RESEARCH PAPER

The changing nature and role of vocational education and training in Europe

Volume 5: education and labour market outcomes for graduates from different types of VET system in Europe

CEDEFOP

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The **European Centre for the Development of Vocational Training** (Cedefop) is the European Union's reference centre for vocational education and training. We provide information on and analyses of vocational education and training systems, policies, research and practice. Cedefop was established in 1975 by Council Regulation (EEC) No 337/75.

Europe 123, 570 01 Thessaloniki (Pylea), GREECE
PO Box 22427, 551 02 Thessaloniki, GREECE
Tel. +30 2310490111, Fax +30 2310490020
Email: info@cedefop.europa.eu
www.cedefop.europa.eu

Foreword

This research paper forms part of the Cedefop project *The changing nature and role of vocational education and training in Europe*.

The purpose of the project is to improve our understanding of how vocational education and training (VET) is changing in the countries belonging to the European Union (as well as in Iceland and Norway). Over a three-year period (2016-18) the project will analyse how vocationally oriented education and training has changed in the past two decades (1995-2015); based on these results it will investigate the main challenges and opportunities facing the sector today and in the future. Work is divided into six separate but interlinked themes:

(a) the changing definition and conceptualisation of VET;
(b) the external drivers influencing VET developments;
(c) the role of traditional VET at upper secondary level;
(d) VET from a lifelong learning perspective;
(e) the role of VET at higher education levels;
(f) scenarios outlining alternative development paths for European VET in the 21st century.

The study takes as its starting point that vocationally oriented education and training is something more than the traditional VET delivered at upper secondary level (in the form of school-based education or training, apprenticeships, or combinations of these). The need for lifelong learning is driving diversification of VET, with new institutions and stakeholders involved. There is also see expansion of VET to higher education areas, partly through reform of the existing institutions, partly through the emergence of new institutions. This has been caused by factors internal to the education and training system as well as by external pressures linked to demographic, technological and economic changes.

Mara Brugia
Cedefop Acting Director

Loukas Zahilas
Head of department for VET systems and Institutions

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Executive summary

This paper analyses how the choice of a general or vocational path at upper secondary education level affects future education and employment prospects. It presents a comparative analysis across European countries using the 2014 labour force survey. Vocational education has mainly been promoted as a way of improving the transition from school to work, but it also appears to have an impact on subsequent education paths, as well as on the adaptability of workers to technological and structural change in the economy. The key question is whether any advantages conferred by vocational qualifications early in someone's career are offset by disadvantages later in life.

In this analysis, the vocational effect is defined as the effect on labour market and education outcomes of taking vocational programmes in upper secondary education (ISCED 3). This effect is calculated in comparison to both lower secondary education and general upper secondary education. Previous research seems to indicate that vocational education can protect people against unemployment and unskilled work (the safety net effect) but can also restrict the range of occupation opportunities available (the diversion effect).

The findings demonstrate cross-national differences in the early career advantages of vocational qualifications in line with previous analyses. The vocational effect seems to vary according to the outcome. In comparison to lower secondary education, the early career advantages of vocational qualifications are generally positive, although this might be because any type of education or training at upper secondary level is more valuable than lower secondary programmes. Nonetheless, it is feasible that the availability of the vocational option at upper secondary level might reduce early school leaving by keeping more practically oriented young people in school and improving their labour market opportunities. When general upper secondary education is the comparator, the results are more mixed: in general, there are negative effects from taking a vocational path on participation in further formal and non-formal education and on occupational status, consistent with earlier research. The safety net function of vocational education (that it is beneficial in terms of unemployment and low-skilled employment) is only observable in some countries and this effect seems to decrease in later work careers, perhaps because skills become outdated.

If this shapes the overall attractiveness of vocational education, such labour market outcomes are unlikely to be attractive for career-oriented young people (usually with more advantageous social backgrounds). However, for people with

higher risk aversion (usually of less advantageous social origin and having fewer resources at their disposal) vocational upper secondary might seem a viable option for prolonging the education path beyond lower to upper secondary education.

The impact of vocational education varies considerably with the specific institutional structure of schooling and work-based training. Differences are notable not only in countries belonging to different types, but also within supposedly similar types.

In apprenticeship countries (Denmark, Germany, Switzerland) vocational upper secondary education is still used primarily as a route into work rather than further study. The analysis confirms previous results about the positive role of dual systems for young people in the short term, and also indicates that the long-term effect of vocational education seems to be less positive. Vocational education still seems to 'divert' young people from formal (tertiary) education even though increasing opportunities for progression have been developing for some time.

The pattern in countries with combined work- and school-based vocational education (the Netherlands, Austria) is quite similar to that in apprenticeship countries but the safety net effect is not so strong.

In countries with school-based vocational education (Belgium, Bulgaria, Czech Republic, Croatia, Italy, Luxembourg, Poland, Romania, Slovenia, Slovakia, Finland), vocational education graduates have a higher risk of unemployment and unskilled employment than general education graduates. General academic and vocational provision is provided in different types of dedicated upper secondary institution, with apprenticeships representing separate systems but accounting for few students. Unlike apprenticeship systems, school-based vocational education does not seem to hold any advantages compared to general secondary education. However, there is large variation in the direction and strength of the vocational effect on labour market outcomes between countries in this group. This is likely to indicate differences in the strength of the cooperation between the key actors: employers, unions and the education institutions.

In countries where general upper secondary education dominates (Estonia, Greece, Spain, France, Latvia, Lithuania, Portugal) vocational education does not have a strong negative effect on education and labour market outcomes. Although vocational upper secondary education may have lower status compared to general education in these countries, vocational education functions quite well, especially in terms of sheltering their graduates from low-skilled jobs and

unemployment and ensuring entry to positions in the middle of the social hierarchy.

In summary, the results highlight unexpected differences between apprenticeship and school-based systems, especially in those countries where general upper secondary education dominates. This is an important issue in the light of the increased prominence of apprenticeships in Europe in the last 20 years, since they are often perceived as the 'poor relation'.

Two single-country 'groups' were also included in the analysis. In Hungary vocational education appears not to have a safety net function and the diversion effect is strong, as in apprenticeship countries. The vocational effect in Hungary seems to be quite similar to countries with school-based vocational education but is much stronger.

In the UK vocational upper secondary education has weak links with employment and is less sharply differentiated from academic upper secondary education. As a result there are quite good opportunities for access to further education and training but there is no safety net function.

The results generally support the move towards apprenticeships and work-based learning in terms of labour market outcomes. However, in countries where general upper secondary education is dominant, vocational tracks are more successful in terms of labour market outcomes than in countries where school-based systems exist. This highlights the need to examine the wider context within which vocational education is embedded and especially the links between education systems and labour market systems on a country-by-country basis.

The results also show that VET graduates are potentially sacrificing the longer-term gains associated with further education in favour of the short-term benefits. For this reason, vocational education should provide strong basic skills and competences alongside technical ones to ameliorate any later life disadvantages. Transition to further education should also be facilitated, to avoid negative perceptions of vocational education as a dead-end option. This must involve not only the opening up of progression routes between different types and levels of education and training, and more flexible transitions between education and training and work, but also the provision of measures to support such transitions.

CHAPTER 1.
Introduction

The paper analyses how the choice of upper secondary education and training specialisation, general or vocational, opens up to future education and employment prospects. The main aim is to present a descriptive overview from the perspective of graduates of vocational upper secondary education and training, looking at both their participation in further learning and labour market outcomes.

The European Commission's communication *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy* (European Commission, 2010) responds to the call of the Europe 2020 strategy to reinforce the attractiveness of vocational education and training (VET). This communication indicates that attractiveness depends on multiple factors, such as short- and long-term outcomes in easy school-to-work transitions, wage levels, career prospects, and the pathways it opens to further education and training without dead-ends, including at the tertiary level. A Cedefop study (2017b) stated that changes have happened in respect of the parity of esteem between VET and general education in many countries and those countries where general education has dominated have tried to raise the low esteem of VET.

Evidence about positive outcomes achieved by VET participants is important in encouraging others to participate. Positive outcomes also encourage people to return to VET to upgrade their skills and competences, to develop new ones and to develop lifelong learning participation. The social status of VET is determined by its position not only in the education system but also in the labour market (Bosch and Charest, 2015).

The upper secondary education system in most European countries is characterised by the duality between general and vocational education. In some countries vocational certificates might signal competence to perform complex tasks in a broad occupational field and open up access to good career opportunities; in other countries they might signal that the vocational education graduate is a low achiever in the school system and possesses narrowly based skills for jobs (Bosch and Charest, 2015). VET enjoys higher esteem in countries in which it opens up access to well-paid jobs and career opportunities than it does in countries with high shares of low-skill jobs.

In the past, in most countries, there were clear distinctions at secondary level between general and vocational education. While the former aims to provide young people with general, often academically oriented, knowledge as the basis for further (higher) education, initial vocational education and training (IVET) provides young learners with practice-oriented knowledge and skills directly relevant to evolving labour markets.

Countries have adopted policies and structures that differ fundamentally in their focus on work and education. Some stress IVET, while others emphasise general education. Countries also generally differ with respect to national VET systems and their institutional arrangements (Bosch and Charest, 2008). To characterise these differences, typologies of education and training systems have been developed.

Country differences suggest a possible trade-off between short-term and long-term benefits. The skills generated by IVET may aid the transition into the labour market but may later become obsolete at a faster rate due to limited adaptability to structural and technological changes (Hanushek et al., 2017). Developing VET as part of lifelong learning requires examination of provision structure, including the links between working life, schools and further education. Significant changes in the labour market, such as globalisation, technological change, reforms of social security systems, are increasing the importance of revisiting the potential efficacy of IVET in today's economic environment. The expansion of upper secondary and higher education has led to blurring of the traditionally clear borders between VET and general education, and between IVET and further education. These changes are accompanied by new demands to strengthen the links, and establish parity of esteem, between VET and general education (Bosch and Charest, 2015).

The existing empirical analysis of the impact of the type of secondary education on individual outcomes is fairly limited and provides mixed information about both the existence and the magnitude of short- and long-term effects. The general vocational education debate has centred mainly on whether vocational education is effective in aiding youth school-to-work transition (e.g. Arum and Shavit, 1995; Ryan, 2001; Müller and Gangl, 2003; Ianelli and Raffe, 2007; Cedefop, 2012; 2013). Even at job entry level, existing studies have not found universal advantage in vocational or general education for young people's labour market outcomes. However, the labour market outcomes of IVET should be complemented by assessment of the education career that follows IVET. The extent to which VET provides access to further education is seen as an important indicator for its attractiveness (European Commission, 2004).

The vocational effect

This paper investigates the short- and long-term 'vocational effect' on education and labour market outcomes in EU Member States. Countries are classified into different types based on two indicators: the size of the vocational education system in a country (vocational enrolment) and the percentage of vocational enrolment in programmes in which work and school are combined. The approach is modest in terms of country details but extensive in terms of countries covered. The 'vocational effect' is defined as the effect on these outcomes of taking vocational programmes in upper secondary education using the 2011 international standard classification of education (ISCED-11). This effect is calculated in comparison with both lower secondary education and with general upper secondary education. The major battle fought in terms of VET attractiveness and labour market outcomes ([1]) is between VET and general education at the upper secondary level. However, the comparison between VET and lower secondary level is also important if the attainment of vocational upper secondary education provides better labour market opportunities compared to lower secondary education.

The labour market outcomes analysed include the employment rate, the unemployment rate and the occupation position (as identified by the first digit of the international standard classification of occupations 2008 (ISCO-08), and the international socioeconomic index of occupational status (ISEI)). Education outcomes include the percentage of people with general and vocational upper secondary education who engage in further education. Labour market and education outcomes for two age groups, 20 to 24 year-olds and 30 to 34 year-olds, are compared to differentiate short- and long-term vocational effects. However, the important question is whether the changing returns on vocational qualifications over the life cycle should be explained as an age effect or a cohort effect. The education and training outcomes analysed provide evidence about the extent to which they make further use of higher and non-formal education. This evidence is especially informative for policies to promote lifelong learning.

([1]) The perception of individuals' value of VET (in terms of skills that VET gives them) is another important part of VET attractiveness. When we speak about VET outcomes from the individuals' viewpoint (and in comparison with general education), it is important to capture their perception concerning skills VET gave to them (Cedefop, 2017a).

Analytical challenges

The analysis is based on the EU labour force survey (EU-LFS) 2014. Implementation of ISCED-11 and the new section on orientation of study in the EU-LFS 2014 offers possibilities to distinguish programme orientations at upper secondary level and to compare the education and employment outcomes of graduates of vocational and general programmes. However, the absence of longitudinal data is a limitation. It is not currently possible to follow individual education trajectories, usefulness and outcomes of IVET. Exploitation of the EU-LFS waves approach could be a way forward, but these possibilities are currently limited for as long as the study orientation is not fully distinguished and as it will take time for longitudinal data to become available.

Therefore, analysis in this paper has restrictions. First, it focuses on country types rather than the full range of countries. Although confirming the variety within Europe, the results only show a descriptive picture of the diversity between countries and do not analyse thoroughly the drivers of this diversity. Second, the paper classifies countries according to the setup of the upper secondary education system. However, differences between countries have their origins in different social, historical and political backgrounds, summing up to more complex differences at the system level. Third, employment, unemployment and occupational status are not the only factors needed to assess the labour market outcomes of VET graduates. The analysis presented in this paper does not include labour market outcomes such as over- and underqualification, job satisfaction, and skills development opportunities. In the absence of specific outcome measures for VET, other indicators of outcomes could be discussed, for different levels of society (individuals, enterprises, society) and for different aims; these could include monetary returns and economic growth. Fourth, the paper presents a snapshot based on the current situation rather than a general finding about the outcomes of VET across countries and time. Fifth, people entering vocational upper secondary differ systematically from those entering general upper secondary education. Research shows that students from privileged backgrounds more likely attend general (rather than vocational) secondary education compared to students from less privileged backgrounds (e.g. Kerckhoff, 1993; Buchmann and Park, 2009). There are also achievement and ability gaps between students in different secondary school tracks (Blossfeld et al., 2016). The preferences, abilities and other characteristics (such as social origin) determine the choice of the programme but also have a direct and autonomous effect on the outcomes (Meer, 2007; Noelke and Horn 2014; Brunello and Rocco, 2015). This makes it difficult to separate vocational effect from that of unobservable ability, preferences, attitudes and other characteristics.

Outline of the paper

Chapter 2 gives an overview of related literature and previous research. Chapter 3 provides some details on the methodological approach. Chapter 4 analyses the VET incidence in Europe and gives the basis for the typology of countries used. Chapter 5 compares the continuation of further studies of vocational and general upper secondary school graduates in different types of country. Chapter 6 concentrates on the labour market. Chapter 7 summarises the key findings.

CHAPTER 2.

Related literature and previous research

2.1. The vocational effect on employment and education outcomes

While there is substantial literature on the effect of education on individual labour market performance, opportunities to investigate the role of vocational versus general education are more limited (especially in terms of comparative analysis between countries), mostly due to lack of data.

Different theories yield contrasting predictions for the vocational effect. Human capital theory assumes that vocational education equips students with skills required in the workplace, enhances the human capital of young people and improves their employment chances (Becker, 1975). Employers may economise on firm-specific training when hiring vocationally trained job entrants.

Signalling theory suggests that schools are simply sorters and signallers (Spence, 1974; Wolf, 2002), and any form of education works mainly as a 'positional good' (Triventi et al., 2016; Di Stasio et al., 2016). 'Positional good' refers to the idea that the value of education credentials is attributable, in part, to their relative scarcity in the population (Shavit and Park, 2016). The absolute level of education does not matter for access to jobs; it is educational attainment relative to that of other job seekers. This means that school performance is an indicator of various characteristics of job applicants, determining their (relative) position within the 'job queue' (Thurow, 1975). This theory suggests that many vocational qualifications may be less demanding and selective compared to general programmes and may, therefore, signal to employers that the job applicant is less motivated than academic graduates. The vocational effect is therefore negative. However, as shown in literature on 'horizontal stratification' in education, some VET programmes might be highly selective and therefore valued by the employer (Baethge, 2010; Gerber and Cheung, 2008; Hefler et al., 2012). A country composition of VET programmes, combining both demanding and selective, and non-selective ones, is therefore crucial for signalling theory predicted outcomes.

Network theories predict that the vocational effect may be positive if vocational programmes give young people access to the networks through which employers recruit job applicants (Rosenbaum et al., 1990).

Theories of social reproduction (Bowles and Gintis, 1976) argue that differentiation of secondary education into vocational and academic tracks is a

mechanism for the reproduction of social inequality across generations. Students with a lower social origin are typically placed in the vocational track, which reduces their chances of attending university and entering professional work (Shavit, 1984; Müller and Karle, 1993; Lucas, 2001; Breen et al., 2009).

Related approaches study changes in the role of VET in overall social stratification over time, focusing on the relative scarcity or abundance of VET credentials in general or of a particular type. Changing societal expectations for acquiring any type of upper secondary education may lead to a higher 'vocational effect' when comparing VET graduates to adults with no upper secondary credential, as the latter become strongly discriminated against in the labour market (Solga, 2005; 2008).

Different theories are not mutually exclusive. As VET programmes differ in requirements and selectivity, the vocational effect may also differ considerably between types of programme or fields of learning, requiring educators to consider the effects of the changing composition of VET across place and time. However, as Shavit and Müller (2000) indicate, the critique of vocational education evaluates VET from the point of view of its effect on university attendance and on the chances of attaining a higher occupation position when entering the labour market. At the same time, vocational education may also provide a 'safety net' to protect young people against unemployment and unskilled work. It might have motivational and cognitive benefits, particularly for low achievers, many of whom would otherwise drop out. Shavit and Müller (2000) declare vocational education to be a 'diversion' if its graduates attain significantly less desirable occupations than general secondary education graduates.

Empirical studies of the vocational effect do not reach consistent conclusions about the size, or even the direction, of the vocational effect (Van de Werfhorst, 2011; Ryan, 2001; Müller and Gangl, 2003; Breen, 2005; Wolbers, 2007). However, we will mention some of the main conclusions of these studies. The effect of vocational upper secondary education is more likely to be positive if it is compared to lower secondary education than if it is compared to general upper secondary education. Fewer graduates from vocational than from general upper secondary programmes enter higher education, which means that VET graduates are potentially sacrificing longer-term gains associated with further education in favour of the short-term benefits (Cedefop, 2012).

Existing studies find that young people with vocational education have a smoother transition to the labour market: they find a job faster, have a lower probability of being unemployed at the start of their career, establish a more stable employment relationship, their cumulative spells in work are longer, and they get access to permanent full-time jobs early in their careers (Müller and

Gangl, 2003; Cedefop, 2012). Researchers explain these positive vocational effects by the occupation-specific skills that students obtain in vocational programmes which make them productive in the labour market and attractive to employers (Arum and Shavit, 1995). The vocational effect for labour market entrants seems to be negative when the criterion is occupation level (Müller and Gangl, 2003). Shavit and Müller (2000) have found that vocational education can provide a safety net and diversion effect (restrict the range of occupation opportunities) at the same time.

However, it has been found that the returns on vocational education depend on institutional context (Kerckhoff, 2000; Bills, 2003; Müller and Gangl, 2003). Vocational secondary education appears to be more effective when it is occupation-specific: it reduces unemployment risks and the probabilities of young people entering the labour market as unskilled workers, and increases their chances of finding a job (Shavit and Müller, 2000). In highly vocationally oriented countries (such as Germany), with higher vocational specificity, vocational education is a viable alternative to higher education. Vocational qualifications reflect the needs of stakeholders and lead to relatively good job prospects. The safety net effect of vocational education seems to be strong in these countries. At the same time, the strong position of vocational education diverts young people from the academic track that leads to higher education and more prestigious occupation positions (Hillmert and Jacob, 2003). In these countries there are strong links between education and the labour market. Employers have a major role in the design, delivery and assessment of vocational programmes. They tend to sort job seekers based on specific skills. Vocational programmes are also less likely to be stigmatised and to signal low ability or low motivation to employers. Ianelli and Raffe (2007) consider that the employment logic dominates in these countries, meaning that vocational education has close links with the labour market and weak links with higher education.

In less vocationally oriented countries (such as France) job-relevant skills have to be learned in the workplace; vocational education has weak links with the labour market. Employers select applicants with the greatest potential and trainability rather than for their vocational skills. Vocational qualifications signal a low education level and are largely viewed as a remedial option for underachievers (Solga, 2002). As a result, vocational secondary education graduates have poorer employment chances than general education graduates. However, vocational education functions more straightforwardly as a part of the education system. Its position compared to general secondary education is defined by its lower status and not by its stronger orientation to employment (Ianelli and Raffe, 2007). Vocational education in these countries lacks the

institutional foundations that make it successful for skill formation in German-speaking countries (Hall and Soskice, 2001).

The main shortcoming of previous empirical studies is their exclusive focus on the short-term labour market and education outcomes. More recently, several researchers have investigated the relationship between VET and long-term employment outcomes using the Programme for the international assessment of adult competencies (PIAAC) data (Brunello and Rocco, 2015; Forster et al., 2016; Hanushek et al., 2017). Hanushek et al. (2017) argue that having vocational education might be a benefit at the start of a work career but turns into a disadvantage later in life. Specific job-related skills are likely to become obsolete quickly in modern economies with rapid technological change. Individuals engaged in general programmes are also more likely to continue to study, compared with graduates of vocational programmes, improving their long-term outcomes. Hanushek et al. (2011), studying employment patterns of different cohorts of graduates with general and vocational education, find support for this hypothesis. There is a trade-off between the short- and long-term benefits of vocational education: it may help when entering the labour market but general education contributes to a higher probability of being employed at older ages (compared to individuals with vocational training) and individuals with general education are more likely to receive lifelong training. Besides this, returns on vocational education (throughout the whole lifespan) vary widely among countries, even among countries with well-established apprenticeship systems (Denmark, Germany and Switzerland). An important question is whether the changing returns on vocational education over the life course should be explained as an age effect or a cohort effect. Previous explanations have ignored the fact that skills become outdated, but this depends on technological changes affecting the skills that are demanded from different cohorts (Forster et al., 2016).

The main conclusion from these studies is that neither general nor vocational education is consistently associated with better labour market outcomes, with the implication that other factors and institutions are influential. Countries differ with respect to how vocational education is operated. However, lack of comparability across institutions and the operation of other factors make it difficult to identify ‘successful’ VET systems. Cross-country comparisons have attempted to list some systematic elements of success (Ianelli and Raffe, 2007; Woessmann, 2008; Cedefop, 2008). Eichorst et al. (2012), reviewing these comparisons, mention six important elements: to ensure the relevance of curricula; to maintain close contact with the labour market; to ensure high-quality schooling; to incentivise training providers and create competition among training providers; to maintain a high level of training quality; to limit the risk of establishing a dead-end

vocational schooling track. The benefits of vocational qualifications seem to be highest when vocational education takes a prominent position and stronger traditions in the education system of a country, most clearly in the form of a dual system (Ryan, 2001; Wolbers, 2007; Ianelli and Raffe, 2007; Cedefop, 2013). Most recent studies indicate that a trade-off over the life-cycle seems to be strongest in the countries with extensive apprenticeship systems (Austria, Denmark, Germany and Switzerland) (Hampf and Woessmann, 2016). These systems are, by definition, built on employer-apprentice contracts, so it would be surprising if this were not the case. That said, school-based VET, still very common across Europe, should not be ignored and the findings of this report shed light on this, while confirming the positive initial labour market outcomes of apprenticeship systems.

The shift in employment to services has also influenced the returns on vocational education (Estevez-Abe, 2006; Wren, 2012). The service sector thrives on general rather than specific skills. As Anderson and Hassel (2012) point out, school-based training systems might fit more easily with the skill requirements of the service sector because they provide general skills that are central to the service economy. General secondary education may, in some ways, be better equipped than traditional apprenticeships to generate the social and communication skills that employers in the service sector seek (Thelen, 2014). Anderson and Hassel (2012) conclude that 'school-based systems have a distinct advantage over firm-based systems in provision of general skills that are so central to the service sector' (p. 191). Recent research has established a strong link between rising educational attainment and employment in the service sector (Wren, 2012).

2.2. Definitions

Definitions used are based on Cedefop (2014). VET 'aims to equip people with knowledge, know-how, skills and/or competences required in particular occupations or more broadly in the labour market' (Cedefop, 2014, p. 128). It normally combines practical training with more theoretical learning.

It is customary to distinguish between initial vocational education and training (IVET) and continuing vocational education and training (CVET). Initial education and training (general or vocational) is defined as 'general or vocational education and training carried out in the initial education system, usually before entering working life (Cedefop, 2014, p. 117). It concerns mainly young people at the beginning of their careers and before labour market entry. In this report we concentrate on IVET at upper secondary level (ISCED-11 3). Cedefop (2014)

defines continuous education and training as 'education or training after […] entry into working life' ([2]). However, this definition of CVET is too broad and not clear. Instead of CVET, the term 'further education and training' is used in this paper**.** Further education and training is defined as further formal or non-formal education and training (at any level).

Further education and training is here understood as studies in formal or non-formal programmes after upper secondary education, to be distinguished as:

(a) formal education (all ISCED levels);
(b) higher education: ISCED 5, ISCED 6, ISCED 7;
(c) non-formal education and training ([3]).

The paper concentrates on upper secondary education graduates (International standard classification of education 2011 (ISCED-11) level 3). The *ISCED 2011 operational manual* (OECD, 2015) indicates that programmes at ISCED 3 – upper secondary education – are typically designed to either (or both) complete secondary education in preparation for tertiary education and provide skills relevant to employment. Programmes at this level offer students more varied, specialised and in-depth instruction than programmes at ISCED-11 2. They are more differentiated, with an increased range of options and streams available.

Data should be collected, especially when producing statistics on labour market and education outcomes, not only on the level of educational attainment but also on the orientation (general or vocational) of the highest level of education completed. This information is particularly important for the analysis of:

(a) the responsiveness of education systems to labour market needs for skills and competences;
(b) the transition from education to work;
(c) the matching of skills with jobs;
(d) access to and inequalities in education;
(e) patterns of people returning to education.

Programmes which form upper secondary education may be either general or vocational. Some allow direct access to ISCED 4, and 5, 6 or 7.

([2]) CVET is 'aimed at helping individuals to: (a) improve or update their knowledge and/or skills; (b) acquire new skills for a career move or retraining; (c) continue their personal or professional development. Continuing education and training is part of lifelong learning and may encompass any kind of education (general, specialised or vocational, formal or non-formal, etc.)' (Cedefop, 2014, p. 51).

([3]) For definitions of formal and non-formal education see Annex 1.

One of the limitations of previous EU labour force survey (EU-LFS) as a data source about IVET is related to the difficulties in distinguishing fully (general or vocational) programme orientation. Implementation of ISCED-11 and the new section on orientation of study in the EU-LFS 2014 offers possibilities to distinguish programme orientations at upper secondary level and to compare the education and employment outcomes of graduates of vocational and general programmes. This distinction is available from 2014 onwards.

As explained in the *International standard classification of education: ISCED 2011* glossary (UNESCO-UIS, 2012, Annex VI), there are two categories of orientation, general and vocational education:

(a) 'vocational education is defined as education programmes that are designed for learners to acquire the knowledge, skills and competences 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 either or both of the relevant national authorities and the labour market' (UNESCO-UIS, 2012, p. 84);

(b) 'general education is defined as education programmes that are designed to develop learners' general knowledge, skills and competences, 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' (UNESCO-UIS, 2012, p. 80).

The EU-LFS 2014 includes the issue about orientation of the programme completed at the highest education level (HATVOC) (general or vocational). We are using this issue to separate ISCED 3 programmes. In regression analyses, vocational effect is calculated in comparison with both lower secondary education (ISCED 2) and with general upper secondary education (general ISCED 3).

CHAPTER 3.

Data and methods

3.1. Data set (EU-LFS) and definition of variables

Individual-level anonymised data from the 2014 European Union labour force survey (EU-LFS) are used for this report. The EU-LFS provides information about sociodemographic background, the level and orientation of education and labour market outcomes. The sample consists of 31 countries with reliable information on programme orientation at ISCED 3 ([4]). Two age groups (20 to 24 and 30 to 34 year-olds) are analysed to study the short- and long-term vocational effects on labour market and education outcomes. The EU-LFS 2014 is among the first comparative data sets to provide good grounds for analysis of interest here. Unfortunately data from the EU-LFS 2014 do not allow the inclusion of older age groups in the analysis and hence the comparison of outcomes across widely different age groups. On the one hand, this is an important restriction because it is not possible to analyse longer-term vocational effects across the life-course or over longer periods of time. Therefore, it would be reasonable to generalise these results across other cohorts, given the different labour market situation and the general social context, including education system architecture. There is also no clarity around whether this would be a good indication of age-related and life-course-related aspects, not only since this cohort might have been too specific, but also because we have not followed other cohorts of this age, nor this cohort at different historical times. Further, the variety in life-course choices available and patterns differ across countries; what is considered a general social requirement for 30 to 34 year-olds in one country may be unique. However, our focus on these specific cohorts could be well justified for two reasons. First, their experience reflects the most recent developments within the initial vocational education and training (IVET) systems across the countries considered, since 2000 to 2014. Second, the experiences of these cohorts is relevant in understanding, predicting and shaping the future developments in continuing vocational education and training (CVET), as the currently youngest cohorts will spend the longest time in professional positions. Sample sizes are presented in Annex 3.

([4]) For limitations of the data set see Annex 2.

Only the highest degree of education is reported in the EU-LFS 2014, with no information being provided on intermediate levels. We are using two different variables: highest level of education successfully completed (ISCED-11) (HATLEVEL) and orientation of the programme completed at the highest education level (HATVOC).

The question about programme orientation concerns only those aged 15 to 34, or older individuals who have completed their highest education level at most 15 years before the date of the interview. It only concerns those with an educational attainment level of ISCED 3 or 4 (upper secondary or post-secondary non-tertiary).

By combining programme type and ISCED categories, three different education types are defined: lower secondary education (ISCED 2), vocational upper secondary education and general upper secondary education. These three groups of are compared.

The analysis concentrates on three types of labour market outcome: employment, unemployment and occupational group.

In the EU-LFS, an unemployed person is defined as:

(a) someone without work during the reference week;
(b) available to start work within the next two weeks (or has already found a job to start within the next three months);
(c) actively having sought employment at some time during the last four weeks.

The unemployment rate is the number of people unemployed as a percentage of the labour force.

Occupational group is measured according to the ISCO-08 1D. There are four groups: managers, professionals, technicians and associate professionals (ISCO 1-3); skilled non-manual workers (ISCO 4-5); skilled manual workers (ISCO 6-8); unskilled workers (ISCO 9). Occupational status is also measured according to the International socioeconomic index of occupational status (ISEI) (Ganzeboom et al., 1992).

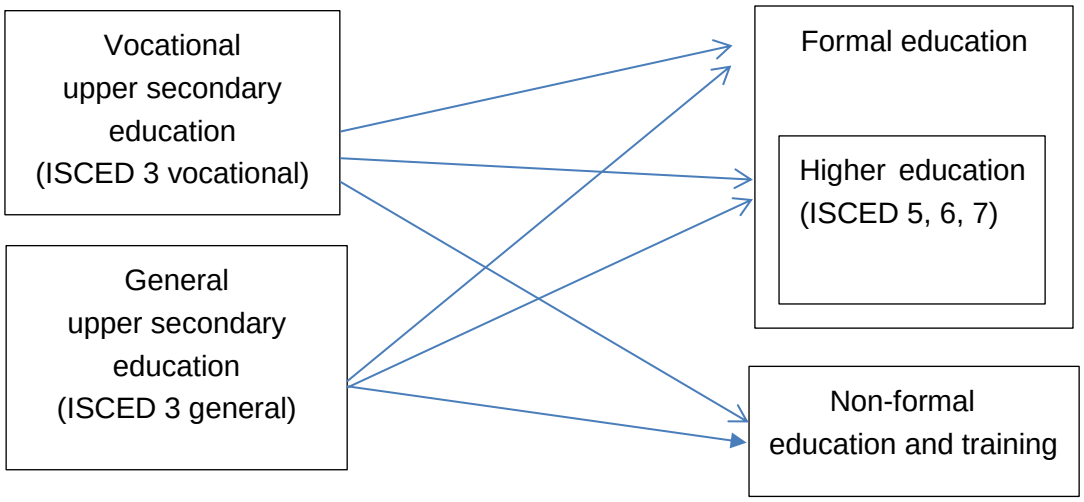
Education outcomes include participation in any formal education activities ([5]) during the last four-week period ending with the reference week (EDUCSTAT), participation in higher education during the last four-week period (EDUCLEVL) and attendance at any courses, seminars, conferences or private lessons or instructions outside the regular education system within the last four weeks

([5]) This variable only covers the regular education system (formal education, including schools, colleges and universities) which the respondent has attended during the last four-week period ending with the reference week.

(COURATT). This variable covers all taught organised learning activities outside regular education which the respondent has attended during the four weeks ending with the reference week**.** The indicator is not an ideal measure due to the short reference period – it underestimates the absolute level of participation – but it is suitable for displaying differences between VET and general education graduates.

Figure 1 depicts studied education trajectories from upper secondary education.

Figure 1. **Trajectories from upper secondary education**



Source: Cedefop.

Overall, the cross-country analysis of differences among VET graduates participating in further education and training shows how countries differ in the level of inequality of access. Combining this with analysis of adults continuing educational careers in formal education enables us to establish the track record of national VET systems in promoting lifelong learning.

3.2. Empirical methodology

The empirical analysis adopted in this paper is based on regression analyses. The analyses include several individual controls, such as gender, time since person started to work (proxy for work experience) and education level.

The analysis is conducted for every country and country groups separately. The direction and relative magnitude of vocational effects is systematically reported in the tables in terms of regression coefficients (see Annexes 5 to 8). Assessing the vocational effect on outcomes requires the definition of a

benchmark. For most of this paper two benchmarks are used: upper secondary general education and lower secondary education.

The study uses two important concepts: the safety net and the diversion functions of VET. The safety net function is operationalised as the impact of VET on risks of unemployment and low-skilled jobs (ISCO 9) compared to general upper secondary education. The diversion function is operationalised as the effect of VET on participation in formal and higher education and on occupational status. As well as these two functions the study also analyses the effect of VET on employment in medium-skilled jobs (ISCO 4-8) and participation in non-formal learning; according to previous analyses, there should be quite big differences between countries. For example, in Germany the VET system is producing the intermediate skills needed by the economy and all vocational qualifications can be supplemented after some years of work experience by promotional training, which equips VET graduates for advancement to middle-management positions (Bosch and Charest, 2015). In countries with school-based VET systems, VET tends to lead mainly to semi-skilled jobs with low potential for development (Bosch and Charest, 2015).

It is difficult to study the direct causal vocational effect on different outcomes because preferences, abilities and other characteristics (such as social origin) determine the choice of the programme and also have a direct and autonomous effect on the outcomes. As Brunello and Rocco (2015) mentioned, the causal vocational effect on outcomes could ideally be identified if the individuals were randomly assigned to general and vocational education. This assumption is most likely violated as at least some individual characteristics that are predictors of both programme choice and labour market outcomes are typically unobserved or poorly measured. Literature has adopted several empirical strategies to identify causal vocational effect. In this paper a selection-on-observables strategy is used. There is one important limitation to this strategy (as well as propensity-score matching strategy ([6])) due to the restricted list of individual characteristics in the EU-LFS: the data set does not include very important variables such as skills and social origin. This restriction should be taken into account when interpreting the results.

([6]) Propensity-score matching compares individuals with a vocational education only to observationally similar individuals with a general education.

Investigating short- and long-term outcomes requires a comparison of individuals of different ages, but the important question is whether the changing returns on vocational qualifications over the life cycle should be explained as an age effect or a cohort effect. Since cross-sectional data (such as the EU-LFS 2014) do not allow distinction between age and cohort effects, it is assumed that today's older age group in each education category is a good proxy for today's younger age cohort when those belonging to this age group are older.

CHAPTER 4.

Typology of countries

4.1. Previous typologies

Typologies of education and training systems have been developed to characterise country differences. Lynch (1994) groups countries according to the institutional principles around which the VET system is organised. Busemeyer and Trampusch (2012) distinguish VET systems according to the degree of public commitment to vocational training and the involvement of firms in IVET. Other typologies are based on varieties of capitalism, in which national economies are described as liberal market or coordinate market economies (Hall and Soskice, 2001; Estevez-Abe et al., 2001; Iversen and Stephens, 2008).

Previous analyses have indicated substantial variation across countries in the relative size of general and vocational upper secondary programmes and in the specific organisation of the vocational programmes. There are different types of vocational system, some of which provide vocational training in fully school-based programmes, while others offer a combination of school and work, for example in a dual system (Ryan, 2001; Ianelli and Raffe, 2007; Van de Werfhorst, 2011; Forster et al., 2016; Hampf and Woessman, 2016). Previous empirical analyses have shown the specificity of the vocational education and the extent to which direct links between the education system and employers have an impact on the labour market entry of young people as well as on their return to vocational education (Breen, 2005; Andersen and van de Werfhorst, 2010; Bol and van de Werfhorst, 2013). Especially when vocational education takes place in a dual form ([7]) (school-based and work-based), specific skills are provided and a close link between job seekers and employers is ensured.

Hanushek et al. (2017) argue that the setup of upper secondary education and the organisation of vocational education are also important for studying short- and long-term vocational effects. Students who have attained vocational education in a dual system will have smooth labour market entry because they have obtained highly occupation-specific skills, more than in vocational systems that do not have dual training. However, their analyses indicate that students in these systems are more vulnerable in their later careers. They (Hanushek et al.,

([7]) Education or training combining periods in an education institution or training centre and in the workplace.

2017) state that in vocationally oriented countries the process of skill obsolescence is especially strong. At the same time, the level of adult training is lower for vocational than for general education graduates. This absence of adult training is especially strong in systems that offer highly occupation-specific skills.

For these reasons the classification of countries in this paper is based on two traditional indicators: that between vocational and general upper secondary education and, within vocational education, that between apprenticeship ([8]) and school-based vocational education. Hanushek et al. (2011) have classified countries into different types based on the percentage of upper secondary education students studying in vocational programmes and the percentage of students in combined school and work-based vocational programmes. The country groupings emerging from this bear a close resemblance to the classifications proposed by Green and Pansiero (2016).

4.2. Defining country groups by variation of upper secondary education

A classification of countries based on two indicators is used. The first indicator measures the proportion of vocational enrolment in upper secondary education. The second measures the size of the dual system as a percentage of vocational enrolment in programmes in which work and school are combined.

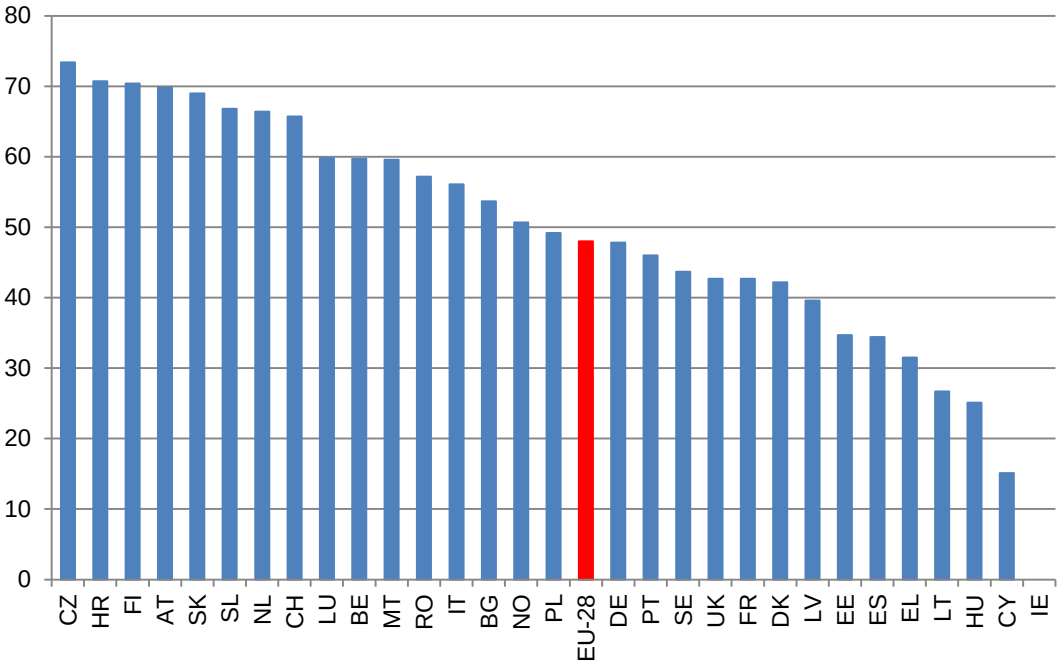
Figure 2 shows that the percentage of those in upper secondary level education taking the VET pathway is different between Member States. This percentage is the highest in the Czech Republic, Croatia, the Netherlands, Austria, Slovenia, Slovakia and Finland (above 60%). Malta (13%), Cyprus (15%), Hungary (25%) and Lithuania (27%) have the lowest shares (all below 30% in 2014).

The percentage of work-based students ([9]) is highest in Denmark (98%) (Figure 3). This proportion is also high in Hungary and Germany. Combined work- and school-based programmes accounted for more than 50% of students in upper secondary VET in the UK and in Austria. The proportion was low in Greece, France, Luxembourg, Malta, the Netherlands and Finland and low in Belgium, Czech Republic, Estonia, Spain, Slovakia and Sweden.

([8]) Apprenticeship is defined as systematic, long-term training alternating periods at the workplace and in an education institution or training centre.

([9]) The indicator is defined as the percentage of upper secondary VET students enrolled in combined work- and school-based programmes.

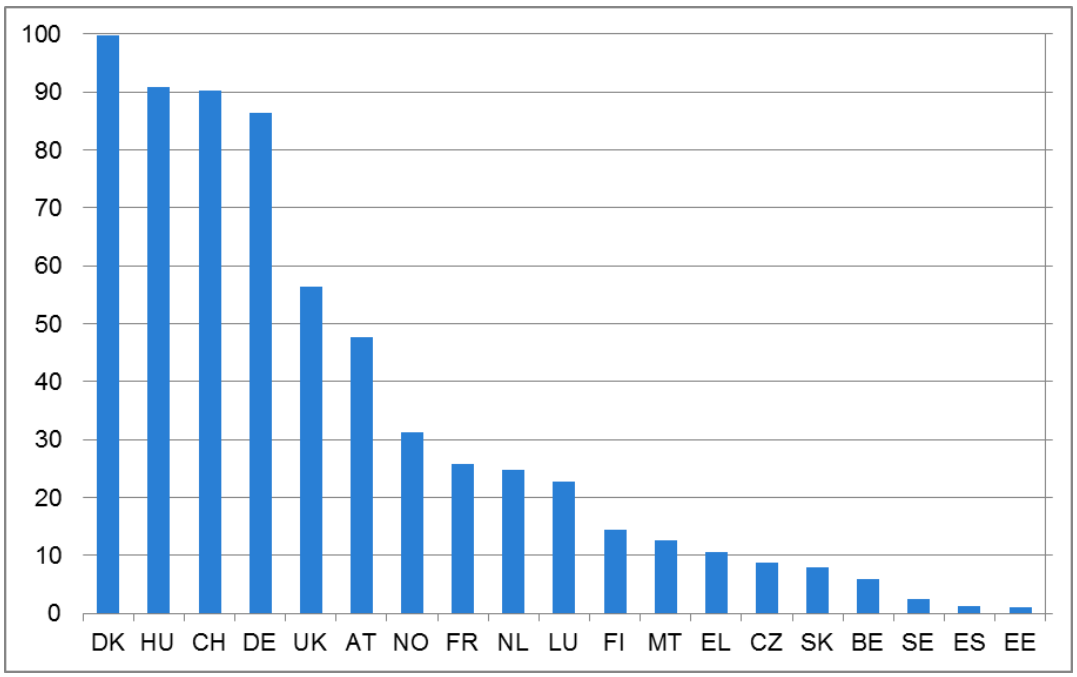
Figure 2. **IVET students as % of all upper secondary students, 2014**



NB: According the data of the EU-LFS 2014 there were no students in VET at upper secondary level in Ireland. It is not a case of no students but of how types/levels of education are classified.

Source: Eurostat.

Figure 3. **IVET work-based students as % of all upper secondary IVET, 2015**



NB: Data are missing for Bulgaria, Croatia, Italy, Cyprus, Latvia, Lithuania, Poland, Portugal, Romania, and Slovenia.

Source: Eurostat.

Figure 4 shows IVET students as a percentage of all upper secondary students and the percentage of IVET work-based students. It reveals no linear relationship between the percentage of IVET students and the percentage of work-based IVET students. However, there are distinct clusters of countries ([10]):

(a) those where the percentages of IVET students and of IVET work-based students are high: Denmark, Germany and Switzerland;
(b) those where the percentage of IVET students is high but the percentage of work-based students is at medium level: the Netherlands and Austria;
(c) those where the percentage of IVET students is high but the percentage of IVET work-based students is low: Belgium, the Czech Republic, Luxembourg, Slovakia and Finland ([11]);
(d) those where the percentage of IVET students is low or at medium level and the percentage of IVET work-based students is low: in Estonia, Greece, France, Malta and Sweden ([12]).

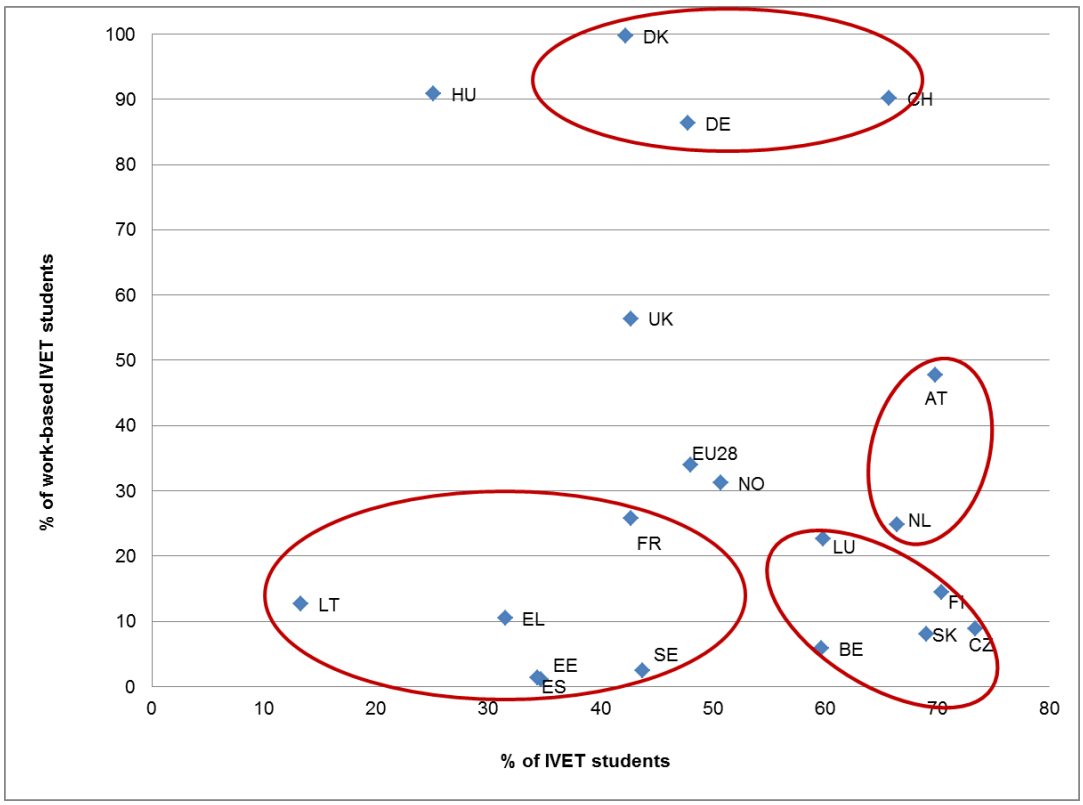
Two countries do not fit this classification. In Hungary the percentage of IVET students is low but that of work-based students is high. In the UK, the percentages of IVET students and work-based students are at medium level.

([10]) Ireland is excluded from the following analyses because, according to EU-LFS 2014 data, there were no students in VET at upper secondary level.

([11]) Some countries where data were not available (Bulgaria, Croatia, Italy, Poland, Romania and Slovenia) could be added to this type.

([12]) Spain, Cyprus, Latvia, Lithuania and Portugal also belong to this type.

Figure 4. **% of upper secondary students who are in IVET versus % of upper secondary IVET students who are work-based, 2015**



Source: Eurostat.

Different types of countries could be differentiated from this clustering.

Type 1 (Denmark, Germany, Switzerland) covers countries with dual systems of apprenticeship. Apprenticeship systems are closely integrated with labour market institutions and the world of work. This has important effects on the labour market value of the qualifications they offer and the consequent incentives it provides for apprentices (Busemeyer and Iversen, 2011).

Type 2 (the Netherlands, Austria) covers systems with participation distributed relatively equally between school-based education and employment-based dual systems of apprenticeship.

Type 3 (Hungary) is exceptional because the percentage of IVET students is low but the percentage of work-based students is high. Noelke and Horn (2014) mention that liberalisation in Hungary has made the transition from vocational education to work more difficult because links between schools and employers have been broken.

Type 4 is used to classify the United Kingdom separately because the percentage of IVET students and work-based students are at medium level in this country. Hodgson and Spours (2014) argue that the UK can be viewed as

'exceptionalist' because of a unique combination of system factors and the degree to which it is influenced by the market and the concept of choice.

Type 5 (Belgium, Bulgaria, Czech Republic, Croatia, Italy, Luxembourg, Malta, Poland, Romania, Slovenia, Slovakia, Finland) covers predominantly school-based systems with general academic and vocational provision in different types of dedicated upper secondary institutions and with apprenticeships representing separate systems but accounting for few students.

Type 6 (Estonia, Greece, Spain, France, Cyprus, Latvia, Lithuania, Portugal, Sweden) covers general education countries with limited vocational systems and with vocational education being school-based. This is the modal type in most south European countries (Greece, Spain, Cyprus, Portugal) and in France but is also found in the Baltic countries (Estonia, Latvia and Lithuania) and in Sweden.

This typology is quite similar to all previous typologies ([13]). Hanushek et al. (2017) have defined the first five types as 'vocational' countries. The important differences within this group of 'work-based vocational education oriented countries' (our first four types) makes it reasonable to suggest differences in education and labour market outcomes.

A comparison of the classification of countries according to the setup of upper secondary education used in this paper and the often used territorial or regional grouping is presented in Table A2 (Annex 4). A comparison of the classification used in this paper and classification of countries based on prevalent VET conceptions is presented in Table A3 (Annex 4).

([13]) The results for Norway should be interpreted with caution, although the data collection process does not reveal significant divergences. We decided to exclude Norway from this paper.

CHAPTER 5.

Effect of VET on further education participation in different country types

Table 1 shows the effect of vocational education and training (VET) on participation in further education by country type ([14]). As with previous studies, the analysis indicates that graduates from vocational programmes have a lower chance of continuing their studies in formal education than those from general upper secondary programmes. However, the propensity of VET graduates to continue studying varies considerably from country to country and seems to depend on factors such as the type of vocational education offered, as well as the ease of progression and openness of the education system. The pattern is most pronounced in the group of apprenticeship countries, but also in those with combined school- and work-based learning (Types 1 and 2) and in Hungary. The difference is smallest in the UK and in countries with school-based vocational education (Type 5). However, there is some variation in the effect of VET between countries in Type 5. As Table A6 in Annex 4 (analysis by countries) indicates, the negative vocational effect on participation in formal education is strong in some countries belonging to this type (in the Czech Republic, Croatia, Italy, Slovenia, Slovakia and Finland). The same pattern is observable for participation in higher education: the general education premium (the advantages of general education graduates compared to vocational education graduates) is more substantial in apprenticeship countries, in countries with work- and school-based vocational education and in Hungary. The effect of VET on participation in higher education is quite weak in countries with school-based vocational education.

([14]) Table 1 is based on results of regression analyses. Regression analyses are presented in Tables A4 and A5 in Annex 5; analyses were performed by each country type.

Box 1. **Participation in higher education and citizens' perceptions of VET**

There are very loose connections between participation of VET graduates in higher education and the views of the respondents on the vertical permeability of the education system in the countries. For example, in Estonia 84% of respondents agree that 'it is easy to continue into higher education such as university after vocational education at upper secondary education', followed by respondents in Poland (75%), Bulgaria and Cyprus (both 71%). Analysis of the EU labour force survey (EU-LFS) 2014 data indicates that the participation of VET graduates in higher education is low or below average in these countries. An exception is the 20 to 24 age group in Bulgaria, whose participation is above the EU average. The level of agreement about vertical permeability in Belgium is much lower than in other Member States (26% agree). There are five other countries where disagreement outweighs agreement: Denmark, France, Luxembourg, Slovenia and Sweden. In Slovenia the participation rate of VET graduates in higher education is high, in Belgium average, in France and Luxembourg low, in Denmark and Sweden low for age group 20 to 24 but above average for age group 30 to 34.

Source: Based on Cedefop, 2017a.

In the long term, the negative effect of vocational education appears to decrease as the differences between the two education groups are smaller among people in their early thirties. The pattern is similar for the two age groups analysed: the negative effect of VET on participation in formal education is strongest in apprenticeship countries (especially in Germany, see Table A6) as well as in countries with work- and school-based VET. This effect is insignificant in the UK, as well as in some countries with school-based vocational education (Bulgaria, the Czech Republic, Luxembourg and Malta). In these countries, the long-term negative effect of vocational education on participation in formal education is decreasing: vocational education graduates do not have lower chances of participation in formal education in their early thirties. The vocational effect on participation in higher education is also significant but has weakened somewhat for the 30 to 34 age group.

In addition to opportunities to continue studies in formal settings (at any level or in higher education, in particular), it is also important from the lifelong learning perspective to have easy access to non-formal training. It has been argued that job-related skills provided by vocational education are more likely to become obsolete (Hanushek et al., 2017). Further education and training could enable people to adapt continuously to changing labour market requirements or to make changes in their occupations and careers, which would increase the probability of employment when older.

Table 1. **Effect of VET on participation in formal and non-formal education in different types of countries, 2014**

Country type	Vocational upper secondary education in reference to general upper secondary education					
	Participation in formal education		Participation in higher education		Participation in non-formal education	
	20-24	30-34	20-24	30-34	20-24	30-34
Type 1	Very strong negative effect	Strong negative effect	Strong negative effect	Strong negative effect	Average negative effect	Average negative effect
Type 2	Very strong negative effect	Strong negative effect	Strong negative effect	Strong negative effect	Average negative effect	Average negative effect
Type 3 (HU)	Very strong negative effect	Average negative effect	Very strong negative effect	Average negative effect	No effect	Average negative effect
Type 4 (UK)	Weak negative effect	No effect	Average negative effect	Weak negative effect	Weak negative effect	No effect
Type 5	Weak negative effect	Average negative effect	Weak negative effect	Weak negative effect	Weak negative effect	Weak negative effect
Type 6	Average negative effect	Weak negative effect	Average negative effect	Weak negative effect	Weak positive effect	Weak positive effect

NB: The scale used is based on regression coefficients presented in Table A4 (Annex 5). The estimations are based on comparison of the vocational effect in the country type with this average effect. Effects are presented on the relative scale from 'weak positive' to 'average positive' to 'no effect' to 'average negative' to 'weak negative'.

Source: Calculations based on the EU-LFS 2014.

Box 2. **VET conception and participation in further education in France**

The analysis of conception of VET (Cedefop, 2017b) indicated that, in France, VET is understood as (part of) lifelong learning. A national system of validation of prior learning and the qualification framework has helped to develop this concept. Initial VET (IVET) and continuing VET (CVET) for adults are now more often presented together. However, this changed conception of VET is now not completely reflected in high participation of VET graduates in further education. The participation rate of VET graduates in formal education is quite low compared to other European countries but VET seems to support participation in non-formal learning. Differences between general upper secondary and VET graduates have remained high.

Source: Calculations based on Cedefop, 2017b.

The results show no single trend emerging in the probability of vocational upper secondary education graduates continuing to participate in non-formal training. First, when compared to lower secondary education, those with vocational upper secondary education are more likely to participate in training in most types of countries (except in Type 1 countries among 20 to 24 year-olds, in

Type 2 countries among 30 to 34 year-olds and in Hungary among both age groups; see Table A5 in Annex 5). Second, in four types of country, compared to general upper secondary education, those with vocational certificates are less likely to train: in apprenticeship, combined school- and work-based and school-based vocational countries, as well as in Hungary. However, there are exceptional cases: for example, in Denmark and the Netherlands VET graduates are more likely to participate in non-formal education and training than general education graduates (Table A6 in Annex 5). In school-based VET systems one reason might be that different actors are responsible for setting standards in initial and further education. Another reason might be that IVET mainly leads to semi-skilled jobs with low potential for promotion and development (see also Bosch and Charest, 2015). In countries with predominantly general upper secondary education, vocational education, relative to general education, significantly increases participation in non-formal training. In the UK the respective relationships are not statistically significant.

Box 3. **Further education for VET graduates in Denmark and Germany**

Denmark and Germany both have dual VET systems but there are big differences in the participation of VET graduates in further education (especially in non-formal education and training). In Germany, the training system is organised around a significant front-end investment but with very little adult continuing training. Training goes to those workers who are already employed and highly valued. Crouch et al. (1999) argue that the German high quality system for IVET may have contributed to the underdevelopment of training for adults. In contrast, Denmark has a well-institutionalised system for adult education that provides opportunities for skill development over the life course. There are courses building on IVET in nearly all occupation fields. All vocational qualifications can be supplemented after some years of work experience by promotional training. The standards of these courses are laid down by the social partners and certificates are generally recognised. These courses open prospects for career advancement and promotion to middle management positions.

Source: Bosch and Charest, 2015; Thelen, 2014.

In summary, the results indicate that school-based vocational education functions more straightforwardly as a part of the education system, facilitating participation in further education. In countries where general programmes dominate in upper secondary education, vocational education graduates have a higher probability of continuing their studies in non-formal education and the positive vocational effect is even stronger among 30 to 34 year-olds. This result might indicate that, in this type of country, VET graduates have better

opportunities to get further training or they lack the skills required in the labour market and need additional training.

A limitation of the analysis is that it is not possible to know why people engage in lifelong learning, particularly whether they do so to fill skills gaps (perhaps compensating for a poor fit between IVET and job needs) or to acquire new skills related to future employment, including enabling career progression (see also Cedefop, 2015).

CHAPTER 6.

Effect of VET on labour market outcomes in different country types

The observed effect of vocational upper secondary education is generally positive in comparison to lower secondary education for both 20 to 24 and 30 to 34 year-olds (see Tables A7 and A8). Higher chances of skilled employment are secured by vocational upper secondary education in all country types, indicating a uniform pattern which depends little on context. Three exceptions to this positive pattern have mainly general education systems (Cyprus, Greece and France, see Annex 9, Table A9). The occupational status of people with vocational upper secondary education is also significantly higher compared to that of people with lower secondary education. These findings suggest that the labour market outcomes of holders of vocational upper secondary credentials are likely to signal the value of vocational education.

6.1. Age group 20 to 24

Comparison of vocational upper secondary education with general upper secondary education provides a more diverse picture. In age group 20 to 24**,** only one vocational effect is similar in all types of country examined: the employment rate of people with vocational upper secondary education is higher than that for those with general upper secondary education. At the same time, our results show that for quality of employment (risks of having an unskilled job or level of occupational status), the advantage of vocational upper secondary education compared to general secondary education depends on country context (type of VET, though there is some variety within types as well). All countries with dual VET systems (Type 1), and also with work and school-based VET systems (Type 2) give their employed graduates higher chances of escaping unskilled jobs. Outside these VET systems only Finland delivers a higher chance of having a skilled job for people with upper secondary vocational education compared to those with general secondary education. VET reduces the unemployment risk compared to general education in countries with predominantly general upper secondary education, but increases this risk in countries with school-based vocational education. The effect of education orientation is not significant in all other country types.

The analysis seems to indicate that vocational secondary education provides a safety net function (measured as avoiding the risk of unemployment and low-skilled employment) only in apprenticeship countries and in countries with combined work- and school-based vocational education. In countries with school-based vocational education, such education actually increases both risks compared to general education.

Vocational upper secondary education compared to general upper secondary education has a stronger (and more negative) effect on the occupation position (diversion effect) in countries where general upper secondary education dominates, as well as in Hungary. In these countries, esteem for vocational education seems low. However, our analysis does not support the previous results that vocational education can provide a safety net and restrict the range of occupation opportunities at the same time (Shavit and Müller, 2000) because the vocational effect on occupation status is smallest in apprenticeship countries and in countries with combined work- and school-based vocational education.

As previous analysis indicated, another expression of the diversion effect – lower levels of participation in formal education (and respectively higher levels of inactivity) among those with vocational upper secondary education compared to holders of general upper secondary education – is characteristic for all types of VET system, with an impact on long-term labour market outcomes.

Additional analysis shows that the vocational effect on entry into occupation groups in the middle of the social hierarchy (skilled white- and blue-collar workers) is positive in apprenticeship countries and those with combined work- and school-based studies; it is also the case in countries where general secondary education dominates (the effect is substantially weaker compared to Type 1 and Type 2 countries). Therefore, vocational upper secondary education ensures entry for skilled workers in these countries. This effect is non-significant in Hungary and the UK, and negative in countries with school-based vocational education. However, the variation between countries in Type 5 (school-based upper secondary education) is substantial. As the analysis by country shows, the vocational effect is positive in Belgium, Bulgaria and Finland, but negative and very strong in Poland. This evidence in some countries with school-based VET highlights the importance of supportive policies and institutions beyond the school system.

Country types could be ordered according to the magnitude and the direction of the vocational effect on labour market outcomes and the safety net and diversion functions of VET (Table 2 ([15])). The vocational effect is the most

([15]) Table 2 is based on Tables A4, A5, A7 and A8.

positive on labour market outcomes in apprenticeship countries and in those with combined work- and school-based vocational education. Vocational education has a safety net function but also quite a strong diversion effect in countries where general upper secondary education dominates, though there are significant differences across these countries. In some countries, the absence of diversion effect signals the presence of some mechanisms that might decrease this effect. Vocational education does not have a safety net effect in Greece or France. The vocational effect is low in the UK. In Hungary and in countries with school-based vocational education, vocational education does not have a safety net effect but its diversion effect is strong. Again, country differences are substantial. In two countries belonging to this type (Bulgaria and Finland) vocational education reduces the risk of unemployment.

Box 4. **Changes in Finnish VET system**

The Finnish VET system is hybrid: it produces skills for the labour market and enables graduates to enter higher education. Creation of higher and further education opportunities for VET graduates has allowed for the removal its dead-end character and has increased the prestige of VET. The major outcome of these reforms is that participation in IVET has been increasing in Finland since the early 2000s. The reforms have been aimed at increasing the employability of VET graduates, with the result that the position of VET in the Finnish school system has changed and increased its interest for applicants.

Source: Stenström and Virolainen, 2016.

Table 2. **Safety net and diversion functions of VET in different country types among 20 to 24 year-olds**

Country type	Safety net function		Diversion function		Employment in medium-skilled jobs
	unemployment	low-skilled employment	occupation position	participation in formal education	
Type 1	No	Yes	Quite low	Very strong	Strong
Type 2	No	Yes	Quite low	Very strong	Strong
Type 3	No	No (higher risk for VET)	Very strong	Very strong	No
Type 4	No	No	Medium	Medium	No
Type 5	No (higher risk for VET)	No (higher risk for VET)	Strong	Medium	No
Type 6	Yes	No	Strong	Medium	Medium

NB: The scale used is based on regression coefficients presented in Tables A4 (Annex 5) and A7 (Annex 6). The estimations are based on comparison of the vocational effect in the country type with this average effect. Estimations are presented on the scale of 'yes', 'no (higher risk for VET)' and 'no' for safety net function; on the relative scale ranging from 'quite low' to 'low' to 'medium' to 'strong' to 'very strong' for diversion function; and on the scale ranging from 'no' to 'medium' to 'strong' for securing employment in medium-skilled jobs.

Source: Calculations based on the EU-LFS 2014.

6.2. Age group 30 to 34

For 30 to 34 year-olds, the comparison of employment rates among people with vocational upper secondary and general upper secondary education is favourable for the former group in most types of country (Table A9). This effect is negative in Hungary: the employment rate of individuals with vocational education is lower than those with general education. The safety net function of vocational education among 30 to 34 year-olds (as among 20 to 24 year-olds) is more pronounced in apprenticeship countries and in those where general programmes dominate in upper secondary education. There is a positive and significant VET premium for skilled jobs (VET graduates are less likely to perform unskilled jobs) in apprenticeship countries (Type 1). The analysis indicates that the probability of having a low-skilled job is significantly lower for individuals with general secondary education in countries with school-based vocational education, and especially in Hungary and the UK.

Among 30 to 34 year-olds the two roles of vocational education mentioned by Shavit and Müller (2000) (diversification and safety net) tend to coincide. In apprenticeship countries, and in those with combined work- and school-based education, vocational education helps to avoid unemployment and unskilled jobs but also restricts occupation opportunities ([16]). However, vocational education ensures positions in the middle positions of the occupation scale in these countries, as well as in countries with predominantly general upper secondary education. There is considerable variation in countries belonging to Type 6: the effect is positive in Spain, Latvia and Sweden; and negative in Greece, Cyprus and Portugal. The positive vocational effect is even more pronounced among 30 to 34 year-olds than in the younger age group (20 to 24 year-olds). This effect is non-significant in the UK but negative in countries with school-based vocational education, and in Hungary, where the effect is strong.

([16]) This analysis excludes those vocational education graduates who have continued their studies in tertiary education. Previous analysis indicates that the percentage of vocational education graduates continuing their studies in higher education is quite high in Denmark (a country with an apprenticeship system).

Box 5. **Bulgaria and Romania as exceptions**

The participation rate of upper secondary students in VET is above the EU average in both countries. Other reports also indicate that the labour market outcomes of VET graduates are better than those of general upper secondary graduates. However, the quality and attractiveness of VET, and the provision of relevant skills for further training and employment, remain inadequate. VET schools have high drop-out rates. The Romanian report also indicates insufficient systematic links with the labour market.

Source: European Commission, 2016; 2017.

Table 3. **Safety net and diversion functions of VET in different country types among 30 to 34 year-olds**

Country type	Safety net effect		Diversion function		Employment in medium-skilled jobs
	Unemployment	low-skilled employment	occupation position	participation in formal education	
Type 1	Yes	Yes	Very strong	Very strong	Strong
Type 2	Yes	No	Very strong	Strong	Strong
Type 3 (HU)	No	No (higher risk for VET)	Strong	Medium	Medium (neg. effect for VET)
Type 4 (UK)	No	No (higher risk for VET)	Strong	No	No
Type 5	No	No (higher risk for VET)	Medium	Medium	No
Type 6	Yes	Yes	Quite low	Low	Medium

NB: The scale used is based on regression coefficients presented in Tables A4 (Annex 5) and A8 (Annex 7). The estimations are based on comparison of the vocational effect in the country type with this average effect. Estimations are presented on the scale of 'yes', 'no (higher risk for VET)' and 'no' for safety net function; on the relative scale ranging from 'quite low' to 'low' to 'medium' to 'strong' to 'very strong' for diversion function; and on the scale ranging from 'no' to 'medium' to 'strong' for securing employment in medium-skilled jobs.

Source: Calculations based on the EU-LFS 2014.

The general patterns for age group 30 to 34 differ from age group 20 to 24 (Table 3). The vocational effect on labour market outcomes seems positive in countries where enrolment in general upper secondary education is high. Vocational education shelters individuals from unemployment and, to a lesser extent, from low-skilled employment. The diversion effect is quite low compared to other types of country. The pattern in apprenticeship countries and in those with combined work- and school-based vocational education is similar: vocational education has a safety net function (shelters from unemployment) but a very strong diversion effect. There is no safety net effect in countries with school-based vocational education: there are no differences in unemployment risks

between people with vocational and general upper secondary education, but vocational education graduates have a higher risk of being in a low-skilled job. An exception seems to be Romania, where vocational education reduces the risk of unemployment and being in a low-skilled job. The diversion effect has remained at medium level. The vocational effect is surprisingly similar in the UK and Hungary. Vocational education does not have a safety net effect as in previous country types but the effect on low-skilled jobs is strong. This means that vocational education graduates have a much higher probability of working in low-skilled jobs compared to general education graduates. Vocational education also diverts people from higher occupation positions. In addition, in Hungary VET does not guarantee employment in medium-skilled jobs.

CHAPTER 7.

Concluding remarks and key findings

This paper presents a comparative analysis of the effect of different education orientations at upper secondary level on education and labour market outcomes across European countries. The analysis has been made possible by the availability of the 2014 labour force survey, which has allowed comparison of these outcomes for general and vocational upper secondary programmes.

Vocational education has mainly been promoted as a way of improving the transition from school to work ([17]), but it also appears to have an impact on subsequent education paths, as well as on the adaptability of workers to technological and structural change in the economy. The advantages of vocational education in smoothing entry into the labour market have to be set against later labour market opportunities.

The vocational effect is defined as the effect on labour market and education outcomes of taking vocational programmes in upper secondary education (ISCED 3). This effect is calculated in comparison to both lower secondary education and general upper secondary education. Following Shavit and Müller (2000) the safety net effect (protecting people against unemployment and unskilled work) and the diversion effect (restricting the range of occupation opportunities) of vocational education have been separated.

Countries have been grouped into different types based on the percentage of upper secondary education students studying in vocational programmes and the percentage of students in combined school and work-based vocational programmes. These two indicators have been used because previous analyses have indicated that the setup of upper secondary education and the organisation of vocational education have an impact on the labour market entry of young people as well as on long-term vocational effects.

The analysis indicates that many of the previous discussions about programme orientation have been too narrow. As Hanushek et al. (2017) show, vocational education has been promoted largely as a way of improving the transition from school to work, but it also appears to have a long-term impact on labour market outcomes. The question is whether a potential advantage of vocational qualifications early in someone's career is offset by disadvantages

([17]) Although other objectives include helping to tackle early school leaving.

later in life. This question is important for policy debates because it helps to understand how institutional context influences the adaptability of workers with vocational education backgrounds to technological and structural change in European societies.

The findings demonstrate cross-national differences in the early career advantages of vocational qualifications in line with previous analyses. The results indicate that the vocational effect varies according to the outcome. It is generally positive in comparison to lower secondary education; however, since vocational upper secondary education produces more favourable labour market outcomes than lower secondary education, this might indicate greater demand for qualifications at this level in the labour market ([18]). This would be in line with the trend for higher-level qualifications to be in demand in occupations that once would have called for lower level qualifications, and with the changing role of VET. The availability of the vocational option might reduce early school leaving by keeping more practically oriented young people in school and improving their labour market opportunities.

When general upper secondary education is the comparator, the results are more mixed: there are generally negative effects on further formal and non-formal education and on occupational status, consistent with earlier research. The safety net function of vocational education (negative vocational effect on unemployment and low-skilled employment) is only observable in a few countries and this effect seems to decrease later on in individuals' work careers, perhaps because of a reduction in the labour market relevance of the skills obtained through initial vocational education and training (IVET).

If this could be taken as evidence of shaping the general level of attraction of vocational education, one could assume that such labour market outcomes hold little attraction for career-oriented young people (usually with more advantageous social backgrounds). However, for people with higher risk aversion (usually of less advantageous social origin and having fewer resources at their disposal) vocational upper secondary might seem to be a viable option for prolonging the education path beyond lower to upper secondary education. There is a significant problem with many students ending at lower secondary level in many European countries. The intention should be to improve the access of those students to the upper secondary level.

([18]) However, there is a risk that the direct implication for value of vocational education may be exaggerated, as there may be a simple reason that upper secondary education is more valued than lower secondary education, no matter whether it is vocational or general.

7.1. Country type observations

The impact of vocational education varies considerably with the specific institutional structure of schooling and work-based training. However, differences occur not only in countries belonging to different types, but also within supposedly similar types.

In apprenticeship countries (Denmark, Germany, Switzerland) the safety net effects of vocational upper secondary education are strongest among 20 to 24 year-olds and weaker among 30 to 34 year-olds. The negative vocational effect on occupational status at the beginning of a career is even more pronounced (weaker) compared to other country types. Dual systems have positive impacts on the labour market entry of vocational school graduates, sheltering them from unemployment and unskilled jobs and ensuring their entry to skilled positions on the occupation ladder. The findings do not support previous findings about the coexistence of safety net and diversion effects of vocational education on labour market entrants.

However, the results for 30 to 34 year-olds are broadly consistent with earlier research and confirm that the safety net and diversion roles of vocational education seem to coincide. In countries with dual systems fewer vocational education graduates enter formal and non-formal education. Vocational upper secondary education does not automatically provide its graduates with the opportunity to continue their studies in formal or in non-formal education (further 'bridging' courses are often required). It is still used primarily as a route into work rather than further study. Vocational upper secondary education functions according to the employment logic, especially for labour market entrants. While the analysis confirms previous results about the positive role of dual systems for young people in the short term, the long-term effect of vocational education seems to be less positive (see also Hanushek et al., 2017). Vocational education still seems to 'divert' young people from formal (tertiary) education, even though more opportunities for progression have been developing for some time. The reasons for this phenomenon need further investigation but are likely to include dispositional factors on the part of people who choose to do an apprenticeship (such as lack of interest in continuing in formal education) but also supply side factors, such as the promotion and accessibility of programmes. Also of interest is the fact that there is less take-up of 'non-formal' learning opportunities. This may reflect lack of supply of such opportunities on the part of employers and other actors, dispositional factors on the part of individuals, and 'structural' factors such as the nature of professions and vocations (the German *Beruf* concept), leading to labour market rigidities and lack of flow between occupations as sorting into professions is a key function of apprenticeships.

However, international experiences show that attempts towards such a system often fail. As indicated by several authors, dual VET systems only work sustainably if there is significant support and acceptance by major actors and the apprenticeship system is complemented by strong labour market institutions (Estevez-Abe et al., 2001).

The pattern in countries with combined work- and school-based vocational education (the Netherlands, Austria) is quite similar to that in apprenticeship countries. The vocational effect on participation in non-formal learning is positive for the 20 to 24 age group but turns negative later in life. The safety net effect is not as strong as in apprenticeship countries. Vocational education does somewhat restrict occupation opportunities at the beginning of a career but the negative vocational effect is substantially larger for the 30 to 34 age group.

In countries with school-based vocational education (Belgium, Bulgaria, Czech Republic, Croatia, Italy, Luxembourg, Poland, Romania, Slovenia, Slovakia, Finland), with general academic and vocational provision in different types of dedicated upper secondary institutions and with apprenticeships representing separate systems but accounting for few students, vocational education graduates have a higher risk of unemployment and unskilled employment than general education graduates. School-based vocational education functions in a more straightforward way as a part of the education system. It seems to have quite a negative effect on initial labour market entry, in terms of occupation position, but this weakens for the 30 to 34 age group. This finding is consistent with the notion that there is a much greater degree of fluidity between professions (sorting of individuals) after labour market entry in these systems. However, unlike apprenticeship systems, school-based vocational education does not seem to hold any advantages compared to general secondary education. The success of school-based vocational education depends on the adequacy of skills taught in vocational schools compared to labour market needs (see also Eichhorst et al., 2012). It requires the cooperation of employers, unions and the education institutions. The main variation in the direction and strength of the vocational effect on labour market outcomes in these countries is likely to indicate differences in the strength of the cooperation between different actors. The vocational effect is more positive in Finland and weaker in Bulgaria and Romania.

In countries where general upper secondary education dominates (Estonia, Greece, Spain, France, Latvia, Lithuania, Portugal, Sweden) vocational education graduates are less likely to continue their studies in formal education than general upper secondary education graduates, but the vocational effect is positive on participation in non-formal education and training; this may indicate a

'compensation' effect, as individuals have a strong need to 'back fill' gaps in their skills that were not filled through formal vocational education in the upper secondary phase. Vocational education does not have a strong negative effect on education and labour market outcomes in this type of country group. Differences in outcomes observed between individuals with vocational and general upper secondary education are smaller in these countries than for other types, especially for the 30 to 34 age group. Although vocational upper secondary education may have lower status than general education in these countries, vocational education functions quite well, especially from a long-term perspective, in sheltering graduates from low-skilled jobs and unemployment and ensuring entry to positions in the middle of the social hierarchy. There may be a generally weak connection between education and training and the labour market, suggesting that the labour market is less determined by qualifications possessed than, for example, family ties in Mediterranean countries. The variation between countries belonging to this type is quite large, probably reflecting significant differences in the institutions that underpin both education and training and the labour market. The vocational effect on labour market outcomes seems negative in Greece and France.

The results highlight interesting differences between apprenticeship and school-based systems, especially in those countries where general upper secondary education dominates. The effect of vocational upper secondary education on education and labour market outcomes is quite positive in the following countries with school-based vocational education: for the 20 to 24 year-old age group in Bulgaria, Romania and Finland; and for the 30 to 34 year-old age group in Spain, Romania and Sweden. This is an important issue in the light of the increased prominence of apprenticeships in Europe in the last 20 years and since the latter is often perceived as the 'poor relation' of the former.

The evidence of exceptions from the general tendencies revealed at the level of VET system types highlights the context-sensitivity of labour market and education outcomes of VET, and the importance of further investigation of institutions and policies contributing to such atypical outcomes. VET systems are deeply embedded in the various national production, labour market, industrial relations and status systems. The demand side (labour market structure) should also have significant impact on the labour market outcomes of VET graduates.

In Hungary, vocational education does not have a safety net function. Vocational education also restricts occupation opportunities as in apprenticeship countries; graduates have lower participation rates in formal and non-formal education compared to general education graduates. The diversion effect of vocational education is also strong. The vocational effect in Hungary seems quite

similar to countries with school-based vocational education. The results indicate the negative vocational effect on education and labour market outcomes, confirming conclusions drawn by Noelke and Horn (2014), who argue that the substitution of employer- with school-provided vocational education has substantially increased unemployment among VET graduates.

In the UK, vocational education seems to have relatively strong links with tertiary education giving access to further education. Using the terminology of Ianelli and Raffe (2007) it could be concluded that in the UK education logic dominates: vocational upper secondary education has weak links with employment, is less sharply differentiated from academic upper secondary education; as a result it ensures quite good opportunities for further education and training. The quite positive vocational effect on education outcomes does not coincide with this effect on labour market outcomes. Vocational education does not have a safety net function in the UK. The vocational effect on occupation position is strong, especially among 30 to 34 year-olds.

7.2. General observations

The results support the move towards apprenticeships and work-based learning in terms of labour market outcomes. However, in countries where general upper secondary education is dominant, vocational tracks are more successful in terms of labour market outcomes than in countries where school-based systems exist. This highlights the need to examine the links between education systems and labour market systems.

Besides the positive contribution of vocational education to labour market entry (especially in apprenticeship countries) more attention should be paid to its long-term effect, to the adaptability of vocational education graduates to technological and structural changes in society. The results show that VET graduates are potentially sacrificing the longer-term gains associated with further education in favour of the short-term benefits. It is no longer sufficient to aid a smooth transition into work: vocational education should also provide strong basic skills to ameliorate any later life disadvantages. To avoid a negative perception of vocational education as a dead-end option, transition to further education should be supported. This opportunity should be provided not only formally, by creating the necessary means of transition, but also by actively supporting such transitions. The European Commission (2010) communique stresses the need to strengthen vocational programmes, to deal with high youth unemployment in Europe, and to increase investment in lifelong learning. The increased focus on lifelong learning will require policies allowing progression

between different types and levels of education and training, and more flexible transitions between education and training and work.

The analyses in this paper have some restrictions. First, it is difficult to draw convincing conclusions about long-term vocational effects based on the comparison of different cohorts. The question is whether cohort differences indicate short- and long-term effects or depreciation of skills with age. However, the consistency of the short- and long-term vocational effect across country groupings seems to confirm previous findings. Second, few independent variables have been included in the analysis. It was not possible to control factors such as social background as well as abilities. Participation in vocational programmes is selective and the selection is inversely related to ability.

The approach taken in this paper was not to aim for comprehensive comparison of VET systems. The classification of countries used is based on two indicators of national VET systems on upper secondary level, independent of its socioeconomic context, disregarding simple comparative indicators (participation in further education and labour market outcomes). The approach has been selective because the full diversity of VET at national level was intentionally not considered.

Despite these limitations, the analyses in this paper have produced original research about labour market and education outcomes of VET graduates in countries with different types of education system at upper secondary level. One of the strengths of this research is the use of the best comparable data on IVET graduates available so far for the countries of Europe. One of the limitations of previous EU-LFSs as a data source about IVET was related to the difficulties in fully distinguishing (general or vocational) study orientation. From 2014 the EU-LFS offers possibilities to distinguish programme orientations at upper secondary level and to compare education and labour marker outcomes of graduates of vocational and general programmes. The paper prepares the ground for the development of VET scenarios for the future. The social status of VET, determined by its position in the education system and in the labour market, is expected to be among the most relevant outputs defining future developments. The country typology used in this paper will contribute to revealing, and predicting, the changes at more systematic level.

List of abbreviations

COURATT	attendance to taught learning activities (non-formal education) in the last four weeks (variable)
CVET	continuing vocational education and training
EDUCLEVL	level of regular education during the last four weeks (formal education) (variable)
EDUCSTAT	student or apprentice in regular education during the last four weeks (formal education) (variable)
EULFS	European Union labour force survey
HATLEVEL	highest educational attainment level (variable)
HATVOC	orientation of the highest educational attainment level (variable)
IVET	initial vocational education and training
ISCED-11	international standard classification of education approved by the 36th UNESCO general conference in November 2011
ISCO-08	international standard classification of occupations 2008 (revision of the ISCO-88 adopted in December 2007)
ISEI	international socioeconomic index of occupational status
PIAAC	programme for the international assessment of adult competencies
VET	vocational education and training

Country codes

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
HR	Croatia
IT	Italy
CY	Cyprus
LV	Latvia

LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom

References

Andersen, R.; van de Werfhorst, H.G. (2010). Education and occupational status in 14 countries: the role of educational institutions and labour market coordination. *The British journal of sociology*, Vol. 61, No 2, pp. 336-355.

Anderson, K.M.; Hassel, A. (2012). Pathways of change in CMEs: training regimes in Germany and the Netherlands. In: Wren, A. (ed.). *The political economy of the service transition*. Oxford: Oxford University Press, pp. 171-194.

Arum, R.; Shavit, Y. (1995). Secondary vocational education and the transition from school to work. *Sociology of education*, Vol. 68, No 3, pp. 187-204.

Baethge, M. (2010). Neue soziale Segmentationsmuster in der beruflichen Bildung. In: Krüger, H.-H. et al. (eds). *Bildungsungleichheit revisited: Bildung und soziale Ungleichheit vom Kindergarten bis zur Hochschule [Educational inequality revisited: education and social inequality from kindergarten to college].* Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 277-300.

Becker, G. (1975). *Human capital*. New York: NBER.

Bills, D.B. (2003). Credentials, signals, and screens: explaining the relationship between schooling and job assignment. *Review of educational research*, Vol. 73, pp. 441-449.

Blossfeld, H.-P. et al. (eds). (2016). *Secondary education models and social inequality: an international comparison*. Edward Elgar Publishing.

Bol, T.; van de Werfhorst, H.G. (2013). Educational systems and the trade-off between labour market allocation and equality of educational opportunity. *Comparative education review*, Vol. 57, No 2, pp. 285-308.

Bosch, G.; Charest, J. (2008). Vocational training and the labour market in liberal and coordinated economies. *Industrial relations journal*, Vol. 39, No 5, pp. 428-447.

Bosch, G.; Charest, J. (eds) (2015). *Vocational training*. London: Routledge.

Bowles, S.; Gintis, H. (1976). *Schooling in capitalist America*. New York: Basic Books.

Breen, R. (2005). Explaining cross-national variation in youth unemployment: market and institutional factors. *European sociological review*, Vol. 21, No 2, pp. 125-134.

Breen, R. et al. (2009). Nonpersistent inequality in educational attainment: evidence from eight European countries. *American journal of sociology*, Vol. 114, No 5, pp. 1475-1521.

Brunello, G.; Rocco, L. (2015). *The effects of vocational education on adult skills and wages: what can we learn from PIAAC?* OECD social, employment and migration working papers; No 168. http://dx.doi.org/10.1787/5jrxfmjvw9bt-en

Buchmann, C.; Park, H. (2009). Stratification and the formation of expectations in highly differentiated educational systems. *Research in social stratification and mobility*, Vol. 27, No 4, pp. 245-267.

Busemeyer, M.; Iversen, T. (2011). Collective skills systems, wage bargaining and labour market stratification. In: Busemeyer, M.; Trampusch, C. (eds). *The political economy of collective skill formation*. Oxford: Oxford University Press, pp. 3-38.

Busemeyer, M.; Trampusch, C. (2011). *The political economy of collective skill formation.* Oxford: Oxford University Press.

Cedefop (2008). *Initial vocational education and training (IVET) in Europe: review*. http://www.cedefop.europa.eu/files/IVET_Review_08.pdf

Cedefop (2012). *From education to working life: the labour market outcomes of vocational education and training*. Luxembourg: Publications Office. http://dx.doi.org/10.2801/92129

Cedefop (2013). *Labour market outcomes of vocational education in Europe: evidence from the European Union labour force survey*. Luxembourg: Publications Office. Cedefop research paper; No 32. http://dx.doi.org/10.2801/44683

Cedefop (2014). *Terminology of European education and training policy*. Luxembourg: Publications Office. http://dx.doi.org/10.2801/15877

Cedefop (2015). *Skills, qualifications and jobs in the EU: the making of a perfect match? Evidence from Cedefop's European skills and jobs survey.* Luxembourg: Publications Office. Cedefop reference series; No 103. http://dx.doi.org/10.2801/606129

Cedefop (2017a). *Cedefop European public opinion survey on vocational education and training*. Luxembourg: Publications Office. http://www.cedefop.europa.eu/en/publications-and-resources/publications/5562

Cedefop (2017b). *The changing nature and role of vocational education and training in Europe. Volume 2: results of a survey among European VET experts.* Luxembourg: Publications Office. Cedefop research paper; No 64. http://dx.doi.org/10.2801/548024

Crouch, C.; Finegold, D.; Sako, M. (1999). *Are skills the answer?* Oxford: Oxford University Press.

Di Stasio, V.; Bol, T.; van de Werfhorst, H.G. (2016). What makes education positional? Institutions, overeducation and the competition for jobs. *Research in social stratification and mobility*, Vol. 43, pp. 53-63.

Eichhorst, W. et al. (2012). *A roadmap to vocational education and training systems around the world*. IZA discussion paper; No 7110.

Estevez-Abe, M. (2006). Gendering the varieties of capitalism: a study of occupational segregation by sex in advanced industrial societies. *World politics*, Vol. 59, No 1, pp. 142-175.

Estevez-Abe, M.; Iversen, T.; Soskice, D. (2001). Social protection and the formation of skills: a reinterpretation of the welfare state. In: Hall, P.A.; Soskice, D. (eds). *Varieties of capitalism: the institutional foundations of comparative advantage.* Oxford: Oxford University Press, pp. 145-183.

European Commission (2004). *Achieving the Lisbon goal: the contribution of VET.*

European Commission (2010). *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy: communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.* (COM(2010) 296 final). http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:ef0023

European Commission (2016). *Education and training monitor 2016: Bulgaria*.

European Commission (2017). *Youth guarantee country by country: Romania.*

Forster, A.G.; Bol, T.; van de Werfhorst, H.G. (2016). Vocational education and employment over the life cycle. *Sociological science*, Vol. 3, pp. 473-494.

Ganzeboom, H. et al. (1992). A standard international socioeconomic index of occupational status. *Social science research*, Vol. 21, No 1, pp. 1-56.

Gerber, T.P.; Cheung, S.Y. (2008). Horizontal stratification in postsecondary education: forms, explanations, and implications. *Annual review of sociology*, Vol. 34, pp. 299-318.

Green, A.; Pansiero, N. (2016). The effects of upper secondary education and training systems on skills inequality. A quasi-cohort analysis using PISA 2000 and the OECD survey of adult skills. *British educational research journal*, Vol. 42, No 5, pp. 756-779.

Hall, P.A.; Soskice, D. (2001). An introduction to varieties of capitalism. In: Hall, P.A.; Soskice, D. (eds). *Varieties of capitalism: the institutional foundations of comparative advantage*. Oxford: Oxford University Press, pp. 1-69.

Hampf, E.; Woessmann, L. (2016). *Vocational vs general education and employment over the life-cycle: new evidence from PIAAC*. IZA discussion paper; No 10298. http://ftp.iza.org/dp10298.pdf

Hanushek, E.A.; Woessmann, L.; Zhang, L. (2011). *General education, vocational education, and labor-market outcomes over the life-course*. IZA discussion paper; NO 6083. http://ftp.iza.org/dp6083.pdf

Hanushek, E.A. et al. (2017). General education, vocational education, and labour-market outcomes over the life-cycle. *Journal of human resources*, Vol. 52, No 1, pp. 49-88.

Hefler, G. et al. (2012). Austria. In: Pavlin, S. Stanley, J. (eds). *Experiencing VET in Europe: insights into the learning experiences of 17 and 18 year-old VET students in seven EU countries: results from an international survey.* Ljubljana: University of Ljubljana, pp. 70-115.

Hillmert, S.; Jacob, M. (2003). Social inequality in higher education: is vocational training a pathway leading to or away from university? *European sociological review*, Vol. 19, No 3, pp. 319-334.

Hodgson, A; Spours, K. (2014). Heavy fog in the Channel – continent cut off: reform of upper secondary education from the perspective of English exceptionalism. *European educational research journal*, Vol. 13, No 6, pp. 683-698.

Ianelli, C.; Raffe, D. (2007). Vocational upper secondary education and the transition from school. *European sociological review,* Vol. 23, No 1, pp. 49-63.

Iversen, T.; Stephens, J.D. (2008). Partisan politics, the welfare state, and the three worlds of human capital formation. *Comparative political studies*, Vol. 41, pp. 600-637.

Kerckhoff, A. (1993). *Diverging pathways: social structure and career deflections*. Cambridge: Cambridge University Press.

Kerckhoff, A. (2000). Transition from school to work in international perspective. In: Hallinan, M. (ed.). *Handbook of the sociology of education*. New York: Kluwer, pp. 453-474.

Lucas, S.R. (2001). Effectively maintained inequality: education transitions, track mobility, and social background effects. *American journal of sociology*, Vol. 106, pp. 1642-1690.

Lynch (1994). Introduction. In: Lynch, L.M. (ed.). *Training and the private sector: international comparisons*. Chicago: University of Chicago Press, pp. 1-24.

Meer, J. (2007). Evidence on the returns to secondary vocational education. *Economics of education review*, Vol. 20, No 5, pp. 559-573.

Müller, W.; Karle, W. (1993). Social selection in educational systems in Europe. *European sociological review, Vol.* 69, pp. 1-23.

Müller, W.; Gangl, M. (eds) (2003). *Transitions from education to work in Europe: the integration of youth into EU labour markets*. Oxford: Oxford University Press.

Noelke, C.; Horn, D. (2014). Social transformation and the transition from vocational education to work in Hungary: a difference-in-difference approach. *European sociological review*, Vol. 30, No 4, pp. 431-443.

OECD (2015). *ISCED 2011 operational manual: guidelines for classifying national education programmes and related qualifications*. OECD publishing. http://www.oecd.org/education/isced-2011-operational-manual-9789264228368-en.htm

Rosenbaum, J. et al. (1990). Market and network theories of the transition from high school to work: their application to industrialised societies. *Annual review of sociology*, Vol. 16, pp. 263-299.

Ryan, P. (2001). The school-to-work transition: a cross-national perspective. *Journal of economic literature*, Vol. 39, No 1, pp. 34-92.

Shavit, Y. (1984). Tracking and ethnicity in Israeli secondary education. *American sociological review*, Vol. 49, No 2, pp. 210-220.

Shavit, Y.; Müller, W. (2000). Vocational secondary education. *European societies*, Vol. 2, No 1, pp. 29-50.

Shavit, Y.; Park, Y. (2016). Introduction to the special issue: education as a positional good. *Research in social stratification and mobility*, Vol. 43, pp. 1-3.

Solga, H. (2002). Stigmatisation by negative selection explaining less-educated people's decreasing employment opportunities. *European sociological review*, Vol. 18, No 2, pp. 159-178.

Solga, H. (2005). *Ohne Abschluss in die Bildungsgesellschaft: die Erwerbschancen gering qualifizierter Personen aus soziologischer und ökonomischer Perspektive [With no education degree: chances of low-skilled people from a sociological and economic perspective]*. Opladen: Verlag Barbara Budrich.

Solga, H. (2008). Lack of training: employment opportunities for low-skilled persons from a sociological and microeconomic perspective. In: Mayer, K.U.; Solga, H. (eds). *Skill formation: interdisciplinary and cross-national perspectives*. Cambridge: Cambridge University Press, pp. 173-204.

Spence, A. (1974). *Market signalling*. Boston: Harvard University Press.

Stenström, M.-L.; Virolainen, M. (2016). Towards the enhancement of school-based VET in Finland. In: Berner, E.; Gnon, P. (eds). *History of vocational education and training in Europe*. Peter Lang, pp. 327-347.

Thelen, K. (2014). *Varieties of liberalisation and the new politics of social solidarity*. Cambridge: Cambridge University Press.

Thurow, L.C. (1975). *Generating inequality: mechanisms of distribution in the US economy*. New York: Basic Books.

Triventi, M. et al. (2016). Education as a positional good: implications for social inequalities in educational attainment in Italy. *Research in social stratification and mobility*, Vol. 43, pp. 39-52.

UNESCO-UIS (2012). ISCED 2011 glossary. http://uis.unesco.org/

Van de Werfhorst, H.G. (2011). Skill and education effects on earnings in 18 countries: the role of national educational institutions. *Social science research*, Vol. 49, No 4, pp. 1078-1090.

Woessmann, L. (2008). Efficiency and equity of European education and training policies. *International tax and public finance*, Vol. 15, No 2, pp. 199-230.

Wolbers, M.H.J. (2007). Patterns of labour market entry: a comparative perspective on school-to-work transitions in 11 European countries. *Acta sociologica*, Vol. 50, No 3, pp. 189-210.

Wolf, A. (2002). *Does education matter? Myths about education and economic growth*. London: Penguin Press**.**

Wren, A. (ed.) (2012). *The political economy of the service transition*. Oxford: Oxford University Press.

ANNEXES

ANNEX 1.
Formal and non-formal education

Formal education is defined as ‘education that is institutionalised, intentional and planned through public organisations and recognised private bodies, and — in their totality — constitute the formal education system of a country. Formal education programmes are thus recognised as such by the relevant national education or equivalent authorities, e.g. any institution in cooperation with the national or sub-national education authorities. Formal education consists mostly of initial education. Vocational education, special needs education and some parts of adult education are often recognised as being part of the formal education system. Qualifications from formal education are by definition recognised and, therefore, are within the scope of ISCED. Institutionalised education occurs when an organisation provides structured educational arrangements, such as student-teacher relationships and/or interactions, that are specially designed for education and learning’ (UNESCO-UIS, 2012, p. 11).

Non-formal education is defined as ‘education that is institutionalised, intentional and planned by an education provider. The defining characteristic of non-formal education is that it is an addition, alternative and/or complement to formal education within the process of lifelong learning of individuals. It is often provided in order to guarantee the right of access to education for all. It caters to people of all ages but does not necessarily apply a continuous pathway structure; it may be short in duration and/or low-intensity; and it is typically provided in the form of short courses, workshops or seminars. Non-formal education mostly leads to qualifications that are not recognised as formal or equivalent to formal qualifications by the relevant national or sub-national education authorities or to no qualifications at all. Nevertheless, formal, recognised qualifications may be obtained through exclusive participation in specific non-formal education programmes; this often happens when the non-formal programme completes the competencies obtained in another context’ (UNESCO-UIS, 2012, p. 11).

ANNEX 2.
Limitations of the data set

Despite providing an opportunity for comparing the education and labour market outcomes of vocational and general upper secondary education internationally, the EU-LFS data set has significant limitations:

(a) it assumes a four-week reference period for measuring participation in continuing vocational education and training (it measures participation in the last four weeks prior to the interview);
(b) it does not systematically cover guided, on-the-job training;
(c) it allows proxy interviews (where proxy respondents answer the questionnaire in case the sampled individuals are not available);
(d) it provides no or very little information on aspects other than participation in education and training (such as purpose, content, forms, source of financing, time invested in it and obstacles to it);
(e) it provides only cross-sectional information.

It is currently not possible to follow individual education trajectories. Exploiting the EU-LFS waves approach could be a way forward, but these possibilities are currently limited. So long as study orientation is not fully distinguished, it will take time for longitudinal data to become available.

Additional data limitations refer to specific countries and variables:

(a) the HATVOC variable was missing for Iceland;
(b) it was not possible to distinguish vocational education using the HATVOC variable for Ireland;
(c) continuing studies in higher education data were missing for Switzerland.

Analysing and comparing data of different countries presents several challenges. First, the definition of a VET degree varies widely among European countries, depending on the country-specific structure of the education system. Therefore, the term VET can identify heterogeneous situations: some countries may have vocational degrees systematically alternating school and workplace practice; others may call ‘vocational’ degrees those that are only vaguely job-oriented, often low-ranked compared to the academic track and possibly stigmatised (Hanushek et al., 2011). Two qualifications under the umbrella of VET may lead to very different outcomes, suggesting that a more comprehensive analysis of the internal differentiation of VET education (the extent of school-work alternation, the degree of transition from one track to another, the type of

curricula) would help understanding better the extent to which cross-national variation can be associated with the characteristics of the vocational system.

Second, people entering vocational upper secondary education may differ systematically from those entering general upper secondary education. Vocational education is usually correlated with unobserved ability because selection into different tracks is based on a competitive examination or because individuals with higher ability choose to enter general rather than vocational schools. More able individuals are more likely to have better labour market and education outcomes and are also more likely to enter general programmes (Meer, 2007). This makes it difficult to separate vocational effect from that of unobservable ability, preferences, attitudes and other characteristics. Several strategies have been adopted to deal with this problem, ranging from instrumental variable estimation to matching techniques (Hanushek et al., 2011). Brunello and Rocco (2015) have adopted a selection-on-observables strategy. Their analysis is based on PIAAC data set which includes useful information (skills, social background) to model selection into different types of programme.

ANNEX 3.

Samples

Table A1. **Sample sizes, EU-LFS 2014**

Country	20-24 year-olds			30-34 year-olds		
	Vocational upper secondary education	General upper secondary education	Total	Vocational upper secondary education	General upper secondary education	Total
Austria	4212	1637	5849	4464	674	5138
Belgium	1776	1815	3591	1611	652	2263
Bulgaria	459	801	1260	582	343	925
Croatia	1297	395	1692	1223	77	1300
Cyprus	274	1006	1280	316	554	870
Czech Republic	1380	420	1800	1489	91	1580
Denmark	1069	4769	5838	1296	289	1585
Estonia	332	770	1102	299	273	572
Finland	1117	1117	2234	985	233	1218
France	8213	7465	15678	9184	2720	11904
Germany	6673	9512	16185	10767	1025	11792
Greece	970	6476	7446	1111	3317	4428
Hungary	2910	5656	8566	4863	1306	6169
Iceland	-	-	-	-	-	-
Ireland	-	6292	6292	-	2965	2965
Italy	10902	8792	19694	9648	3119	12767
Latvia	425	1153	1578	415	542	957
Lithuania	416	1753	2169	416	393	809
Luxembourg	40	392	432	72	187	259
Malta	172	624	796	64	265	329
Netherlands	1520	1360	2880	1329	209	1538
Norway	585	323	908	141	266	407
Poland	8769	7291	16060	10223	2270	12493
Portugal	1482	2967	4449	868	1686	2554
Romania	6396	2250	8646	4617	954	5571
Slovakia	2634	1496	4130	2723	239	2962
Slovenia	1913	1207	3120	1940	265	2205
Spain	762	1983	2745	679	641	1320
Sweden	7220	3355	10575	4310	1614	5924
Switzerland	1312	962	2274	1518	435	1953
United Kingdom	970	1419	2389	1306	707	2013

ANNEX 4.

Comparison of country classifications

Table A2 compares the classification of countries according to the setup of upper secondary education used in this working paper and often used in territorial/regional grouping.

Table A2. **Territorial grouping of countries and typology of countries by set-up of upper secondary education**

Territorial/ regional grouping	Types by set-up of upper secondary education system					
	Type 1: dual system VET	Type 2: work- and school-based VET high	Type 3: work-based high, school-based VET low (HU)	Type 4: work- and school-based VET medium (UK)	Type 5: school-based VET dominant	Type 6: General education focused
West European countries				UK		
Visegrad countries			HU		CZ, SK, PL	
South-east European countries					BG, RO, HR	
Central European countries	DE, CH	AT, NL			BE, LU, SL	
Nordic countries	DK				FI	SE
South Mediterranean countries					MT	EL, CY
West Mediterranean countries						ES, PT, FR
Baltic countries						EE, LV, LT

The table indicates some similarities between territorial grouping and typology used in this working paper. However, there is substantial variation across Centre European and Nordic countries in the relative size of the general and vocational programmes and in the specific organisation of the vocational programmes. All west Mediterranean and Baltic countries belong to Type 6, but this type also includes Sweden, as well as two south Mediterranean countries. All three south-east European countries belong to Type 5 with several countries from other regions.

Table A3. **Comparison of the classification of countries according to the set-up of upper secondary education and the concept of VET**

Grouping based on the concept of VET	Types by set-up of upper secondary education system					
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
VET understood as dual initial training	DE, DK	AT	HU		SK (apprenticeship)	
VET understood as initial vocational education		NL			BE, BG, CZ; HR, IT, PL, RO, SK (school), LU, MT, SI	CY, EE, EL, ES, LV, LT, PT, SE
VET understood as further training				UK		CY
VET understood as (part of) lifelong learning					FI	FR

Source: Table based on Cedefop, 2017b.

ANNEX 5.

The effect of VET on participation in further education: results of logistic regression analyses

Table A4. **Types of upper secondary education and participation in formal education among 20 to 24 and 30 to 34 year-olds, logistic regression coefficients by country type, 2014**

Country type	Vocational upper secondary education in reference to general upper secondary education			
	Participation in formal education		Participation in higher education	
	20-24 year-olds	30-34 year-olds	20-24 year-olds	30-34 year-olds
Type 1	-3.208***	-2.858***	-2.742***	-2.684***
Type 2	-3.146***	-2.302***	-2.887	-2.199***
Type 3 (HU)	-3.024***	-1.282***	-5.064***	-1.986***
Type 4 (UK)	-1.402***	-.222	-1.929***	-.535*
Type 5	-1.795***	-1.451***	-1.164***	-1.329***
Type 6	-2.061***	-.556***	-2.173***	-.984***

*** significant at level 0.001;

** significant at level 0.01

Source: Calculations based on EU-LFS 2014 microdata.

Table A5. **Types of upper secondary education and participation in non-formal education among 20 to 24 and 30 to 34 year-olds, logistic regression coefficients by country type, 2014**

Country type	Vocational upper secondary education in reference to lower secondary education		Vocational upper secondary education in reference to general upper secondary education	
	20-24 year-olds	30-34 year-olds	20-24 year-olds	30-34 year-olds
Type 1	-.020	.322***	-.353***	-.781***
Type 2	.227***	.154	-.309***	-.517***
Type 3 (HU)	.286	-.730***	-.172	-.833***
Type 4 (UK)	.630***	.529***	-.227***	-.162
Type 5	.323***	.606***	-.173***	-.287***
Type 6	.475***	.630***	.216***	.411***

*** significant at level 0.001

Source: Calculations based on EU-LFS 2014 microdata.

ANNEX 6.

The effect of VET on participation in further education, summary of country analyses

Table A6. **Effect of VET on education outcomes, summary**

Type	Country	20-24 year-olds		30-34 year-olds		20-34 year-olds
		Participation in formal education	Participation in higher education	Participation in formal education	Participation in higher education	Participation in non-formal education
Type 1: dual	DE	– –	– –	– –	–	– –
	DK	–	–	–	–	+
	CH	–	n.a.	–	n.a.	–
Type 2: work- and school-based	AT	– –	– –	– –	– –	–
	NL	– –	– –	–	–	+
Type 3	HU	– –	– –	–	– –	–
Type 4	UK	–	–	0	–	0
Type 5: school-based	BE	–	–	–	–	0
	BG	–	–	0	0	0
	CZ	– –	–	0	0	0
	FI	– –	–	–	–	0
	HR	– –	–	– –	0	0
	IT	– –	–	–	–	0
	LU	–	– –	0	0	0
	MT	–	–	0	0	0
	PL	–	–	–	–	–
	RO	–	–	–	–	0
	SI	– –	–	–	–	–
	SK	– –	–	– –	– –	0
Type 6: mainly general	CY	–	–	– –	– –	0
	EE	– –	– –	–	–	0
	EL	– –	– –	– –	– –	0
	ES	– –	– –	–	–	0
	FR	– –	– –	–	–	–
	LT	– –	– –	–	–	0
	LV	–	–	–	– –	0
	PT	– –	– –	–	–	–
	SE	–	–	–	0	0

Vocational upper secondary education (ref. general upper secondary education).
\+ probability is higher for those with vocational upper secondary education;
– probability is lower for those with vocational upper secondary education;
– – probability is much lower for those with vocational upper secondary education
n.a. not applicable

Source: Calculations based on EU-LFS 2014 microdata.

ANNEX 7.

The effect of VET on labour market outcomes among 20 to 24 year-olds

Table A7. **Types of upper secondary education and labour market outcomes among 20 to 24 year-olds, regression coefficients by country types, 2014**

Country type	Vocational upper secondary education in reference to lower secondary education	Vocational upper secondary education in reference to general upper secondary education
Employment		
Type 1	1.277***	1.575***
Type 2	1.016***	1.375***
Type 3 (HU)	1.247***	1.970***
Type 4 (UK)	.918***	.781***
Type 5	.430***	1.089***
Type 6	1.010***	1.452***
Unemployment		
Type 1	-.681***	.113
Type 2	-.954***	-.113
Type 3 (HU)	-.739***	.095
Type 4 (UK)	-.834***	.033
Type 5	-.411***	.153***
Type 6	-.885***	-.202***
Low-skilled employment		
Type 1	-1.067***	-.904***
Type 2	-1.184***	-.779***
Type 3 (HU)	-1.666***	.426***
Type 4 (UK)	-1.047***	.123
Type 5	-1.054***	.172***
Type 6	-.819***	.080
Employment in ISCO 1-8 versus unemployment and ISCO 9 (low-skilled employment)		
Type 1	.904***	.447***
Type 2	1.149***	.516***
Type 3 (HU)	1.510***	-.214***
Type 4 (UK)	1.049***	-.083
Type 5	.691***	-.138***
Type 6	.971***	.141***
Socioeconomic index of occupational status (ISEI)		
Type 1	2.218***	-3.414***
Type 2	5.360***	-1.756***
Type 3 (HU)	5.550***	-8.116***
Type 4 (UK)	4.808***	-4.153***

Country type	Vocational upper secondary education in reference to lower secondary education	Vocational upper secondary education in reference to general upper secondary education
Type 5	5.811***	-4.597***
Type 6	3.220***	-5.552***
Employment in ISCO 1-3 versus unemployment and ISCO 9 (low-skilled employment)		
Type 1	.978***	.040
Type 2	1.578***	.298***
Type 3 (HU)	2.412***	-1.935***
Type 4 (UK)	1.488***	-.0440***
Type 5	1.840***	-.548***
Type 6	1.369***	-.415***
Employment in ISCO 4-8 versus unemployment and ISCO 9 (low-skilled employment)		
Type 1	.879***	.569***
Type 2	1.051***	.588***
Type 3 (HU)	.149***	-.001
Type 4 (UK)	.958***	.028
Type 5	.601***	-.066*
Type 6	.926***	.253***

*** significant at level 0.001;

* significant at level 0.05

Source: Calculations based on EU-LFS 2014 microdata.

ANNEX 8.

The effect of VET on labour market outcomes among 30 to 34 year-olds

Table A8. **Types of upper secondary education and labour market outcome among 30 to 34 year-olds, regression coefficients by country types, 2014**

Country type	Vocational upper secondary education in reference to lower secondary education	Vocational upper secondary education in reference to general upper secondary education
Employment		
Type 1	1.279***	.912***
Type 2	1.125***	.394***
Type 3 (HU)	1.077***	-.284***
Type 4 (UK)	1.126***	-.124
Type 5	.846***	.152***
Type 6	.770***	.160***
Unemployment		
Type 1	-1.204***	-.336***
Type 2	-1.090***	-.261
Type 3 (HU)	-.995***	.087
Type 4 (UK)	-1.006***	.016
Type 5	-.718***	-.031
Type 6	-.699***	-.206***
Low-skilled employment		
Type 1	-1.592***	-.266*
Type 2	-1.559***	-.038
Type 3 (HU)	-1.718***	.938***
Type 4 (UK)	-.776***	.619***
Type 5	-1.209***	.175***
Type 6	-.952***	-.094*
Employment in ISCO 1-8 versus unemployment and ISCO 9 (low-skilled employment)		
Type 1	1.564***	.393***
Type 2	1.496***	.199
Type 3 (HU)	1.719***	-.533***
Type 4 (UK)	.893***	-.414***
Type 5	1.001***	-.030
Type 6	.876***	.183***
Socioeconomic index of occupational status (ISEI)		
Type 1	7.403***	-9.365***
Type 2	7.598***	-10.553***
Type 3 (HU)	6.870***	-8.067***
Type 4 (UK)	3.342***	-9.232***

Country type	Vocational upper secondary education in reference to lower secondary education	Vocational upper secondary education in reference to general upper secondary education
Type 5	7.944***	-4.981***
Type 6	4.316***	-3.997***
Employment in ISCO 1-3 versus unemployment and ISCO 9 (low-skilled employment)		
Type 1	2.021***	-.188***
Type 2	2.063***	-.512***
Type 3 (HU)	2.248***	-1.443***
Type 4 (UK)	.998***	-.960***
Type 5	2.071***	-.379***
Type 6	1.359***	-.037
Employment in ISCO 4-8 versus unemployment and ISCO 9 (low-skilled employment)		
Type 1	1.420***	.752***
Type 2	1.345***	.704***
Type 3 (HU)	1.674***	-.364***
Type 4 (UK)	.855***	-.103
Type 5	.857***	-.072*
Type 6	.782***	.248***

*** significant at level 0.001; * significant at level 0.05.

Source: Calculations based on EU-LFS 2014 microdata.

ANNEX 9.

The effect of VET on labour market outcomes, summary of country analyses

Table A9. **Effect of VET on labour market outcomes, summary**

Type	Country	20-24 year-olds					30-34 year-olds				
		Employ-ment	Un-employment	Low-skilled jobs	ISEI	ISCO 4-8 versus ISCO 9 and unemployment	Employ-ment	Un-employment	Low-skilled jobs	ISEI	ISCO 4-8 versus ISCO 9 and unemployment
Type 1: Dual	DE	+	+	–	–	+	+		–	–	+
	DK	+	+	–	–	+	+			–	+
	CH	+	–	–	–	+	+			–	+
Type 2: Work- and school-based	AT	+		–	–	+	+			–	+
	NL	+		–			+			–	
Type 3	HU	+		+	–		–		+	–	–
Type 4	UK	+			–				+	–	
Type 5: School-based	BE	+			–	+	+		+	–	
	BG	+	–			+					
	CZ	+			–		–			–	–
	FI	+	–	–	–	+				–	
	HR	+								–	
	IT	+		+	–		+	–		–	
	LU	+								–	
	MT	+			+						
	PL	+	+	+	–	–			+	–	
	RO	+	–		–	+		–		–	+
	SI	+	+		–	–			+	–	

Type	Country	20-24 year-olds					30-34 year-olds				
		Employ-ment	Un-employment	Low-skilled jobs	ISEI	ISCO 4-8 versus ISCO 9 and unemployment	Employ-ment	Un-employment	Low-skilled jobs	ISEI	ISCO 4-8 versus ISCO 9 and unemployment
	SK	+		+	–				+	–	
Type 6: Mainly general	CY	+					–	+	+	–	–
	EE	+			–	+				–	
	EL	+		+		–	–	+	–		–
	ES	+			–	+	+	–	–	–	+
	FR	+	+	+	–		–	+		–	
	LT	+			–					–	
	LV	+									+
	PT	+			–			+			–
	SE	+			–	+	+		–	–	+

Vocational upper secondary education (ref. general upper secondary education)

+ probability is higher for those with vocational upper secondary education; - probability is lower for those with vocational upper secondary education

Source: Calculations based on EU-LFS 2014 microdata.

The changing nature and role of vocational education and training in Europe

Volume 5: education and labour market outcomes for graduates from different types of VET system in Europe

This research paper is the fifth in a series produced as part of the Cedefop project The changing nature and role of VET (2016-18). Based on comparative analysis of labour force survey data from 2014, the report analyses the vocational effect on labour market and education outcomes, asking whether any advantages conferred by vocational qualifications in early career would be offset by disadvantages later in life. The report explores the functioning of the safety net and the diversion effects across countries, demonstrating how these vary considerably with the specific institutional structure of schooling and work-based training. The results indicate that VET graduates are potentially sacrificing the longer-term gains associated with further education in favour of short-term benefits.

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European Centre for the Development of Vocational Training

Europe 123, 570 01 Thessaloniki (Pylea), GREECE
Postal address: PO Box 22427, 551 02 Thessaloniki, GREECE
Tel. +30 2310490111, Fax +30 2310490020
Email: info@cedefop.europa.eu
www.cedefop.europa.eu

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