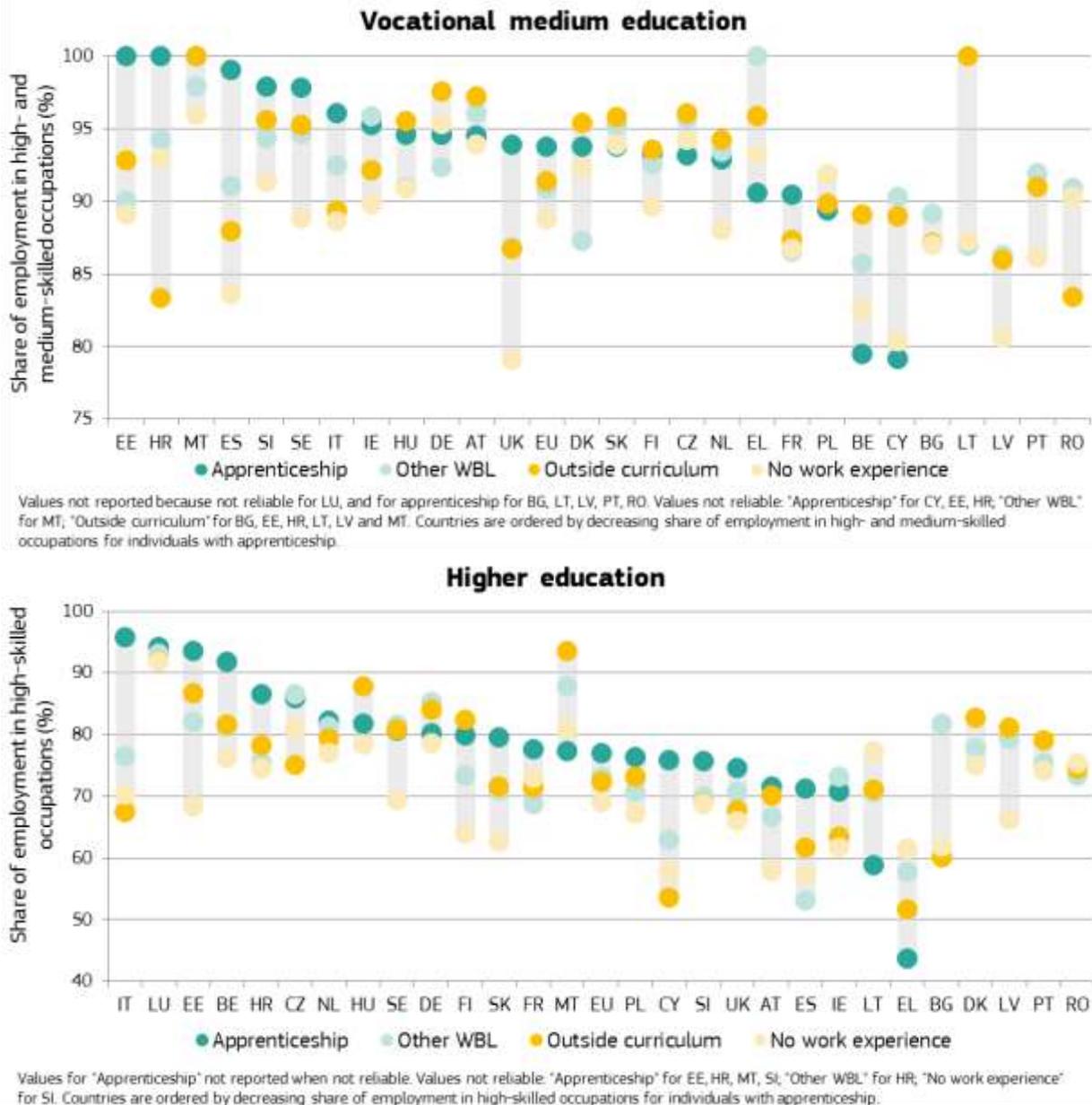
### 3.4 The characteristics of employment and job quality among the employed

This section is devoted to analysing in more detail the situation of those who are employed. As a matter of fact, being in employment does not necessarily guarantee being in a quality job. Several aspects can be considered to give a picture of the level of quality of employment of young people.

A first relevant aspect is the **type of occupation** in which young people are employed, and in particular whether it is a skilled one or not. As a matter of fact, occupations can be broadly distinguished according to their equivalent skill level; “high-skilled occupations” are traditionally considered to be those falling under the first three groups of the International Standard Classification of Occupations (ISCO), which include managers, professionals, technicians and associated professionals. “Medium-skilled occupations” are those falling under ISCO occupational groups 4 to 8. Skilled jobs can be considered the typical destination for graduates from higher education; similarly, graduates from ISCED 3-4 can be expected to be employed at least in medium-

level occupations (or higher). Figure 9 shows an overview of the share of employment in “matching” occupations – i.e. in high- and medium-skilled occupations for graduates from vocational medium education, and in high-skilled ones for higher education graduates – by work experience during studies. At the EU level, 77.1% of those who had an apprenticeship during their university studies are employed in a skilled occupation; this is an expected outcome, as apprenticeships during university are common in fields of study leading to careers as professionals, which are skilled occupations by definition. The share is a bit lower for those with other types of WBL (73.2%), and the lowest (69%) among those with no work experience at all. Even when looking at the national level, in the majority of the countries skilled employment is more widespread among young people who did an apprenticeship, and less common among those who did not have any work experience, although the differences between groups vary a lot.

**Figure 9. Share of employment in (medium- and) high-skilled occupations by educational attainment and work experience during studies, 2016 (% of people aged 20-34 who are employed and not working in the armed forces)**

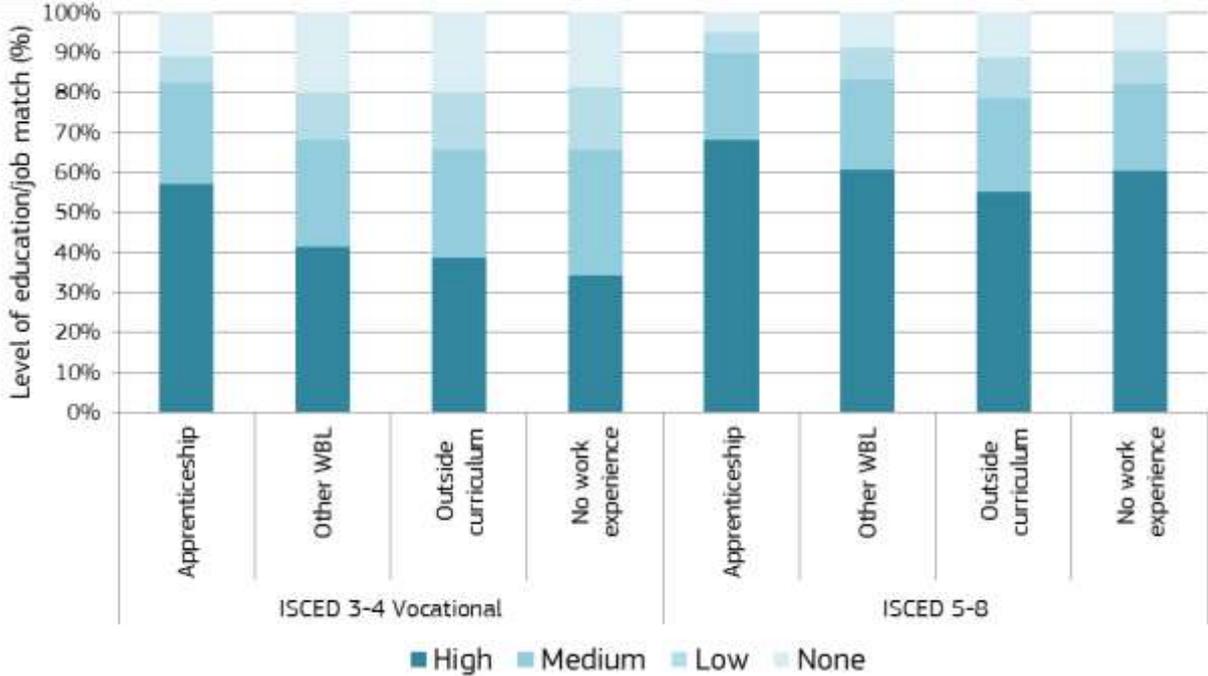


Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.  
 Notes: the share of employment in skilled occupations is defined as the share of employed people aged 20-34 who work as managers and professionals (ISCO 1-2) or as technicians and associated professionals (ISCO 3), out of all those employed (excluding those in the armed forces). The share of employment in high- and medium-skilled occupations covers those employed in ISCO categories 1 to 8 (i.e. all non-elementary occupations).

Among EU graduates from vocational medium education, having been an apprentice during studies is associated with the highest share of employment in medium- and high-skilled occupations (93.8%); the lowest share is found among those with no work experience at all (88.7%). This outcome is likely driven by results in a few of the biggest EU countries (e.g. ES, IT, UK), but when looking at the national level, more diverse patterns emerge. On one hand, in quite a few countries the highest shares are indeed found among individuals with apprenticeship experiences, while in others these are registered among those with experience outside the curriculum, with no clear advantage of having a WBL experience during studies; on the other hand, the gaps between sub-groups within country vary a lot, between 2 and 17 percentage points.

A more revealing aspect might be the level of match or mismatch between the current job and the individual's education. The 2016 AHM investigates this issue by asking young people about the **appropriateness of the job given the level of education**; respondents can select an option between these four categories: the job corresponds well to the education (which can be considered as a high level of match); the job corresponds to some extent to the education (medium level of match); the job does not correspond very well to the education (low level of match); the job does not correspond at all to the education (no match). The first category therefore covers individuals that feel a complete match between their studies and their current job; the others signal a more or less severe degree of mismatch between education and job. Figure 10 <sup>(11)</sup> shows that at both education levels, individuals who had an apprenticeship experience during their latest studies are those who report the highest level of complete fit between education and current job, and the lowest level of severe mismatch. The incidence of the latter is similar across the other three categories of work experience during studies; however, at least for vocational medium education, having other types of WBL during studies is associated with a higher level of match when compared to individuals with experience outside the curriculum or no experience at all.

**Figure 10. Self-reported level of match between education and job by educational attainment and work experience during studies, EU28, 2016 (% of total employed persons, age group 20-34)**



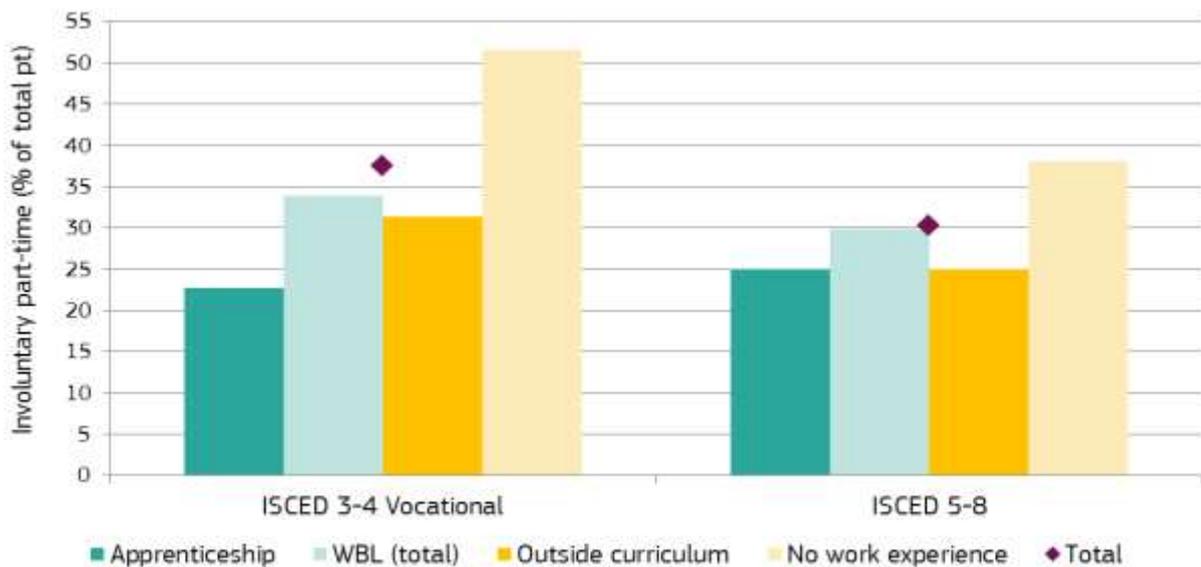
Source: own elaborations on Eurostat data from LFS AHM 2016. Online data code: [\[lfs\\_16oklev\]](#).  
 Notes: "high": the job corresponds well to the education; "medium": the job corresponds to some extent to the education; "low": the job does not correspond very well to the education; "none": the job does not correspond at all to the education.

Besides the skills and match level of the jobs, other relevant dimensions of job quality to be considered are related to contract and the presence of underemployment. A first category of underemployment is

<sup>(11)</sup> Given the limited sample sizes for this indicator, results by country are not reliable and are therefore not reported here. The same applies to the following figures.

**involuntary part-time work**, i.e. the situation in which a part-time worker would like to work additional hours and is available to do so. This underemployment indicator highlights situations of insufficient volume of work and underutilised labour among persons already employed. Figure 11 shows how this indicator varies depending on participation in work experience during studies. Among those who work part-time, the incidence of involuntary part-time is highest among young people who had no work experience whatsoever during their studies, both at vocational medium level education and higher education. Participation in an apprenticeship during studies appears to be associated with the lowest shares of involuntary part-time work, followed by those who had a work experience outside of the curriculum.

**Figure 11. Employed persons working part-time involuntarily by educational attainment and work experience during studies, EU28, 2016 (% of total number of part-time employed persons, age group 20-34)**



Source: Eurostat data from LFS AHM 2016. Online data code: [\[fso\\_16invpt\]](#).

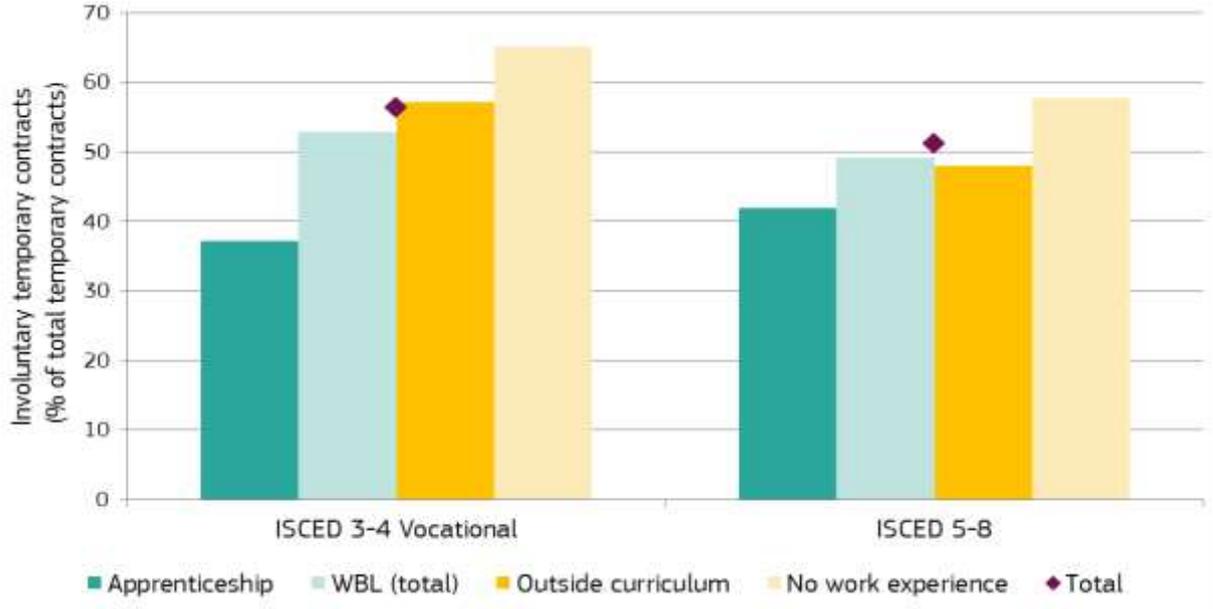
Notes: WBL (total) covers all individuals having had some form of work-based learning, including apprenticeship. Current data availability does not allow computing this indicator for the "other WBL" category available for some other indicators. The figure for apprenticeship for ISCED 5-8 is unreliable.

A partially different situation is found when looking at the incidence of **involuntary temporary contracts** on total temporary employees. As shown in Figure 12, having had an experience as apprentice during studies is associated with better outcomes for graduates from both vocational medium education and tertiary education. Other types of WBL do not appear to be associated with similar performances. The highest likelihood of having an unwanted temporary contract is found among those who did not have any work experience during studies, at both education levels.

Similarly, Figure 13 shows that graduates who did an apprenticeship during their studies appear to have the best outcomes also in terms of incidence of **precarious employment** situations (defined as having a work contract of only up to 3 months), both at medium vocational and high education level, although for the latter differences are rather small<sup>(12)</sup>. For graduates from tertiary education, having had another type of WBL experience during the studies is associated with the highest probability of having a short work contract.

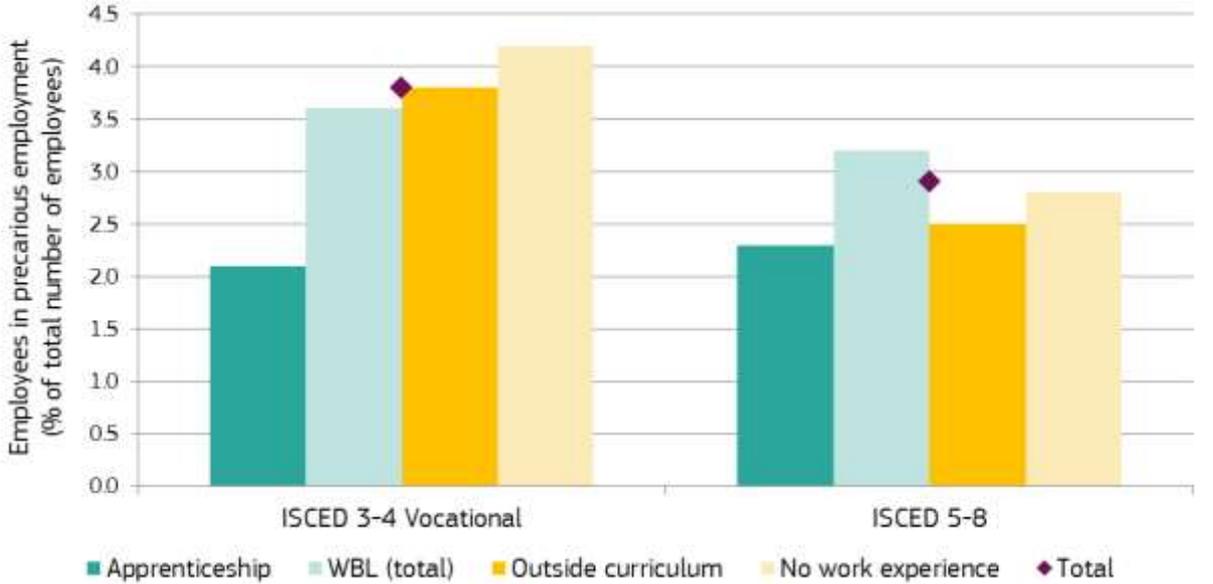
<sup>(12)</sup> As already mentioned, and especially considering the small differences and sample sizes for this indicator, it is impossible to establish whether these differences are statistically significant.

**Figure 12. Employees with involuntary temporary contracts by educational attainment and work experience during studies, EU28, 2016 (% of total number of employees with temporary contracts, age group 20-34)**



Source: Eurostat data from LFS AHM 2016. Online data code: [\[lfs\\_16invtemp\]](#).  
 Notes: WBL (total) covers all individuals having had some form of work-based learning, including apprenticeship. Current data availability does not allow computing this indicator for the "other WBL" category available for some other indicators.

**Figure 13. Employees in precarious employment by educational attainment and work experience during studies, EU28, 2016 (% of total number of employees, age group 20-34)**



Source: Eurostat data from LFS AHM 2016. Online data code: [\[lfs\\_16precomp\]](#).  
 Notes: WBL (total) covers all individuals having had some form of work-based learning, including apprenticeship. Current data availability does not allow computing this indicator for the "other WBL" category available for some other indicators. Figures for experience outside curriculum for ISCED 3-4 Vocational and for apprenticeship for ISCED 5-8 are unreliable.

## 4 Work-based learning in UOE data

The **joint UNESCO-UIS/OECD/EUROSTAT (UOE) data collection on education statistics** provides internationally comparable data on key aspects of formal education systems, specifically on the participation and completion of education programmes, as well as the cost and type of resources dedicated to education. The results of the UOE data collection on education statistics are compiled on the basis of national **administrative sources** (normally census or administrative registers), reported by Ministries of Education or National Statistical Offices on the basis of commonly agreed definitions.

As reported in UOE (2017), this data collection covers **formal education programmes** <sup>(13)</sup> that represent at least the equivalent of one semester (or one-half of a school/academic year) of full-time study and are provided within the reporting country's own territory. The UOE data collection covers formal vocational education programmes <sup>(14)</sup> provided they are delivered either as entirely school-based programmes (i.e. they take place entirely in educational institutions) or as combined school- and work-based programmes in which the school-based component represents at least 10% of the total study over the whole programme. Entirely work-based training is excluded.

Among these programmes, a further distinction is made (at the upper secondary and post-secondary non-tertiary levels) between “school-based programmes” and “combined school and work-based programmes”; this distinction is based on the amount of training that is provided in-school as opposed to training in the work place.

In **school-based programmes** instruction takes place (either partly or exclusively) in educational institutions. These include special training centres for vocational education run by public or private authorities or enterprise-based special training centres if these qualify as educational institutions. These programmes can have an on-the-job training component, i.e. a component of some practical experience at the workplace. Programmes should be classified as school-based if at least 75 per cent of the curriculum is presented in the school environment (covering the whole educational programme) or through distance education.

On the other hand, a programme is classified as **combined school- and work-based** if less than 75 per cent of the curriculum is presented in the school environment or through distance education. The 75 per cent cut-off point should be regarded as a general guideline that may need to be operationalized differently across countries. These programmes include:

- apprenticeship programmes organised in conjunction with educational authorities or educational institutions that involve concurrent school-based and work-based training; and
- programmes organised in conjunction with educational authorities or educational institutions that involve alternating intervals of attendance at educational institutions and participation in work-based training (programmes of training in alternation, sometimes referred to as “sandwich” programmes).

Experience shows that for combined school- and work-based programmes the coverage of work-based components in national data collections is uneven.

UOE data on the prevalence of combined school- and work-based programmes is provided in Eurostat datasets concerning “Pupils enrolled in upper secondary education by programme orientation, sex, type of institution and intensity of participation” (Eurostat online data code *educ\_uoe\_enrs04*) and “Pupils enrolled in post-secondary non-tertiary education by programme orientation, sex, type of institution and intensity of participation” (Eurostat online data code *educ\_uoe\_enrs07*). Table 2 shows the percentage of pupils enrolled in ISCED 3 and 4 vocational programmes who are attending combined school- and work-based programmes.

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<sup>(13)</sup> **Formal education** is institutionalised, intentional and planned and provided by public organizations and recognised private bodies.

<sup>(14)</sup> According to the UOE manual, **vocational education** is designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation, trade, or class of occupations or trades. Vocational education may have work-based components. Successful completion of such programmes leads to labour market-relevant vocational qualifications acknowledged as occupationally-oriented by the relevant national authorities and/or the labour market.

**Table 2. Prevalence of WBL by ISCED level, 2016 (% of students in the respective vocational ISCED level who were enrolled in school- and work-based programmes)**

	ISCED 3 Vocational	ISCED 4 Vocational	ISCED 3-4 Vocational
<b>EU28</b>	<b>25.3</b>	<b>33.8</b>	<b>26.4</b>
BE	5.9	: <sup>z</sup>	5.2
BG	: <sup>z</sup>	: <sup>z</sup>	:
CZ	8.8	55.5	10.0
DK	80.0	: <sup>z</sup>	80.0
DE	87.1	51.1	74.1
EE	2.2	3.4	2.6
IE	: <sup>z</sup>	15.0	15.0
EL	: <sup>z</sup>	:	:
ES	2.0	22.8	2.8
FR	24.2	: <sup>z</sup>	23.8
HR	: <sup>z</sup>	: <sup>z</sup>	:
IT	: <sup>z</sup>	: <sup>d</sup>	:
CY	: <sup>z</sup>	: <sup>z</sup>	:
LV	100.0	100.0	100.0
LT	: <sup>z</sup>	: <sup>z</sup>	:
LU	21.4	100.0	24.9
HU	100.0	100.0	100.0
MT	22.5	:	22.5
NL	:	: <sup>z</sup>	:
AT	46.0	57.9	46.9
PL	15.5	: <sup>z</sup>	11.4
PT	: <sup>z</sup>	: <sup>z</sup>	:
RO	7.9	14.6	9.2
SI	: <sup>z</sup>	: <sup>z</sup>	:
SK	10.5	11.4	10.6
FI	12.9	66.1	17.4
SE	4.5	89.3	10.8
UK	37.5	: <sup>z</sup>	37.5

Source: own elaborations on Eurostat UOE data. Online data code: [\[educ\\_uae\\_enrs04\]](#) and [\[educ\\_uae\\_enrs07\]](#).

Notes: WBL is defined as combined school- and work-based (SW) programmes. (:) missing; (z) SW not applicable; (d) definition differs. EU28 for ISCED 4 and ISCED 3-4 is the sum of the available countries. When SW is not applicable at one ISCED level, the ISCED 3-4 rate is computed with the SW of the available level at the numerator, and the sum of students in both vocational ISCED levels at the denominator. ISCED 3 VET not applicable for IE, therefore the ISCED 3-4 rate is computed as ISCED 4; ISCED 4 not applicable for DK and UK, therefore the ISCED 3-4 rate is computed as ISCED 3. ISCED 4 VET not applicable for HR, NL and SI.

## **5 Overview of alternative potential data sources**

Sections 3 and 4 provided a description of what can be reasonably considered the two main candidate sources of information for potential indicator(s) and/or a benchmark on WBL. However, other data sources can provide information on prevalence and outcomes of WBL. An overview of these alternative data sources is presented in this section.

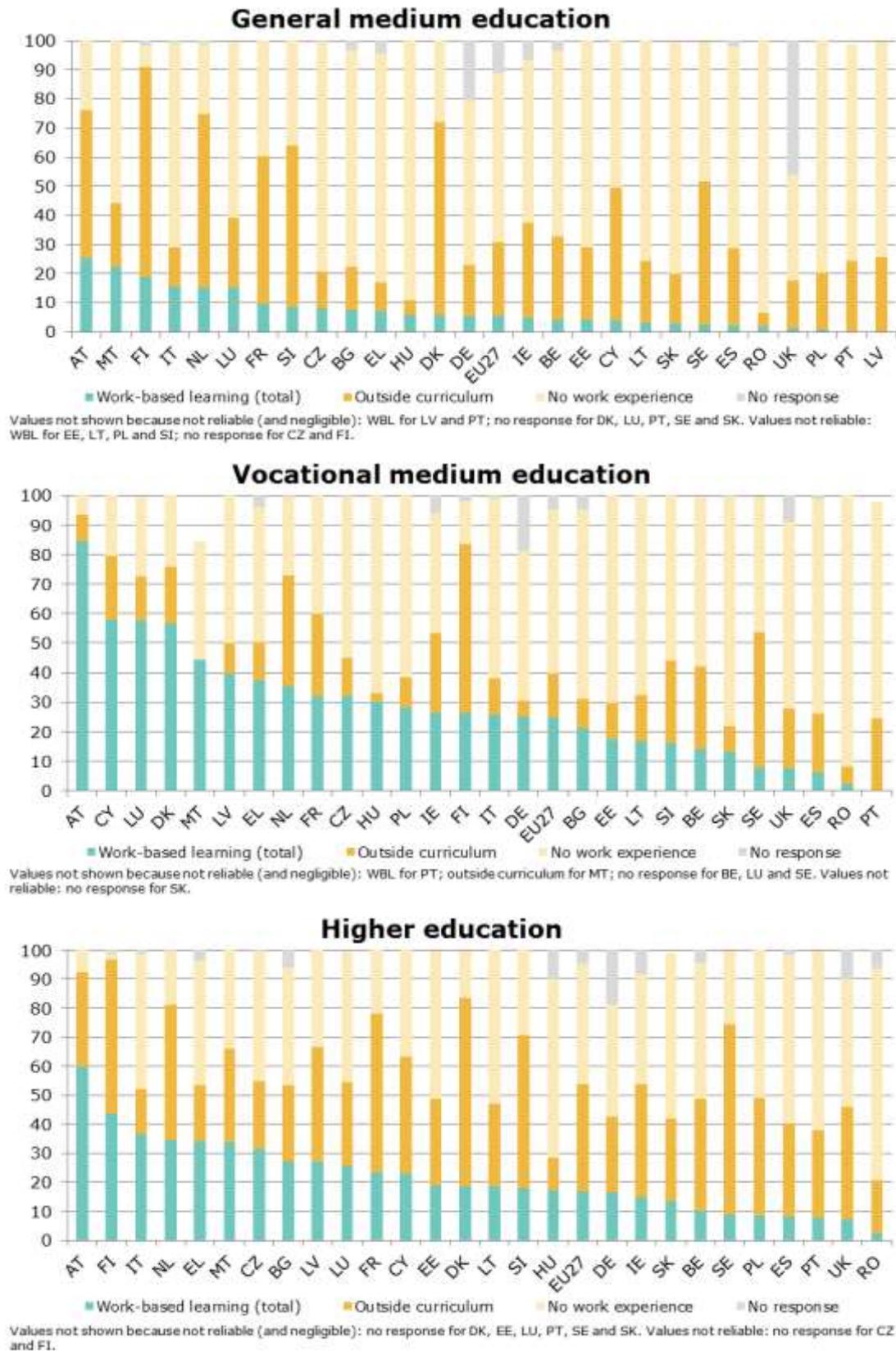
### **5.1 Previous LFS AHM on young people on the labour market**

Before 2016, the EU-LFS Ad-Hoc Module (AHM) focused on the topic of young people on the labour market already two times, in 2000 and 2009. The target population in 2009 was the same as for the 2016 AHM, namely individuals aged 15-34, while the 2000 module considered the age group 15-35.

No information on work during studies was collected in the 2000 AHM. The 2009 AHM on the entry of young people into the labour market, on the other hand, provided information on work during studies in formal education through a specific question, aimed at distinguishing individuals who: (i) did not work or worked less than one month per year; (ii) worked (only) as part of their educational programme; (iii) worked while studying but outside educational programmes; (iv) worked (only) during an interruption of studies; or worked as different combinations of these options. The 2009 AHM could therefore identify work which was part or not of the curriculum, but – unlike the 2016 AHM – it excluded short work experiences (lasting less than one month), and did not provide information on its characteristics (whether paid or not, whether mandatory or not). As a consequence, it did not allow isolating apprenticeships as defined in Section 3.

Based on 2009 AHM data, Figure 14 provides an overview of the incidence of different types of work experience during studies at different ISCED levels, similar to what Figure 2 did with 2016 data. Given the differences in the questions asked, it is not possible to draw direct comparisons between the two years to discuss trends over time. Overall higher levels of WBL are found in 2016 when compared to 2009; however, in the latter only work experiences of at least one month are considered, which might account for part of the differences.

**Figure 14. Work experience during studies and type of experience, by educational attainment, 2009 (% of people aged 15-34 who completed formal education above ISCED 2)**



Source: own elaborations on a Eurostat special extraction from LFS AHM 2009.

Notes: countries are ordered by decreasing prevalence of work-based learning. No data for HR, hence the EU value refers to EU27. Non-response rates are also reported to highlight cases where there might be a bias.

## 5.2 Information from core LFS variables (**TEMPREAS** variable)

The **standard LFS questionnaire** includes a variable (**TEMPREAS**) investigating the reasons for having a temporary job/a work contract of limited duration. Among the options available, one captures situations in which the person has a temporary job because his/her contract covers a period of training (as apprentices, trainees, research assistants, etc.); optionally, countries can also allow separate answers for contracts covering a period of apprenticeship, and contracts covering a period of training other than apprenticeship (trainees, internships, research assistants, etc.).

As reported in the LFS explanatory notes, the criteria for a contract to qualify as an apprenticeship are as follows:

- there is a contract or formal agreement for a prescribed period of time between the employer and the apprentice or an institution representing the apprentice, defining the characteristics of the apprenticeship;
- learning time alternates between periods of practical training at the work place and general/theoretical education in an educational institution or training centre on a weekly, monthly or yearly basis;
- all apprenticeships are formal education programmes; successful completion is evidenced by a qualification;
- in apprenticeships, the participant (apprentice) always receives remuneration in cash or in kind;
- the duration is between 6 months and 6 years. The duration refers to the programme and not only to the work-based component.

Only paid apprenticeships, traineeships or other trainings are captured by this variable.

This variable of the core LFS questionnaire can provide useful information on the number of individuals working as apprentices or in another period of training; moreover, the existence of these precise criteria to identify apprenticeships, rather than the application of national definitions, allows to obtain comparable results across countries. For the time being, only few EU countries report data using the optional distinction between apprenticeships and other types of training, and reliable results for both groups are available for even fewer countries (i.e. AT, DE, EL, PL and UK for the age group 15-24 in 2018). Moreover, Eurostat plans to further investigate the overall quality of results distinguishing apprentices and other forms of training from this variable. From 2021, under the IESS FR, the distinction between the two types of training will become mandatory, therefore increasing the relevance of this variable for monitoring purposes.

Nevertheless, a few inherent features of this question should be borne in mind when evaluating its suitability for building a WBL indicator. First, the question on the reason for having a temporary contract is asked only to employees, so by definition it only applies to paid apprenticeships and trainings. Second, the variable aims at identifying current apprenticeships and trainings; however, this does not necessarily translate into the identification of all individuals participating in apprenticeship programmes: as some apprenticeship programmes alternate between longer periods in school or at the workplace, a student currently in a longer school period of the apprenticeship programme would not be captured through this question. Despite the uncertainty concerning the practical level of coverage provided by this variable, it surely represents a valuable source of complementary information on ongoing WBL experiences of individuals in formal education.

## 5.3 OECD Survey of Adult Skills (**PIAAC**)

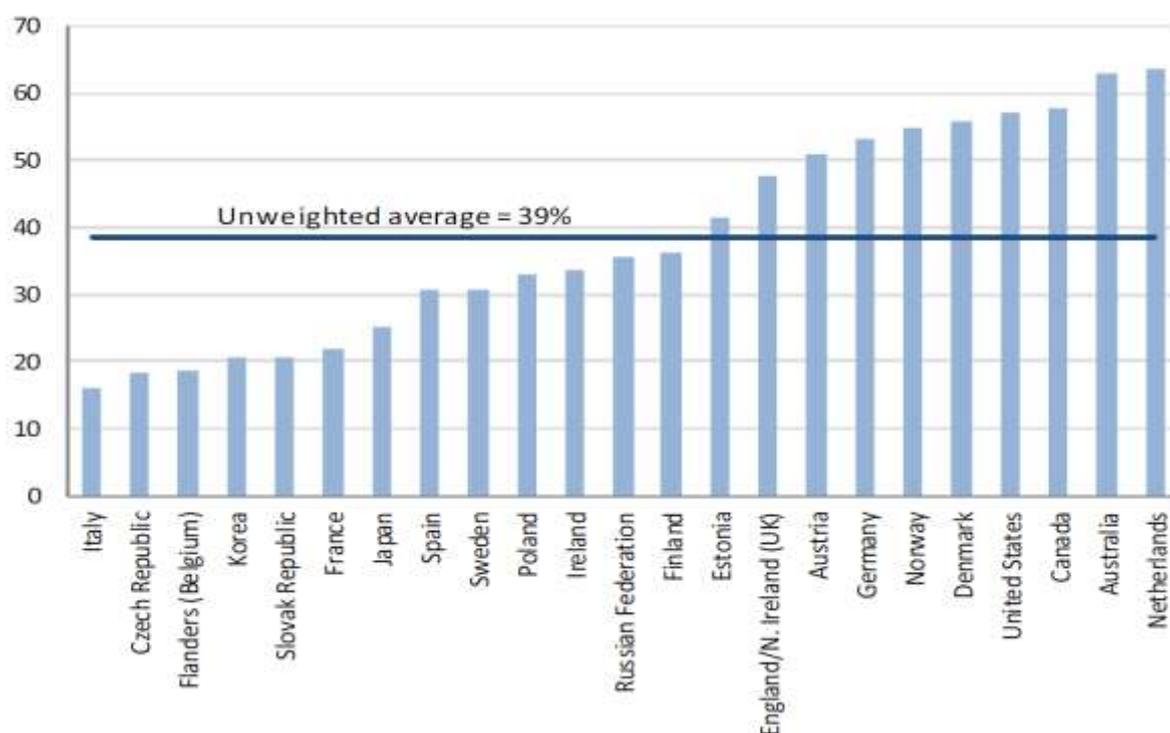
The OECD Survey of Adult Skills represents another potential source of information for work-based learning. The Survey of Adult Skills is conducted in over 40 countries as part of the Programme for the International Assessment of Adult Competencies (PIAAC). It measures adults' proficiency in key information-processing skills – literacy, numeracy and problem solving – and gathers information and data on how adults use their skills at home, at work and in the wider community. It focuses on individuals aged 16 to 65, and it is administered every 10 years.

Based on evidence provided in the first PIAAC wave, Quintini (2015) tries to draw a picture of work and study among individuals aged 16-29 in 23 countries/regions, by combining information on student and work status, educational pathway and apprenticeship status. In particular, it identifies individuals who work and study as the sum of:

- Those who are in education and work (i.e. those who are in employment while reporting that they are also currently studying for a formal qualification) <sup>(15)</sup>;
- Those who say they are an apprentice or in an internship when self-reporting their current status <sup>(16)</sup>, irrespective of their answers to the labour force and education status questions (as per previous point);
- Those salaried employees who, when asked about their type of employment contract, reply having “an apprenticeship or other training scheme” <sup>(17)</sup>, irrespective of their answers to the labour force and education status questions.

As shown in Figure 15, the study reports that overall, 39% of 16-29 year-old students worked in 2012.

**Figure 15. Share of youth (16-29) combining work and study <sup>(a)</sup>, 2012 (% of all students <sup>(b)</sup>)**



Source: Quintini (2015); OECD calculations based on Survey of Adult Skills (PIAAC) (2012).

Notes: (a) All apprentices – by labour market status and/or by contract type – are counted as combining work and study, irrespective of what they report. Indeed, some apprentices classify themselves as students while others see themselves as simply working. (b) Apprentices who do report “only work” as a labour force status are added to the total of student. This is done for consistency with their inclusion among youth who are working and studying. Countries are ordered by increasing prevalence of work-based learning.

More fine-tuned disaggregations of this measure of working while studying would allow a better identification of the group of interest for the current analysis; however, it should be pointed out that the group is identified based on general variables that do not have the purpose of capturing work-based learning as it would be ideally defined. No information on the length of the work experience is available, nor on whether it was mandatory or part of the curriculum. It also only captures a snapshot of the situation in a particular moment, since the questions on the employment status have the last week as reference period; this implies that a student who is not currently involved in a work experience while studying will not be taken into account, even if she might have been working in the past or might do so over the course of the studies. Finally, while contributing to provide information on the issue, PIAAC is not a suitable source of information for monitoring purposes, given the frequency with which it is carried out.

<sup>(15)</sup> These individuals are captured by the PIAAC derived variable summarising information on labour market and education status (EDWORK), which combines answers from questions C\_D05 and B\_Q02a.

<sup>(16)</sup> The relative question is C\_q07.

<sup>(17)</sup> The relative question is D\_q09.

## 5.4 OECD special survey

In 2015/17, the OECD/INES Network for Data Development on Labour Market and Social Outcomes of Education (LSO) carried out a pilot study on work-study programmes (*“Improve and develop indicators on vocational work-study programmes and qualifications”*). The aim of the pilot was to gather information on the prevalence of work-study qualifications, as well as on the labour market outcomes of adults educated through work-study programmes. Participation in the pilot study was voluntary, and only few countries managed to provide data (normally from national labour force surveys) to detect their graduates’ outcomes; as a consequence, the survey covered only four countries, namely Austria, France, Germany and Switzerland. OECD (2019) provides information on the survey, as well as an overview of the different definitions of work-study programmes and of their prevalence based on different sources. The pilot study was also a good opportunity to achieve conceptual and technical clarifications, and served as a basis for discussion towards a classification of education programmes by types of work-based components within the LSO network.

As shown in Table 3, the pilot found that, in the four countries, at least 75% of the population aged 25-34 year-olds with upper secondary or post-secondary non-tertiary level attainment attended vocational programmes. In Austria, Germany and Switzerland, over 60% of the population aged 25-34 at this attainment level had a work-study qualification, while in France a majority attended a school-based programme (OECD, 2017a). In all four countries, young people with a work-study qualification have higher employment rates and lower inactivity levels than their peers who attended a programme with general orientation; however, the comparison between individuals with work-study qualifications and those with other forms of vocational qualifications shows mixed results.

**Table 3. Educational attainment among 25-34 year-olds, by programme orientation and type of vocational programme, 2015**

	Below upper secondary		Upper secondary or post-secondary non-tertiary								Tertiary	
			Vocational orientation						General orientation			
			All vocational orientation		Work-study programme		School-based programme					
%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	
<b>Austria</b>	10	(0.2)	43	(0.4)	32	(0.3)	11	(0.2)	8	(0.2)	39	(0.3)
<b>France</b>	14	(0.2)	31	(0.2)	9	(0.1)	22	(0.2)	10	(0.1)	45	(0.2)
<b>Germany</b>	13	(0.1)	51	(0.2)	34	(0.2)	16	(0.1)	7	(0.1)	30	(0.2)
<b>Switzerland</b>	8	(0.2)	33	(0.4)	30	(0.4)	2	(0.1)	10	(0.3)	49	(0.4)

Source: OECD (2017a). Box A5.1 – Labour market outcomes for adults with a work-study qualification. Table A5.b (Web only).

Notes: Standard errors have been estimated using a simple random sample assumption. The real standard errors taking into account the complex sample design may be higher.

An update of the data provided in this pilot on the outcomes of work-study programmes is planned for Education at a Glance 2020. However, despite the unquestionable value of such information, this cannot be considered a systematic monitoring exercise which could potentially underpin a future indicator or benchmark on WBL.

## 5.5 Continuing Vocational Training Survey (CVTS)

The Continuing Vocational Training Survey (CVTS) collects information on enterprises’ investment in the continuing vocational training (CVT) of their persons employed. Five waves of the survey have been carried out so far, for reference years 1993, 1999, 2005, 2010 and 2015.

The primary objective of CVTS is to collect data on CVT <sup>(18)</sup> in enterprises, and in particular on: the strategies of enterprises in training their persons employed; the costs of training (CVT courses); the training modalities;

<sup>(18)</sup> The CVT considered is the one where the training activity is the result of a decision in the enterprise, and where the primary objective is the acquisition of new competences or the development and improvement of existing competences. The training activity

the training intensity (number of participants, training hours). Since 2005, the CVTS was extended to cover questions on participation in initial vocational training (IVT), with the purpose of understanding the strategies of enterprises offering IVT. IVT within enterprises is defined as a formal education programme (or a component of it) where working time alternates between periods of education and training at the work place and in educational institutions or training centres. For the last wave of CVTS, the operational definition for IVT participants explicitly refers to apprentices. As explained in the CVTS 5 manual, apprenticeships are defined based on a list of criteria, namely:

- The apprenticeship must be a formal education programme (or a component of it). Within the programme, learning time alternates between periods of practical training (workplace) and general/theoretical education (at the educational institution/training centre);
- Successful completion of the programme is evidenced by a qualification;
- The duration of the apprenticeship is from 6 months to 6 years;
- The apprentices receive remuneration (wage or allowance, in cash or in kind);
- Usually, there is a training contract (work contract) defining the characteristics of the apprenticeship.

The questions related to IVT differ across subsequent CVTS waves; in 2005 the survey asked information on the total number of IVT participants in the enterprise in the year of reference, as well as on costs incurred by the enterprise in relation to its provision of IVT. The latter was replaced in 2010 by a question on the reasons for usually offering apprenticeships. In the last wave (for reference year 2015), CVTS investigates whether the enterprise usually employs IVT participants <sup>(19)</sup>, and what are the main reasons for this.

This brief overview of the survey clearly shows that CVTS is not an ideal candidate for monitoring WBL. First, the unit of observation in the survey is the enterprise, and not the individual, so that the reference population is different from the one of interest. Second, the definition of IVT differs between CVTS waves, limiting the monitoring potential of this component of the survey even from the side of the hosting firms; as a matter of fact, the last wave of CVTS does not even collect data on the number of apprentices in the companies, which would be the most relevant piece of information the survey could provide given its scope and target population. Finally, given that the survey does not collect individual-level data, no information is available on the level and orientation of the educational programme that apprentices are attending.

## 5.6 Cedefop European Skills and Jobs Survey (ESJS)

The Cedefop European Skills and Jobs Survey (ESJS) is a survey of adult employees (aged 24 to 65) carried out in 2014 in the 28 Member States of the European Union by Cedefop, the European Centre for the Development of Vocational Training. The survey focused on collecting information on the match of adult workers' skills with the skill needs of their jobs. It was financed and developed by Cedefop in collaboration with a network of experts on skills. The aim of the survey is to help inform the development of European policies on initial and continuing education and training and employment policies.

In the section on educational attainment, the ESJS questionnaire includes a specific question on work-based learning, namely: "Did your study take place only within an educational institution (e.g. a school, college or university) or did it involve some learning in a workplace (e.g. through apprenticeships, internships, or other forms of work-based learning)?" This question is asked to all those with ISCED level 3 or above. Based on this question, respondents are classified according to whether they had workplace learning or not.

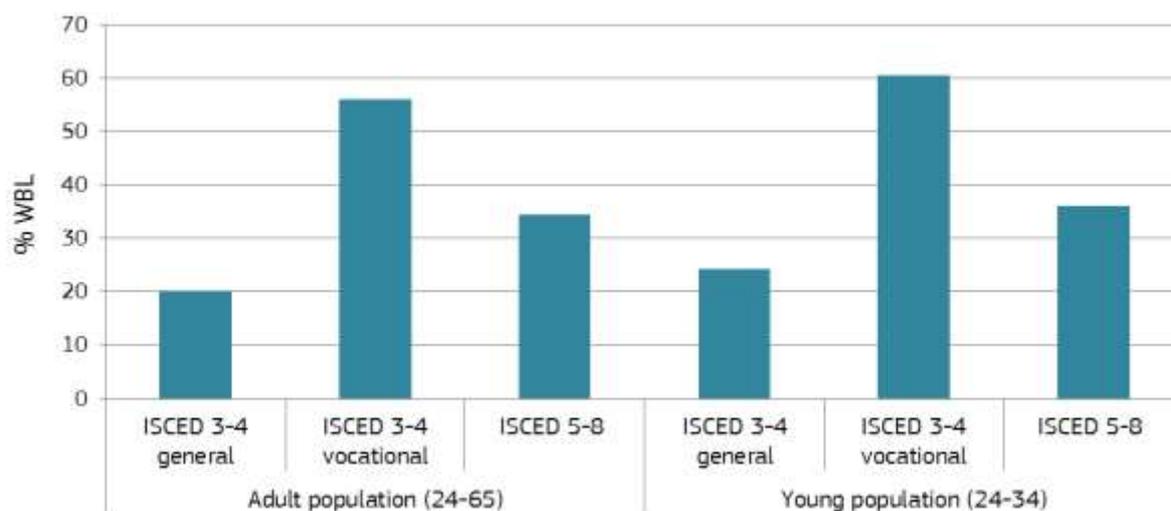
Figure 16 shows the share of employees who had a work-based learning experience for the EU as a whole; the highest shares of WBL are found among those with a vocational degree at ISCED 3-4 level. 56% of adult employees with this education stream had this type of experience during studies; the share reaches 60% among young employees aged 25-34. Around 35% of higher education graduates had WBL during their studies. Evidence from ESJS (Cedefop, 2015 and 2018) shows that indeed work-based learning is associated with a faster transition to a first job, as well as to higher levels of job satisfaction.

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should be identifiable as a specific and separate period of training, rather than an on-going activity that cannot be distinguished from work.

<sup>(19)</sup> According to the latest data, around 30% of enterprises in the survey employed IVT participants in 2015; this share is higher for bigger enterprises (with 250 or more persons employed), where it reaches 59%, and lower (27%) for small companies (with 10-49 persons employed). See Eurostat online dataset [[trng\\_cvt\\_34s](#)].

**Figure 16. Share of employees who had a work-based learning experience during studies, by educational attainment and age, 2014, EU28 (% of total employees)**



Source: own elaborations on Cedefop ESJS data.

Notes: the sample considered is the one of respondents who completed a degree at ISCED 3 level or above, and answered to the question on vocational orientation of their degree.

Despite offering valuable information on prevalence and outcomes of WBL, the ESJS suffers from a few main shortcomings for the purposes of monitoring. The first one is that it is carried out on adult employees only; this means that (i) it does not cover the total population, therefore not providing information on non-working individuals (as well as self-employed ones); (ii) it does not cover young people up to the age of 23. The second drawback is that when trying to distinguish between educational levels, as in Figure 16, sample sizes for individuals with WBL experiences become quite small, especially when focussing on the young population. In the age group 24-34, only 9 EU countries have samples of graduates from vocational medium education with WBL experience of 50 individuals or above; for higher education graduates, the number increases to 16. This suggests sample sizes are likely not adequate for an in-depth analysis. Finally, another issue concerns the frequency of the survey; as mentioned, the first wave was carried out in 2014, and a second one is foreseen for 2021. This makes the survey not an ideal candidate for monitoring WBL.

## 5.7 Cedefop VET opinion survey

In 2016 Cedefop launched its first ever opinion survey aimed at investigating European citizens' opinions on VET. In that year, more than 35 thousand interviews were conducted among the citizens of the Member States to seek their opinions on VET and get key insights on awareness, attractiveness and effectiveness of vocational education and training in Europe.

A section of this survey was dedicated to investigating the respondents' experience in upper secondary education; among other aspects, the survey asked about mode of delivery, i.e. whether it had any work-based components or was entirely school-based.

As reported in Cedefop (2017), general education was more likely to be entirely school-based, while VET was more likely to include some work-based components. 89% of respondents reporting upper secondary education with a general orientation stated that it occurred entirely in a school environment; the rate for those reporting vocational medium education was 43%, while for 24% it took place mostly at school and partly in the workplace, for 18% it was split equally between school and workplace, and for 13% it was mostly in the workplace and partly in school.

The primary purpose of the survey was to understand how European citizens view vocational education and training; as a consequence, the survey is not targeted at or particularly suited for monitoring prevalence and outcomes of VET or WBL, but more at capturing VET perceptions. It therefore cannot represent a candidate to replace other official data sources in this field, but rather complements information that can be drawn from them.

## 5.8 Labour Cost Survey (LCS)

The Labour Cost Survey (LCS) is a survey conducted every four years in EU Member States measuring the level and structure of labour costs, or total expenditure borne by employers for the purpose of employing staff. The reference years of the surveys so far are 1996, 2000, 2004, 2008, 2012 and 2016.

The survey covers enterprises with 10 employees or more, and all economic activities except agriculture, fishing, public administration, private households and extra-territorial organisations. In the LCS, detailed information is collected to calculate the various components of labour costs (wage components and social security contributions), as well as information on costs of vocational training, and taxes and subsidies relating to the employment of staff. The survey also records data on the number of full-time jobs and the number of hours worked and paid; among employees, the number of apprentices is recorded separately, as well as information on their wages and salaries, and social security contributions.

As reported in Eurostat (2015), in order to harmonise and ensure comparability across countries – and to avoid that data for apprentices include forms of traineeship – the LCS 2016 introduced an operational definition envisaging that an individual should be classified as apprentice if:

- An employment contract exists between the individual and the enterprise;
- The apprentice receives remuneration in the form of wage or allowance;
- The educational programme is of less than 6 years of duration and leads to a formal qualification;
- The apprenticeship contract is of at least 6 months and leads to a formal qualification;
- There is alternance between practical training at workplace and general/theoretical education in an educational institution or training centre on a weekly, monthly or yearly basis.

No such definition was included in Eurostat's implementing arrangements for LCSs before 2016.

As for CVTS, several limitations are evident for this survey as potential data source for monitoring WBL. First, the unit of observation in the survey is not the individual but the enterprise; as a consequence, no individual-level information (e.g. on the educational programme attended) is collected. Second, only information on apprenticeships is recorded, and no data on other types of WBL. Moreover, the definition of apprentice appears to have been standardised only from 2016 onwards. For all these reasons, it is possible to conclude that the LCS is not a good candidate for monitoring WBL.

## 5.9 Structure of Earnings Survey (SES)

The Structure of Earnings Survey (SES) is a large enterprise survey conducted in all EU Member States every four years. Up until now, it is available for reference years 2002, 2006, 2010 and 2014, with the next survey with reference year 2018. It provides comparable information at EU level on relationships between the level of earnings, individual characteristics of employees (sex, age, highest successfully completed level of education, occupation, length of service, type of contract and working time) and their employer (economic activity, size of the enterprise, etc.). It covers enterprises with at least 10 employees operating in all areas of the economy except agriculture, forestry and fishing, and public administration. Information on public administration as well as enterprises with less than 10 employees is also available from some countries on a voluntary basis.

Among individual-level data, the SES collects information on the type of contract of employees, distinguishing between contracts of permanent and temporary duration, and apprenticeships. However, no precise definition of apprentices is available in the documentation. It also registers the highest successfully completed level of education of employees; this would however not allow drawing a link between an apprentice and the educational programme currently attended.

When compared to other enterprises surveys, the SES appears to be able to provide more information on apprentices among employees; however, the information included can only draw a very partial picture of WBL features and participants and of their outcomes. As a consequence, the SES does not represent an ideal candidate data source for monitoring WBL.

## 6 Preliminary assessment of the potential data sources

In order to evaluate a data source for underpinning potential indicator(s) and/or a benchmark on WBL, it is fundamental to assess its “fitness for use”. This is a multi-faceted concept, which can be defined starting from the dimensions used in data quality frameworks. . OECD (2017b) captures quality – defined as “fitness for use” for users’ needs – in terms of the following seven dimensions <sup>(20)</sup>:

- **Relevance** is achieved when data/statistics meet the needs of users;
- **Accuracy** is the degree to which the data correctly estimate or describe the quantities or characteristics that they are designed to measure;
- **Credibility** (similarly to **reliability**) is the confidence that users place in data products based simply on their image of the data producer, i.e. the brand image; it is determined in part by the integrity of the production process;
- **Timeliness** reflects the length of time between data becoming available and the events or phenomena they describe. The notion of timeliness is assessed on the time period that permits the information to be of value and still acted upon;
- **Accessibility** reflects how readily data products can be located and accessed;
- **Interpretability** (or **clarity**) reflects the ease with which users may understand and properly use and analyse the data. The adequacy of the definitions of concepts, target populations, variables and terminology underlying the data, and information describing the limitations of the data, if any, largely determines the degree of interpretability;
- **Coherence** (or **consistency/comparability**) reflects the degree to which the data are logically connected and mutually consistent; it can apply to different dimensions, among which:
  - **Coherence over time** implies that the data are based on common concepts, definitions and methodology over time, or that any differences are explained and can be allowed for. Incoherence over time refers to breaks in a series resulting from changes in concepts, definitions or methodologies;
  - **Coherence across countries** implies that the data are based on common concepts, definitions, classifications and methodology, or that any differences are explained and can be allowed for <sup>(21)</sup>.

For the purposes of the current analysis, a few of these “fitness for use” criteria are generally respected. With the exception of the Cedefop ones, the data sources considered are part of a regulated data collection, carried out by Eurostat or other international organisations such as OECD, so that *credibility* and *reliability* as defined above are normally ensured. Apart from the OECD special survey, which represented a pilot exercise, all these data sources are easily *accessible* and provide all the necessary metadata and supporting documents for *interpretation* and understanding of definitions, coverage and limitations. They also normally ensure *coherence across countries*, in that they try and apply standard definitions instead of national ones; for WBL, this is especially true for LFS (both AHM/ future HATWORK and TEMPREAS variables) and UOE data, as in these cases particular attention is devoted to its conceptualisation and international comparability. Given all these features, it is also reasonable to say that the data sources *accurately* capture what they are designed to measure.

The remaining dimensions (namely timeliness, coherence over time and relevance) are more discriminating between potential data sources. An overview of the data sources and of the evaluation of these criteria for each of them is provided in Table 4, which also provides the main features of the sources in terms of geographical and time coverage, as well as of target population.

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<sup>(20)</sup> Eurostat (2019) measures quality of the statistical output by “the extent to which the statistics are relevant, accurate and reliable, timely, coherent, comparable across regions and countries, and readily accessible by users, i.e. the Principles of Statistical Output”. These dimensions are in line with those described by OECD, and are also used to draw a more comprehensive description of each of them.

<sup>(21)</sup> Other levels of coherence can be considered. The first one is coherence within a dataset, which implies that the elementary data items are based on compatible concepts, definitions and classifications and can be meaningfully combined. Incoherence within a dataset occurs, for example, when two sides of an implied balancing statement, such as inflows and outflows, do not balance. A second one is coherence across datasets, which implies that the data are based on common concepts, definitions and classifications, or that any differences are explained and can be allowed for. While relevant, these levels of coherence are less directly related to the assessment of potential data sources for WBL monitoring.

A first conclusion that can be drawn is that all surveys targeting enterprises are not ideal candidates for monitoring WBL. Even though they can provide information on the number and relevance of apprentices in the companies, these surveys cannot deliver any information on (i) the level and orientation of the educational programmes that apprentices are attending; (ii) other outcomes of individuals with WBL experiences, e.g. labour market outcomes after finishing their studies; (iii) work-based learning experiences other than apprenticeships.

As far as the Cedefop data sources are concerned, the VET opinion survey is not an ideal source of information because of its nature and purpose. The ESJS, on the other hand, qualifies as an extremely relevant source; nevertheless, two main drawbacks emerge: the first one is that it only interviews adult employees; the second one is that for now only one wave is available, and the foreseen frequency for repeating the survey is not adequate for monitoring purposes. As a consequence, its “overall quality” as data source underpinning possible indicator(s) and/or a benchmark can be considered as low.

The frequency of survey implementation represents a major shortcoming also for the OECD special survey (together with its current geographical coverage), as well as for PIAAC. The latter has another limitation, i.e. the fact of providing only a snapshot of the situation of apprenticeships/WBL in a particular moment; this is because the relevant questions for capturing WBL or apprenticeships have the “last week” as reference period. While this can still represent a source of valuable complementary information about ongoing apprenticeships of individuals currently in formal education, it is likely not to capture all possible WBL occurrences. A similar concern could partially apply to information from the LFS TEMPREAS variable; despite in principle capturing ongoing apprenticeships and trainings, the ability of this variable to identify all individuals participating in apprenticeship programmes, especially when a student might take the apprenticeship as optional in the future, is yet to be fully established.

For all these reasons, it can be concluded that no alternative source is able to ensure the same overall data quality (including relevance, timeliness and coverage) provided by the LFS AHM (and future LFS HATWORK) and by UOE. These are therefore the only realistic candidate data sources for a potential WBL indicator, on which Section 7 concentrates for a more in-depth assessment. Given the relevance of TEMPREAS as a complementary source of information, it is also taken into account in the following assessment.

A final remark that can be drawn from the overview of data sources provided in the previous section concerns the definitions of WBL and apprenticeship adopted in each of them. The reported definitions show that there is still a relative lack of coherence across sources. An overview of the definitions used and planned under the IESS FR is reported in Annex 2.

**Table 4. Overview of the main characteristics of the potential data sources identified to underpin a possible indicator on WBL.**

<b>Data source</b>	<b>LFS AHM/ Future LFS HATWORK</b>	<b>UOE</b>	<b>LFS TEMPREAS</b>	<b>PIAAC</b>	<b>OECD special survey</b>	<b>CVTS</b>	<b>ESJS</b>	<b>Cedefop VET opinion survey</b>	<b>LCS</b>	<b>SES</b>
<b>Years available</b>	2009, 2016, yearly under IESS FR (from 2021)	Yearly from 2013	Yearly; singling out apprentices is optional since 2016, mandatory from 2021	Every 10 years (first cycle 2011-2018)	First wave 2015/17; to be repeated 2018/20	1993, 1999, 2005, 2010 and 2015 (every 5 years)	2014	2016	1996, 2000, 2004, 2008, 2012 and 2016 (every 4 years)	2002, 2006, 2010 and 2014 (every 4 years)
<b>Geographical coverage (EU countries)</b>	Complete	Complete	Complete	Partial	Very partial	Complete from 2005	Complete	Complete	Complete from 2004	Complete from 2010
<b>Target population</b>	Up to 2016: population aged 15-34; from 2021: population aged 20-34 with at least upper secondary educational attainment	Students in ISCED levels 3 to 5	Employees aged 15 and over with a fixed-term contract	Adult population aged 16-65	All population aged 15 and over	Enterprises	Adult employees aged 25-64	All population aged 15 and over	Enterprises	Enterprises (and their employees)

<b>Relevance</b>	High	High	Medium (partial information)	Medium (partial information)	High	Low	High, but only for a sub- group of individuals (employees)	Low	Low	Medium (partial information)
<b>Timeliness</b>	High	High	High	Low	Low	Medium	Low	Low	Medium	Medium
<b>Coherence over time</b>	High under IESS FR	High	High	-	-	Low	-	-	Low	Low (no definition)
<b>Fitness for use for a WBL indicator <sup>(22)</sup></b>	High	High	Medium	Medium	Medium	Low	Low	Low	Low	Low

<sup>(22)</sup> This row reports an overall evaluation of “fitness for use” of a data source for underpinning potential indicator(s) and/or a benchmark on WBL. It is classified as “high”, “medium” or “low”; “high” means that based on the combination of the criteria above (including relevance, timeliness and coverage), the data source qualifies as a realistic candidate source for a potential WBL indicator; “low” shows that a source is not fit for a WBL indicator; “medium” captures situations where the source can provide relevant information on WBL, but (i) limited to some categories of WBL; or (ii) only for a subset of EU countries; or (iii) not with the required time frequency.

## **7 An in-depth analysis of the strengths and weaknesses of LFS AHM/HATWORK, LFS TEMPREAS and UOE**

Section 6 established that the LFS AHM (and the future LFS HATWORK variable) and UOE ensure an adequate overall level of “fitness for use” of the data source in terms of the main dimensions identified above. This section goes beyond the general overview, and looks in more detail into the main aspects that can be taken into account in order to evaluate the relevance and usefulness of the two data sources to underpin a possible indicator on WBL.

### **7.1 Type of WBL experience**

The two different data sources allow identifying different types of WBL experience; however, it is generally not easy to reconcile the types of WBL that can be analysed in the data with the three main models of WBL described in European Commission (2013) presented in Section 2. The UOE data collection allows capturing programmes resembling the first and second model of WBL, i.e. alternance schemes or apprenticeships, and school-based VET which includes on-the-job training periods in companies; however, it does not allow distinguishing them. The LFS AHM attempts to capture more precisely different kinds of WBL, taking into account duration, payment and whether the work experience was mandatory or not; this ideally allows a better identification of the types of work experience, and in particular a better grasp of what can be considered as part of the first model of WBL, especially apprenticeships.

The third model of WBL, i.e. WBL that is integrated in a school-based programme, cannot be identified in either data source.

### **7.2 ISCED levels**

While the UOE data collection distinguishes combined school and work-based programmes only among formal vocational education programmes at ISCED levels 3 and 4, the LFS AHM allows identifying work-based learning also for general medium education programmes and higher education ones. While this can provide interesting insights into the prevalence of WBL at different levels, the policy relevance of work-based learning is mostly focused on medium-level vocational education; as a consequence, this is not necessarily to be considered a defining factor in the choice of a data source for possible WBL indicator(s) and/or a benchmark.

### **7.3 Survey vs. administrative data**

The advantage of having a WBL indicator based on survey data rather than administrative registers lies in the possibility to link the information on participation in WBL with several other characteristics of the individuals covered in the survey. This ideally allows observing the relationship between participation in WBL and:

- individual socio-demographic features, e.g. immigrant background;
- characteristics of the education programme, e.g. field of study;
- relevant labour market and other socio-economic outcomes, e.g. the choice of continuing studies or employability.

These links are impossible to make using administrative data from UOE.

On the other hand, there are limitations to the extent to which it is possible to analyse the links between WBL and these characteristics and outcomes using survey data. This is particularly the case when the analysis focuses on a narrowly defined population of reference. In these cases sample size issues might severely affect the reliability of the figures that can be derived.

Moreover, survey data is sometimes prone to issues related to misunderstandings of the questions among the respondents, which could bias the responses and make the resulting information less reliable. The evaluation

report of the 2016 EU Labour Force Survey Ad-Hoc Module (Eurostat, 2018) reports that this issue was raised in several countries <sup>(23)</sup>.

Sample size restrictions or difficulty of individual interpretations of survey questions, do not apply to UOE administrative data which are based on general definitions of the features of the programmes to be identified in administrative registers. Nevertheless, some concerns can be raised also regarding the relevance of the UOE definition for combined school and work-based programmes and/or the applicability of such definition and its reliability in practice. As mentioned above, the UOE WBL definition is based on a differentiation of programmes depending on the proportion of time in the curriculum that is supposed to be spent in the school, as opposed to work environment. The actual operationalisation of this definition in the national education systems might prove difficult in practice, for example in cases where work-based learning experience is optional and/or different students from the same programme may spend a different amount of time in a work environment. This may be even more complex in modular VET systems, where the requirements for work-based learning may be defined not in a single programme, but in each individual module taken by a student. As a matter of fact, a comparison between data from UOE and LFS on students/graduates from vocational ISCED 3-4 programmes shows much higher levels of WBL in the latter, which might suggest that countries are not able to report all types of WBL in administrative data.

#### 7.4 Stock vs. flow information

The 2016 LFS AHM provides a snapshot of the prevalence of work-based learning in all highest attained education qualifications in a given moment in time. As such, it provides what can be considered as “*stock*” information on WBL, i.e. information on individuals who did have this type of work experience during their studies. On the other hand, in giving information on current enrolments, UOE data provide what could be considered as “*flow*” information on work-based learning – that is, data on current students who will then be included in the future stock of individuals who participated in work-based learning.

As mentioned above, the “*stock*” information provided in the LFS data allows evaluating more aspects of the WBL phenomenon than flow information from administrative registries can do. However, an important caveat applies to the LFS AHM collection, in particular when trying to assess the prevalence of WBL at ISCED 3 and 4. As a matter of fact, the AHM enquires about work experience during the highest *attained* level of education; this implies a potential loss of information on lower education levels, and as a consequence, the risk of miscalculating the real prevalence of WBL. This problem is likely to affect especially participation at ISCED 3 level, which is the most relevant one for VET policy. Given the data currently available, it is not easy to evaluate the incidence of the potential loss of information in the LFS AHM. It is possible to get an impression of it by looking at the group of young people aged 20-24 who reported having a WBL experience, and who at the time of the interview had an ISCED 3-4 vocational degree as their highest level of education attained. Figure 4 showed that according to LFS AHM data, the share of individuals in this group who were still in formal education at the time of the survey was 19.5% for the EU as a whole, representing around 1 million people; six EU countries (SI, BG, NL, RO, ES and CZ) had shares above 25%. Assuming these individuals successfully complete a higher level of education, if they were interviewed a few years later, the information on their WBL experience at ISCED 3-4 would be lost <sup>(24)</sup>. The magnitude – and even the direction – of the impact this could have on a possible WBL indicator is however hard to assess, as it would depend on the relative prevalence of WBL among those continuing and not continuing formal education.

An additional aspect to be taken into account in the comparison between the relevance and usefulness of this stock and flow information is timeliness. As a matter of fact, if the purpose of the indicator is to monitor progress for policy purposes, then the ideal situation would be to have information as soon as possible. Past experience on a few of the current Education and Training (ET) 2020 benchmarks highlighted how some countries decided to complement EU “*stock*” benchmarks such as early leavers from education and training and tertiary educational attainment with national “*flow*” indicators to reduce the delay in monitoring and facilitate timely policy interventions. A similar issue should be considered for possible WBL indicator(s) and/or

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<sup>(23)</sup> As an example, the LFS AHM initially published for DE showed very low levels of WBL even among individuals who have a vocational ISCED 3-4 degree as highest level of attained education. This under-reporting of WBL was allegedly due to an error in the national questionnaire, where work-based learning and apprenticeships were wrongly reported. Data were revised in April 2019, using national variables which allow the identification of apprentices in particular.

<sup>(24)</sup> In a similar way, the approach adopted in the LFS of asking about work experience during the highest *attained* level of education implies that information on WBL taking place in an education level which is not yet completed can be captured only partially (i.e. identifying apprenticeships and other paid trainings) through the TEMPRES variable, and not through HATWORK.

a benchmark. The LFS TEMPREAS variable could contribute to filling in this gap, by complementing the “stock” information provided by LFS AHM (and future HATWORK) variables with a “flow” component accounting for recent apprentices.

A possible solution to both issues mentioned in this section would be to focus on recent graduates only, in line with the definition applied for the ET 2020 benchmark on employment rate of recent graduates used in Section 3.3 – but considering all individuals irrespective of whether they are still in formal education or not. Provided such solution could rely on a sufficient sample size, it would reduce the possible effect of losing information on lower education levels than the highest one completed, as well as ensure more timely information.

## **7.5 Comparability over time**

UOE data on school and work-based vocational programmes at ISCED levels 3 and 4 are available yearly since 2013, after the implementation of ISCED2011. Moreover, following a request from DG EMPL and Cedefop, Eurostat published trend data based on ISCED2011 for enrolments and graduates with a focus on programme orientation for reference years 2005 and 2010 as well. Although it is not easy to assess the reliability of these time series, in principle the UOE data collection has been carried out in a consistent way for a few years already.

Data from the Labour Force Survey are more fragmented. Until now, information on WBL in the LFS was collected only in the 2009 and 2016 Ad-Hoc Modules on young people on the labour market. However, as mentioned in Section 3, it was agreed that under the upcoming Integrated European Social Statistics Framework Regulation, the variable “work experience at a workplace as part of HATLEVEL” (HATWORK) will be included into the core LFS from 2021. This new variable will avoid the use of terms such as “apprenticeships” or “traineeships”, which appear to be still potentially confusing when operationalising definitions at national level. Instead, it will distinguish five main modalities of work-based learning, based on duration and payment. Concerning duration, it will identify work experience(s) at a workplace with duration of 7 months or over; from 1 to less than 7 months; and less than 1 month (or no experience). As far as the payment component is concerned, the new variable will distinguish work experiences where at least one work experience was paid from those where all work experiences were unpaid. This information will not be entirely comparable to that provided in the LFS AHM; however, the inclusion of this variable in the core LFS will lead to a constant collection of information on WBL, therefore representing a fundamental source of information for monitoring country progress in this domain.

## 8 Conclusions

Enhancing provision and access to high-quality learning opportunities has been at the heart of European education, training and employment policies for many years. One of the main priorities in the EU VET policy has been the promotion of work-based learning and apprenticeships schemes, as tools to deliver labour market relevant skills, ease transitions to labour market, contribute to reducing youth unemployment and support the training of adults. Given the relevance attributed to work-based learning in VET across the EU, including the 2018 Council Recommendation on a European framework for quality and effective apprenticeships, it is important to find ways to ensure reliable and comparable data collection that could support better tracking of progress and inform policymaking.

This report provided evidence in support of this process. It presented an overview of the main data sources currently available to monitor WBL in VET programmes, and an assessment of the strengths and weaknesses of the sources that could underpin a possible indicator or benchmark on work-based learning.

The main conclusion of this report is that, based on the overall evaluation of “fitness for use” of the available data sources (including dimensions such as relevance, timeliness and coverage of the data), there are currently two sources that can be used to obtain regular, quality and comparable data on WBL in VET programmes: the 2016 EU-LFS Ad-Hoc Module on young people on the labour market (and future core LFS HATWORK variable), and the UOE data collection. The report also highlighted that – despite the narrow focus on specific types of WBL, and some degree of uncertainty concerning the practical level of coverage – the core LFS variable TEMPREAS can represent a valuable source of complementary information on ongoing WBL experiences of individuals in formal education.

Several remarks can be done on the differences between these data sources. A first one concerns the nature of the data, and in particular the comparison between survey and administrative data. Survey data such as LFS have the clear advantage of allowing linking participation in WBL with both individual characteristics and education/labour market outcomes, as well as granting a broader coverage of different levels of education; however, possible limitations due to sample size and reliability issues need to be taken into account. Administrative data can be considered more reliable in this perspective; however, the operationalisation of the adopted definitions of WBL might prove difficult in some countries.

Secondly, the two data sources provide different types of information: the LFS AHM (and future HATWORK variable) provides “stock” information on WBL, i.e. a snapshot of the prevalence of work-based learning in all highest attained education qualifications in a given moment in time; UOE – and (partially) LFS TEMPREAS – on the other hand, provide “flow” information, i.e. data on current students who will then be included in the future stock of individuals who participated in WBL. In this sense, the two data sources are therefore complementary. The “stock” information from LFS data allows evaluating more aspects of the WBL phenomenon than flow information from administrative registries can do; however, given the fact that the LFS captures work experience during the highest *attained* level of education, a potential loss of information on lower education levels might occur, with unclear impacts on a possible WBL indicator. Moreover, a concern about the timeliness of “stock” information can arise, as it implies some level of delay when compared to “flow” data. A possible solution to both issues would be to focus on recent graduates only (provided a sufficient sample size is available to ensure reliability).

Finally, another relevant aspect in the evaluation of the potential data sources is the definition of work-based learning (and of more specific categories within it) applied in each of them. The report showed that there is still a relative lack of coherence across sources, which can however be addressed in the future in light of the ongoing effort to rationalise classifications of WBL and apprenticeships in Eurostat data sources. In particular, the future HATWORK variable (included in the core LFS from 2021) will avoid the use of terms such as “apprenticeships” or “traineeships” – which appear to be still potentially confusing when operationalising definitions at national level. Instead, the categorisations will be designed around two main dimension, namely duration of work experience and whether the work experience was paid or not, in order to make data more easily comparable across countries.

Overall, based on the analysis above and the experience with LFS Ad-Hoc modules in 2009 and 2016, LFS-based indicators appear to be much more promising for monitoring and analysis of work-based learning. This is due to better coverage and accuracy across countries and levels of education, better timeliness, possible linkage with multiple other variables in the LFS, as well as more comparable operationalisation of the definition of WBL.

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## List of abbreviations

### Country codes

AT	Austria	IE	Ireland
BE	Belgium	IT	Italy
BG	Bulgaria	LT	Lithuania
CY	Cyprus	LU	Luxembourg
CZ	Czechia	LV	Latvia
DE	Germany	MT	Malta
DK	Denmark	NL	Netherlands
EE	Estonia	PL	Poland
EL	Greece	PT	Portugal
ES	Spain	RO	Romania
FI	Finland	SE	Sweden
FR	France	SI	Slovenia
HR	Croatia	SK	Slovakia
HU	Hungary	UK	United Kingdom

### Abbreviations

AHM	Ah-Hoc Module
Cedefop	European Centre for the Development of Vocational Training
CVTS	Continuing Vocational Training Survey
ESJS	European Skills and Jobs Survey
EU	European Union
EU-LFS	EU Labour Force Survey
IESS FR	Integrated European Social Statistics Framework Regulation
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
IVET	Initial VET
LCS	Labour Cost Survey
OECD	Organisation for Economic Co-operation and Development
UOE	UIS (UNESCO Institute of Statistics)/OECD/Eurostat data collection
PIAAC	Survey of Adult Skills (part of the Programme for the International Assessment of Adult Competencies)
SES	Structure of Earnings Survey
VET	Vocational education and training
WBL	Work-based learning

### ISCED 2011 levels

ISCED 3	Upper secondary education;
ISCED 4	Post-secondary non-tertiary education
ISCED 5-8	Tertiary (or higher) education

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## Annex 1. Statistical Annex

**Table A 1. Main fields of study among individuals with vocational medium education as highest qualification attained, and share of WBL within each field, 2016 (% of people aged 15-34)**

	Engineering, manufacturing and construction		Business, administration and law		Services		Health and welfare	
	% on total	Of which WBL (%)	% on total	Of which WBL (%)	% on total	Of which WBL (%)	% on total	Of which WBL (%)
<b>EU28</b>	<b>35.3</b>	<b>60.3</b>	<b>20.8</b>	<b>59.6</b>	<b>15.1</b>	<b>61.4</b>	<b>10.1</b>	<b>60.8</b>
BE	36.4	52.8	20.0	49.8	12.8	55.3	13.3	69.0
BG	70.0	22.2	9.0	25.4 u	6.4	33.2 u	x	
CZ	43.0	68.7	19.7	47.0	19.9	81.9	5.5	75.0
DK	37.4	62.2	26.6	47.4			25.0	37.0
DE	31.6	88.6	31.4	85.7	10.9	81.8	15.8	59.3
EE	61.6	59.5	11.5	46.9 u	13.6	52.7	x	x
IE	6.6	42.4	3.8	x	9.0	30.8	9.8	32.1
EL	34.7	12.3	7.1	18.5	23.7	23.7	13.2	20.2
ES	28.9	29.1	23.1	23.7	15.1	25.7	16.4	33.0
FR	41.9	77.2	23.0	74.5	13.2	80.3	14.5	78.1
HR	38.0	31.7	13.6	20.2 u	25.9	31.2	3.9 u	34.8 u
IT	30.5	34.6	30.8	25.8	15.3	51.2	2.0	50.9
CY	64.3	53.8	5.5 u		19.1	61.1	x	
LV	47.1	55.8	5.8 u	x	25.3	61.6	x	x
LT	49.6	63.4	14.6	59.7	25.5	69.2	x	x
LU	x	x	x	x	x	x	x	x
HU	44.0	89.0	17.8	83.9	19.5	86.9	4.4	88.5
MT	31.9	63.7 u	16.5 u	x	19.3 u	66.7 u	9.6 u	x
NL	19.0	68.6	19.8	65.7	20.7	68.5	20.8	74.8
AT	39.6	93.3	28.2	70.9	16.8	84.5	6.5	90.6
PL	46.8	56.5	11.7	50.2	19.1	62.3	2.6	53.5
PT	21.9	35.4	19.7	33.1	20.3	51.8	11.0	38.3
RO	50.2	10.9	7.4	12.1	8.2	14.8	3.0	19.4 u
SI	41.1	36.4	20.7	38.0	12.6	44.3 u	10.5	44.5 u
SK	40.8	60.3	20.5	46.9	20.7	69.6	4.1	82.4
FI	37.1	82.9	9.6	75.1	26.5	82.2	13.6	89.9
SE	43.1	64.6	6.7	70.1	13.0	67.3	13.2	61.2
UK	16.3	60.5	9.7	50.8	18.2	39.4	13.1	51.0

Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.

Notes: (x) not publishable because of very low reliability; (u) unreliable.

**Table A 2. Main fields of study among individuals with higher education as highest qualification attained, and share of WBL within each field, 2016 (% of people aged 15-34)**

	Business, administration and law		Engineering, manufacturing and construction		Health and welfare		Education	
	% on total	Of which WBL (%)	% on total	Of which WBL (%)	% on total	Of which WBL (%)	% on total	Of which WBL (%)
<b>EU28</b>	<b>22.7</b>	<b>40.5</b>	<b>14.2</b>	<b>43.7</b>	<b>11.2</b>	<b>52.8</b>	<b>8.0</b>	<b>42.0</b>
BE	20.9	49.6	11.9	49.9	18.6	67.2	8.9	64.4
BG	39.2	36.2	16.4	34.1	4.9	55.2 u	6.2	40.1 u
CZ	13.0	49.0	15.3	60.0	13.7	75.9	9.3	70.8
DK	20.6	24.0	14.3	25.2	25.2	29.3	6.3	33.1 u
DE	27.0	31.7	19.9	32.6	8.5	35.2	13.7	22.9
EE	22.0	45.3	16.4	52.3	11.5	58.1	6.0	56.5 u
IE	11.4	18.6	3.3	19.1 u	5.7	32.4	3.3	16.6 u
EL	19.3	23.8	15.9	24.3	10.7	28.9	6.9	21.1
ES	21.6	29.8	13.2	28.1	14.4	26.3	12.9	32.0
FR	31.0	80.6	16.9	82.9	11.6	81.4	2.1 u	73.6 u
HR	14.2 u	x	13.6 u	x	7.9 u	28.2 u	17.1 u	31.4 u
IT	20.0	29.4	15.2	28.3	13.6	59.1	4.4	52.4
CY	31.1	11.7	10.1	29.1	10.4	58.4	6.9	44.8
LV	31.6	44.0	14.0	47.8	8.4	73.4	3.7 u	x
LT	30.4	60.3	18.6	68.9	9.9	84.9	6.2	84.3
LU	31.4	53.3	7.4 u	x	7.8 u	68.8 u	8.7 u	x
HU	21.0	78.7	11.7	89.3	7.0	91.3	12.1	78.6
MT	23.7	32.9 u	8.7 u	x	19.3	65.7	12.5	52.5 u
NL	26.1	47.2	9.0	50.0	19.1	67.4	9.9	69.4
AT	25.1	24.6	24.6	52.0	5.6	55.8	8.9	39.1
PL	23.0	27.1	12.1	42.1	7.3	63.7	12.3	47.6
PT	18.3	20.4	17.7	13.1	18.5	35.5	7.9	29.3
RO	32.9	8.2	17.9	10.2	4.5	22.3 u	2.2	x
SI	21.7	30.0 u	16.0	46.3 u	11.3	59.1 u	12.3	43.7 u
SK	21.2	33.8	13.9	37.8	13.1	49.2	14.8	58.3
FI	23.6	53.3	18.7	65.9	18.2	87.6	6.4	80.9
SE	16.4	21.1	21.3	20.3	18.7	55.0	10.1	63.9
UK	14.4	17.8	7.9	34.7	8.7	37.2	5.4	35.7

Source: own elaborations on a Eurostat special extraction from LFS AHM 2016.

Notes: (x) not publishable because of very low reliability; (u) unreliable.

## **Annex 2. Definitions of work-based learning and apprentices/apprenticeships in Eurostat data sources**

### **LFS AHM 2016 (Ad-Hoc Module 2016 – Young people on the labour market)**

Source: explanatory notes, <https://ec.europa.eu/eurostat/documents/1978984/6037334/Explanatory-notes-AHM-2016.pdf>

The variable WORKEXP (work experience during studies) distinguishes whether a person had paid and/or unpaid work experiences (or no work experiences) during the studies that led to the highest level of formal education successfully completed. For those who had a work experience, the variable WORKSTUD (work-based learning) further classifies the work experience into two kinds of work-based learning, “apprenticeships” and “traineeships”, and work experiences outside the curriculum.

In the AHM 2016 context, “apprenticeships” are defined as work experiences that were a mandatory part of the curriculum of the formal programme that led to the highest level of education successfully completed, where the work-based learning was paid and had a total duration of at least 6 months. “Traineeships” are all other forms of work-based learning as part of the curriculum, i.e. traineeships might be mandatory or voluntary, paid or unpaid, and they might be shorter than six months.

→ For the definition of apprenticeships, “duration” refers to the duration of the work-based learning component.

### **LFS variable HATWORK from 2021**

Source: draft 2021 LFS explanatory notes, not yet publicly available.

The new variable HATWORK (work experience at a workplace as part of HATLEVEL, i.e. the studies that led to the highest level of education successfully completed) will be collected annually as from 2021 for those aged 20 to 34 with at least upper secondary educational attainment. The variable aims at categorising the target population into five groups as follows:

- Work experience(s) at a workplace from 1 to 6 months, at least one (work experience) paid;
- Work experience(s) at a workplace from 1 to 6 months, all unpaid;
- Work experience(s) at a workplace 7 months or over, at least one paid;
- Work experience(s) at a workplace 7 months or over, all unpaid;
- No or less than 1 month work experience.

The terms “apprenticeships” or “traineeships” are not used on purpose, as these terms remain confusing at national level. The split of duration into “1-6 months” and “7 months or over” was introduced on request of countries who found these intervals more relevant/meaningful. There is no information collected on whether the work experience was mandatory or voluntary.

→ “Duration” refers to work experience at a work place.

### **LFS variable TEMPREAS since 2016**

Source: 2017 LFS explanatory notes, <https://ec.europa.eu/eurostat/documents/1978984/6037342/EU-LFS-explanatory-notes-from-2017-onwards.pdf>

The variable TEMPREAS (reasons for having a temporary job/work contract of limited duration) is only asked to employees with a contract of limited duration. The variable identifies the reason why the respondent has in the main job a fixed-term contract. One reason for having a fixed-term contract is training, and since 2016 two categories of TEMPREAS aim at singling out “apprentices” vs. “other forms of training” on a voluntary basis.

The criteria to qualify as an apprenticeship are as follows:

- there is a contract or formal agreement for a prescribed period of time between the employer and the apprentice or an institution representing the apprentice, defining the characteristics of the apprenticeship;
- learning time alternates between periods of practical training at the work place and general/theoretical education in an educational institution or training centre on a weekly, monthly or yearly basis;
- all apprenticeships are (part of) formal education programmes; successful completion is evidenced by a qualification;
- in apprenticeships, the participant (apprentice) always receives remuneration in cash or in kind;
- the duration is between 6 months and 6 years. The duration refers to the programme and not only to the work-based component.

In the context of this variable, training other than apprenticeship covers all other categories of paid training such as trainees (either linked to formal or non-formal education programmes); research assistants; internships (e.g. for physicians); periods of practice after courses and before recognition of qualifications (e.g. for lawyers).

→ Here, “duration” refers to the formal programme and not to the work-based component. This was decided in view of how formal education is covered both in UOE and in surveys: only formal programmes with a duration of at least 6 months are considered as formal education.

### **LFS variable TEMPREAS from 2021**

Source: draft 2021 LFS explanatory notes, not yet publicly available

From 2021, new legislation will apply to the EU-LFS, and for TEMPREAS, singling out “apprentices” vs. “other forms of training” becomes mandatory. The explanatory notes are rephrased for better clarity but remain largely unchanged in terms of contents. They read as follows:

Criteria to qualify an apprenticeship: in order to achieve comparable results, only apprentices who fulfil all these criteria should be included, regardless of national definitions of apprentices:

- All apprenticeships are (part of) formal education programmes; successful completion is evidenced by a formal qualification.
- There is a contract or formal agreement for a prescribed period of time between the employer and the apprentice and/or an institution representing the apprentice, defining the characteristics of the apprenticeship (such as the rights and obligations of the employer and of the apprentice, learning objectives, etc.).
- Learning time combines or alternates periods of education and training at the work place and in educational institutions or training centres on a weekly, monthly or yearly basis.
- In apprenticeships, the participant (apprentice) always receives remuneration in cash or in kind.
- The duration is between 6 months and 6 years. The duration refers to the programme and not only to the work-based component.

Training (other than apprenticeship) covers all other categories of paid training such as:

- trainees as defined in the explanatory notes for WKSTAT (either linked to formal or non-formal education programmes);
- research assistants;
- internships (e.g. for physicians);
- periods of practice after courses and before recognition of qualifications (e.g. for lawyers).

## **LCS**

Source: Eurostat (2015). Labour Cost Survey 2016. Eurostat's arrangements for implementing the Council Regulation 530/1999 and the Commission Regulation 1737/2005 – FINAL, [https://ec.europa.eu/eurostat/cache/metadata/Annexes/lcs\\_r2\\_esms\\_an3.pdf](https://ec.europa.eu/eurostat/cache/metadata/Annexes/lcs_r2_esms_an3.pdf)

According to the LCS 2016 implementing arrangements, an individual should be classified as apprentice if:

- An employment contract exists between the individual and the enterprise;
- The apprentice receives remuneration in the form of wage or allowance;
- The educational programme is of less than 6 years of duration and leads to a formal qualification;
- The apprenticeship contract is of at least 6 months and leads to a formal qualification;
- There is alternance between practical training at workplace and general/theoretical education in an educational institution or training centre on a weekly, monthly or yearly basis.

➔ "Duration" refers to the apprenticeship contract.

## **CVTS**

The definitions used for CVTS are aligned to the LFS variable TEMPREAS.

## **UOE**

School-based programmes: at least 75% of the curriculum is presented in a school environment.

Combined school and work-based programmes: the work-based component is between 25% and 90% of the curriculum.

Work-based programmes: over 90% of the curriculum is presented in a work-based environment. These are by definition not formal education but the qualification might be recognised as formal.

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Publications Office  
of the European Union

doi:10.2760/645199

ISBN 978-92-76-12117-6