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Report on reskilling and upskilling through
Formal and Vocational Education training

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Future Developments in Vocational Education and Training in Europe

Report on reskilling and upskilling through formal and vocational education training

Jörg Markowitsch & Günter Hefler (3s, Vienna)

Abstract

Contrary to general education, vocational education and training (VET) has been an area of cooperation from the very beginning of the European Union. Over decades, however, the concept and reality of VET has changed substantially. VET as a dead-end educational pathway preparing exclusively for direct labour market entrance has practically faded out. The VET systems of the EU member states have become more open and have developed their access routes to higher and further education. Since 1995, common drivers for developments in VET across EU member states have included structural ones as shrinking birth-cohorts or changes in skill demands induced by new technologies and digitalisation as well as institutional ones, for instance, a new emphasis on learning outcomes or the introduction of qualification frameworks. However, common drivers have resulted in different trajectories taken by the various national VET systems, perpetuating the diversity of VET in Europe. The paper discusses long-term structural changes and recent trends within VET (such as vocational drift in education, hybridisation of general and vocational education, increasing permeability of educational pathways in initial VET) and how they might play out in the future. Given that the trends are expected to continue, it can be expected that by 2030 national qualification frameworks in most EU members states will be firmly established thereby organising a diversity of vocational qualifications ranging from EQF level 1 to 8 – including professional doctorates.

Keywords: Vocational Education and Training, International Comparison, Europe, Trends, Future

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Contents

| | |
|--|----|
| Introduction..... | 1 |
| Key trends of VET and expectations for the future of VET in Europe..... | 4 |
| VET systems between convergence and divergence and the role of Europeanisation | 10 |
| The future of VET in Europe: Long-standing issues and emerging challenges..... | 12 |
| Abbreviation..... | 15 |
| References..... | 16 |
| Annex..... | 20 |

Introduction

The Vocational Education and Training (VET) is a broad concept, which is understood differently across countries as well as by leading international organisations at a European and global level¹. Over the second half of the 20th century the meaning of VET has shifted from denoting a ‘fairly specific training or re-training for particular jobs to a very wide concept, overlapping with general education and spanning, in theory at least, secondary education, adult training both general and in connection with active labour market measures, much of higher education and lifelong learning as a whole (including quite explicitly non-formal and informal learning).’(West, 2012, p. 19)

For the purposes of this paper we will concentrate on VET for young people (initial VET or IVET) in the EU (i.e. programmes at upper-secondary and post-secondary education which prepare for specific roles in the labour market) and have a particular focus on apprenticeships. The paper will not cover the important areas of VET within higher education, non-formal training within firms or the wider aspects of lifelong learning with the exception of cases where the latter has an impact on formal IVET provision.

Continuing changes in the understanding of VET pose problems in defining its borders and comparing it over time. The two traditional markers, used in classifications of educational programmes of the 1970s, ‘VET are terminal programmes not providing access to HE’ and ‘VET focusses on the middle level of education’ have definitely lost ground. Nevertheless, despite substantial cross-country differences (as described in more detail in the following sections of this paper), a recent study of definitions of VET in 30 European countries revealed that in most countries VET is perceived as occupations-specific education and training geared towards securing supply of skilled labour which predominantly addresses young people (IVET), provides qualifications at the middle level of education (ISCED-11 levels 3-4), and is financed from education budgets (Cedefop, 2017b). Other important characteristics of VET at upper secondary level should be kept in mind as well: Firstly, VET is much more diverse than general education with students having to choose among a much broader variety of programmes; secondly, learning outcomes are less standardised; thirdly, there are differences between general education and VET programmes with regard to ownership, as business interest organisations and the trade unions, often enjoy a strong say on vocational tracks relevant to their industries (see section 2.5); and hence patterns of financing are also more diverse in VET than for general upper secondary education which is mainly funded by the state, while some types of VET such as apprenticeships may enjoy substantial financial contributions by employers (for some apprenticeship scheme employers cover more than 75% of the total costs, and for some schemes apprentices pay exceeds national minimum wages) (Cedefop, forthcoming-b; Conlon et al., 2013).

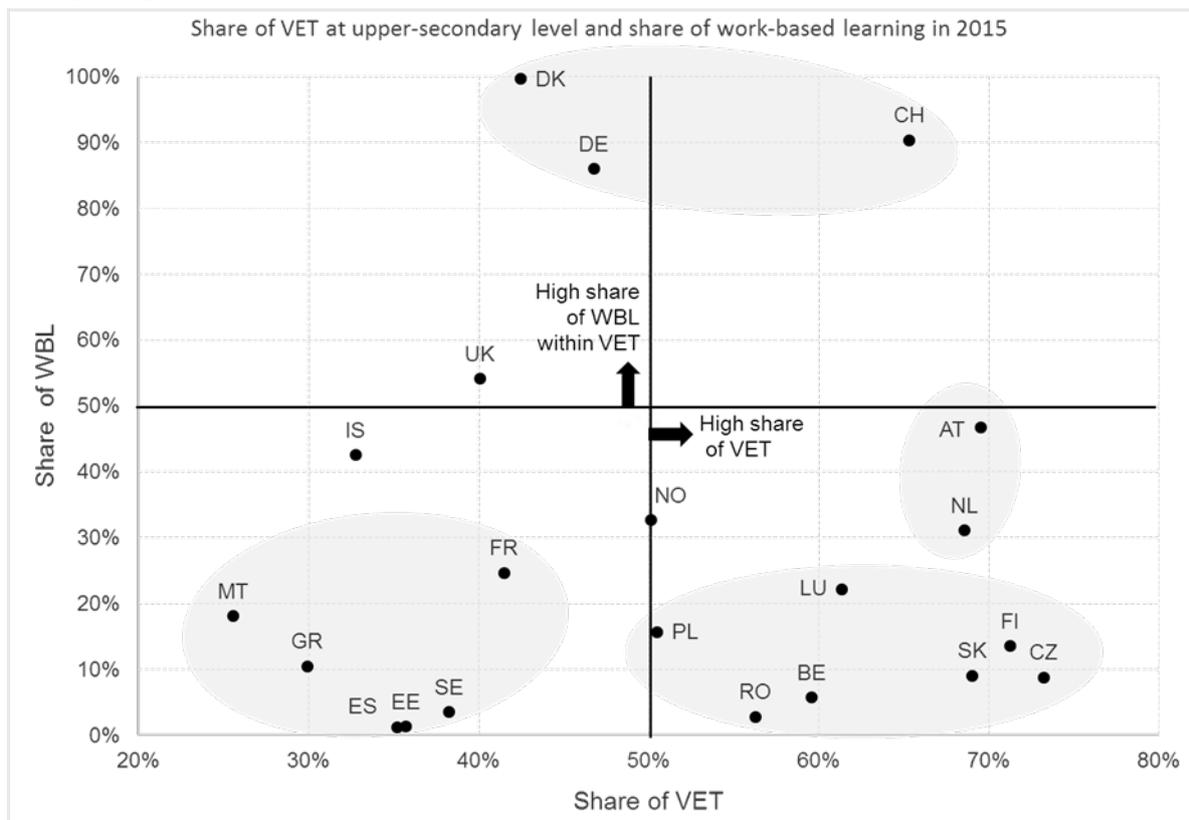
Various authors have tried to grasp the diversity of VET systems by constructing typologies which classify systems along different rationales. We can neither give a full account of these approaches nor present a new typology here (for critical overviews see e.g. Bosch, 2016; Gonon, 2016; Rageth & Renold, 2017). Instead we note that many of these typologies – irrespective of their cultural-historical, sociological-educationalist or political-economist perspective – coincide in their

¹ For instance, the UNESCO has decided to use the term Technical and Vocational Education and Training (TVET), see: <https://unevoc.unesco.org/go.php?q=more+about+What+is+TVET&context> (accessed 31.10.2018). Please also note that the US government put an end at the use of the term VET, which was considered too strongly connotated with the old understanding and renamed VET in 2006 into ‘Career and Technical Education – CTE’ (see: Carl D. Perkins Career and Technical Education Improvement Act of 2006). Cedefop defines VET as ‘education and training which aims to equip people with knowledge, know-how, skills and/or competences required in particular occupations or more broadly on the labour market’ (Cedefop, 2014, p. 292) – thereby deliberately not referring to any level or sector of the education and training system.

reference to particular countries' VET systems iconic 'ideal-types': VET in Germany and Switzerland is usually described as an ideal type, referred to as the collective, coordinated or dual-corporatist model, where learning takes place alternately in schools and companies, firms are financially engaged in training and social partners are involved at various levels in curriculum development, setting of occupational standards and assessment; VET in France is taken as an alternative model, referred to as statist or education-led, with VET mainly provided by state-funded schools; and VET in the UK is perceived as another ideal type, referred to as the liberal or market model, with little standardisation of training practices, low public commitment and low involvement of firms, high tuition fees covered by the households and providers competing for state funding (compare for instance the different approaches from [Busemeyer & Trampusch, 2012](#); [Green, Leney, & Wolf, 1999](#); [Greinert, 2004](#)). While typologies relying on ideal types of VET represented by single countries have enhanced the field of comparative research, they have been proven as insufficient for classifying VET approaches across all 28 EU Member States accordingly.

For the analysis of current trends and future expectations of VET and due to our focus on IVET we apply a simple approach for the grouping of countries which takes the percentage of upper-secondary education students enrolled in vocational programmes and the percentage of students engaged in combined school and work-based vocational programmes at this level as the starting point (compare Figure 1).

Figure 1: Share of VET at upper-secondary level (all age groups) and share of dual education as part of VET for selected countries in 2015 (ISCED 2011)



Note: Data for share of WBL for Greece from 2014, for the Netherlands from 2010, for countries which are not shown either data is not provided or there are concerns about the classification of VET and WBL.

Source: Eurostat [educ_uoe_enrs04], own calculations

Countries with dual systems of apprenticeship where school-based VET tracks play nor or only a minor role are Denmark, Germany, and Switzerland. Countries with mixed systems with participation distributed relatively equally between school-based education and dual systems of

apprenticeship and which have an overall high share of VET are for instance Austria and the Netherlands². Countries with school-based systems with high enrolments in VET (share of VET between 50-70%) and with no or only small apprenticeships are the Visegrád states, South-Eastern European countries, as well as Finland, Luxembourg, Belgium, and Italy. Countries which could be considered as 'general education' countries with relatively small school-based vocational systems are the Baltic states and most Southern European countries as well as France and Sweden (with shares of VET around 30-40 %).

In the following we discuss long-term structural changes and recent trends within VET or specific to VET and how they might play out in the years up to 2030. We do not have the space for discussing more general trends affecting all education sectors such as increasing individualism resulting in more individual learning pathways, ageing societies and longer working lives asking for more lifelong learning or new education technologies, changing classroom teaching and digital learning (see for instance [Facer, 2009](#); [Facer & Sandford, 2010](#); [Redecker et al., 2011](#); [Scott, 2015](#); [Stoyanov, Hoogveld, & Kirschner, 2010](#)).

² In terms of numbers the UK would fit this group, but given the fact that VET in the UK consists mostly in further education, we suggest to treat the UK as case of its own, following also Hodgson and Spours (2014) who 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.

Key trends of VET and expectations for the future of VET in Europe

Ongoing institutionalisation of VET

While dominating VET provision up to 1990s, VET as a dead-end educational pathway preparing exclusively for direct labour market entrance has practically faded out. Today's VET systems have become more open and have developed their access routes to higher and further education: either by providing direct access to newly established polytechnics (universities of applied sciences) often emerging from upgraded higher vocational or technical colleges such as in Finland³ or the Netherlands⁴, or by introducing vocational equivalences to the general higher education entrance examinations such as the 'Baccalaureat professionnel' in France⁵, the 'Berufsmaturität' in Switzerland and 'Berufsreifeprüfung' in Austria⁶ (see also below on permeability).

While the incorporation of IVET into the national education systems had passed its heyday in the 1980s, in most countries, there are still numerous vocational qualifications which are currently considered as out of scope of the formal education system (as defined by ISCED) waiting for integration. This development is increasingly fuelled by the ongoing implementation of national qualification frameworks ([Elken, 2016](#); [Mikulec & Ermenc, 2016](#); [Pilcher, Fernie, & Smith, 2017](#)). A relative increase of VET (or at least its visibility) can be expected from more NQFs becoming operational in the EU28⁷ and many VET qualifications (in particular short courses) previously not seen as part of the education system will become visible within NQFs.

There are at least two important future developments: Firstly, the ongoing trends towards extended schooling, towards postponing educational choices, towards making VET and general education more equal and towards more comprehensive forms of upper-secondary education (with differences within) will result in upper-secondary VET with a predominately preparatory profile (instead of preparing for a single occupation), and in this respect not too different from academic tracks. This implies that occupational competence and specific vocational qualifications will be predominantly acquired in post-secondary education and thereby later in life. Secondly, more vocational (further) training programmes and (partial) qualifications (at EQF level 3, 4, 5) will be integrated into national qualification frameworks and further enlarge governments' influence on VET. Consequently, the broadening of the concept of VET will continue, while at the same time the previously contained fragmentation of VET may re-emerge.

Diversification of VET: Downwards and Upwards shifts

While VET at the upper-secondary level, VET's traditional 'heartland', has been better integrated into public education systems and thereby amalgamated with general education, VET provision has also been expanded into both lower and – to an even larger extent – into higher levels of education ('vocational drift' in education). New VET provision during the years of compulsory schooling has been developed to better prepare students for moving into vocational tracks on upper secondary level ([McCoshan, 2008](#)). Reforms extend vocational pathways down into the lower secondary level, and improve existing vocational courses to better prepare students for upper secondary courses.

³ Please see Cedfop (2019a)

⁴ Please see Cedfop (2019b)

⁵ Please see Cedfop (2019c)

⁶ Please see Cedefop (2019)d

⁷ For an overview see Cedefop (2015a).

Pre-VET programmes have often been designed to assist students from socially disadvantaged backgrounds. For instance, in the last decade, Switzerland has developed shorter forms of apprenticeships for the disadvantaged youth, while Austria has introduced the option of partial qualifications and of prolonging the duration of apprenticeship for disabled people ([Becker, Balzer, Kammermann, & Spöttl, 2018](#)).

In pursuit of professionalism and higher ranked credentials, many post-secondary VET programmes in the EU have been upgraded into a separate strand of professional higher education (HE). Moreover, new vocationally or professionally oriented higher-level degree programmes have been added to the traditional provision of universities ([Kyvik, 2008](#); [Smeby, 2006, 2015](#)). Some countries also offer higher level vocationally oriented education and training outside higher education, i.e. outside the Framework for Qualifications of the European Higher Education Area – EHEA⁸ ([Cedefop, 2019e](#); [Kyvik & Lepori, 2010](#)). For instance, Switzerland has established the so-called ‘Tertiary-B’⁹ sector in addition to ‘Tertiary A’ which comprises universities and universities of applied sciences (‘Fachhochschulen’) and started to assign first vocational qualifications up to EQF level 8 in their national qualifications framework ([Baumeler & Engelage, 2017](#)). During the last two decades the participation figures in vocationally oriented education and training provided at higher levels of education have increased and around 20% of higher level education provision can be considered vocational or professional in the EU ([Ulicna, Luomi Messerer, & Auzinger, 2016](#)). This is particularly the case for professional HE, whereas changes in numbers for higher VET are minor. It needs to be further highlighted that programmes classified at ISCED 2011 Levels 4 and 5 in the EU are nearly exclusively vocational or professional in orientation. Thus, the share of VET programmes (compared to general ones) at these levels is higher than for level 3 – however, overall there are comparatively few participants on Levels 4 and 5. The reason for the shift of VET to higher levels and the vocational drift within higher education are manifold and include: changing occupational structures driven by the shift from manufacturing to knowledge-intensive services, changing students preferences asking for more higher-level programmes, allowing for continuing education on HE level or entering better paid jobs; increasing emphasis of policy makers on positive effects of programmes on the employability of graduates.

Besides IVET’s expansion to lower and higher levels, also the expansion of Continuing Vocational Education and Training (CVET) should be noted and the blurring of boundaries between IVET and CVET. When referring to the EU-28 average, recent changes in CVET provision (1999-2015) have been minor, with slightly increasing number of hours per employed spent in CVET and a slightly higher incidence of companies providing courses. Trends vary somewhat across sectors, as well as across countries.

Speaking of the provision of training, there is a clear trend that IVET providers also provide CVET programmes and increasingly admit adults in their IVET provision (compare also Figure 2 in the Annex). In some countries the numbers of adult learners in IVET programmes, in particular in apprenticeships¹⁰, have increased substantially. Apprenticeship for adults and doing an apprenticeship after having gained HE entrance permission are getting more popular. In Germany, the number of graduates from general upper-secondary education and drop-outs from universities

⁸ We refer to vocationally oriented types of programmes and qualifications that are fully outside the EHEA and are linked to EQF levels 5-8 via their inclusion in a National Qualifications Framework (NQF) as ‘higher VET’ while those within the EHEA as ‘professional higher education’.

⁹ B stands for ‘Berufsbildung’ (=vocational education) signifying tertiary vocational education.

¹⁰ Definitions and classifications of apprenticeship programmes in Europe differ. The joined data collection of UNESCO, OECD and EUROSTAT finds around 80 programmes which contain work-based elements (meaning that less than 75% of the curriculum is presented in the school environment’. A comprehensive study conducted by European Commission found around 70 apprenticeship and apprenticeship-like programmes in the EU in 2012 (European Commission, 2012). A recent Cedefop study identified 30 apprenticeship schemes in 24 European countries including Norway and Island (Cedefop, 2018a).

taking up apprenticeship programmes has increased in the last decade. In Finland, adults (25 and older) make up even for the majority of participants in apprenticeship schemes. In Estonia, both VET schools and higher education institutions have started to admit adult learners to make up for shrinking youth cohort and the proportion of students aged 25+ in IVET has increased from 14% in 2007 to 34% in 2016 ([Roosalu & Saar, 2018](#)). The influx of migrants from third countries and the fact that in many countries migrants are more likely to choose VET paths will further lead to an on average more mature IVET student population. The increase of adult students in IVET is expected to intensify in the near future in Western and Northern Europe due to migration and in Central and Eastern Europe due to further shrinking youth cohorts and foreseeable labour shortages¹¹.

Given that the described trends will continue, it can be expected that by 2030 national qualification frameworks in most EU Members states will be firmly established thereby organising a diversity of vocational qualification ranging from EQF level 1 to 8 – including professional doctorates within professional HE as well as equivalent vocational qualifications outside the EHEA. Due the general upwards shift, the heartland of VET will have certainly shifted from EQF level 3 to level 4 and 5 and the increase of adult learners in VET will somewhat weaken the prevalent idea of VET mainly signifying IVET. In the next two sections we will take up the issue of institutionalisation and diversification of VET and look more closely into the changes within IVET at upper-secondary level.

Increasing permeability, broader profiles and hybridisation of vocational and general education

Practically all EU Member States have taken part in reforms of school-based VET (which is the dominating form of VET in Europe) aiming at changing programmes towards preparing for broader vocational domains, enriching curricula by more theoretical and general subjects and offering qualifications allowing for access to higher education. As its corollary, VET programmes preparing specifically for one narrowly defined trade or occupational field have dropped in importance.

The development of VET in the Visegrád states since 1989 can be taken as point of reference ([Kogan, Noelke, & Gebel, 2012](#)). By the early 1990s, in all Visegrád states VET students made up for 70 to 80% of students at upper-secondary level. Since then, the proportion of VET students has moderately but continuously fallen by 10 up to 20 percentage points (in the most pronounced way in Poland and Hungary). However, in all Visegrád states participation in lower-ranked, practical VET programmes which do not provide access to higher education have dramatically decreased, while at the same time hybrid VET programmes offering dual qualifications (professional diplomas and as higher education entrance qualification) have become an important route into an expanding higher education sector ('academic drift').¹² This trend which has been described as hybridisation of vocational and general education or as trend towards double qualifications¹³ is also evident in many Western European countries (e.g. in Austria, the Netherlands, Luxembourg, Belgium, and France). It remains to be seen if the academic drift within VET at the level of upper-secondary schools will continue and eventually lead to a situation where these programmes will be perceived as 'general/academic' in nature.

There are various examples in recent history where the academic upgrading of previously dedicated vocational education resulted in a new hybrid mainly "general" in nature (e.g. in France, Denmark or

¹¹ See for instance: James Shotter, 'Central Europe: running out of steam', Financial Times, 2018-8-27)

¹² West (2013, p. 31) explains this for CEE countries by the fact that general upper secondary education had been suppressed in communist times and because upper secondary general education was the 'royal road' to university, there was a tendency of general education to expand at the expense of vocational.

¹³ There is no agreed terminology yet for these qualifications. „Double“, „hybrid“ or „dual“ has been used so far to described such qualifications/programmes. See also Deissinger, Jørgensen, Fuller and Aff (2013)

Hungary)¹⁴. Finally, the trend towards double qualifications is not only obvious within school-based VET, but can also be seen within apprenticeship tracks by the increasing numbers of enrolments in the preparation for vocational 'bac' or 'matura' in Austria, France, Switzerland and recently also in Denmark (see also section 2.1 above).

The advantages of double qualifications for the individual learner are obvious and may explain the strong demand of students for them: they increase the learners' flexibility in terms of future learning options without compromising the opportunities for instant transition to the labour market after graduation. However, the quest of preparing for an instant transition into the labour market and also for entering higher education (HE) makes up for today's key dilemma of vocational education. On the one hand, it raises the public esteem of vocational education, on the other hand it bears the risk of diluting VET and at the same time putting those who have their strength in acquiring manual and practical skills at a disadvantage.

To sum up: there is a trend towards double qualifications, broader occupational profiles, a growing emphasis on generic and transversal skills in IVET ([Deissinger, Jørgensen, Fuller and Aff 2013](#)). It would be premature to state that double qualifications (access to higher education AND preparing for the labour market) has become the new gold standard for IVET at upper secondary education, however, the evidence suggests that this is likely to happen in the near future. It is a different matter whether these double qualification programmes will remain classified as vocational or whether they will be subsumed under the academic tracks on upper secondary level, the post-secondary tracks or even regarded as part of higher education. Taking the developments of the past as a guideline, it seems to be a safe guess that programmes will be reclassified differently across countries, keeping it difficult to track developments of the VET sector across countries and time.

Increasing work-based learning, vocational drift and the changing concept of apprenticeship

Even as it may look implausible at a first glance, evidence suggests that the 'academic drift' within VET portrayed above can happen along with a 'vocational drift' in general programmes and a growing emphasis on work-based learning across educational programmes. Before explaining this paradox we shall have a look at the figures on policies targeting work-based learning.

Participation numbers in traditional apprenticeship (dual VET) have been steadily declining after their peak in the 1980s in all countries with strong apprenticeship systems (with the exception of Switzerland). The decline in numbers was most pronounced in Germany and Denmark, but was also significant in Austria or the Netherlands. Besides changing preferences and shrinking age cohorts, the decline in numbers has been driven by a constant slump in the number of training places offered by employers (reflecting structural changes in the economy with a decline of employment in sectors and types of companies which traditionally offer training places).

However, as apprenticeship systems have been proven highly successful in easing young people's transition into work, across Europe, policy makers in the fields of youth and employment have developed a keen interest in them. Skyrocketing youth unemployment in the years of the Great Recession has further strengthened the interest to see what apprenticeship schemes are able to deliver. Consequently, apprenticeship schemes have been established even in countries, where they

¹⁴ Compare for instance higher commercial/technical examinations in Denmark, the technological bac in France or the case of vocational gymnasiums in Hungary which can all be considered vocational oriented upper-secondary education but are classified as general programmes in ISCED.

have hardly any tradition¹⁵. Beyond this spread of apprenticeship schemes, the provision of work-based and practice-based learning increased within the curricula of a broad range of educational programmes, including mandatory internships for pupils in school-based VET or project-based learning for students in professional HE.

The development of VET in Hungary in the last decade can illustrate how academic and vocational drift can coincide. As in other Visegrád states, participation numbers in low-profile, practical VET programmes have plummeted in the past decade, while they have increased in the track which provides more academically grounded and broader vocational orientation. At the same time, participants in work-based learning and the number of apprenticeship places have slightly increased¹⁶. This is possible because an apprenticeship is not a stand-alone pathway in Hungary as it is in Austria, Germany, Switzerland or Denmark, but one option for organising learning in either of the two VET tracks. Academic drift and increase of work-based learning can thereby go together.

For a comprehensive understanding of current developments in the field of apprenticeship in the EU, it is therefore vital to distinguish between two fundamentally different approaches to apprenticeship training. One approach takes apprenticeship as a *specific type of programme*, which aims to qualify people for jobs as skilled workers, while the programme is practically the only way to acquire the awarded qualification (as in the DACH region, Denmark and Norway). The other approach understands apprenticeship as a *mode of learning* which combines on-the-job learning with classroom-based instruction, but which can be applied in practically any type of educational programme and on any level of education. For the multiple ways to apply apprenticeship as a mode of instruction, apprenticeship schemes in Hungary, Finland, France or the UK provide good examples ([Cedefop, 2018a](#)). In France apprenticeships are offered at EQF levels 2 to 7, and participation in apprenticeships at higher levels is increasing while participation at lower levels is stagnating. In the UK, more policy emphasis has been recently given to higher apprenticeships.

Remarkably, apprenticeships in countries regarding them mainly as a mode of instruction (as in France, Finland or the UK) are on the rise – driven also by extended state subsidies – while participation numbers for the traditional form of apprenticeship are declining in the traditional ‘dual system’ countries. It is not surprising that this sort of decoupling of the historically strong link of apprenticeships with middle level skills is most pronounced in France and Finland which have also introduced mechanisms to validate non-formal and informal learning quite early – providing greater flexibility for learners. In these systems one and the same VET qualification can be obtained in traditional school settings, by apprenticeships or by accreditation of prior learning and skills examination.

Some diversification of apprenticeship is also visible in the traditional apprenticeship countries (Germany, Austria, Switzerland and Denmark) which have started to offer apprenticeship at lower and higher level of education (see also Chapter 2.2 above). Looking at these developments, it is likely that apprenticeships as a way of learning or instruction (the model applied in France, Finland, Hungary or the UK) will gain further ground in Europe, and might become even the dominating understanding of apprenticeship in the long run ([Cedefop, 2018a](#); [Markowitsch & Wittig, 2019](#)).

¹⁵ See for instance the country reviews and development project carried out by Cedefop since 2015 in Latvia, Malta, Greece, Italy, Slovenia, Cyprus or Croatia <http://www.cedefop.europa.eu/en/events-and-projects/projects/apprenticeships-work-based-learning> (accessed 31.10.2018)

¹⁶ Similar developments can be observed in France, Finland, and more recently, for instance, also in Slovakia, the Czech Republic and Poland. Partly this seems to reflect the efforts of national policy and funding in this area.

Increasing responsiveness and employer engagement

Supporting the responsiveness of the VET system to the needs of the labour market and henceforth identifying and forecasting future skills to ensure that these requirements can be incorporated into education and training have been standing issues on the policy and research agenda for more than four decades now ([Haskel & Holt, 1999](#))¹⁷. However, since the early 1990s, a shift in the discourse can be recognised. While in earlier days, emphasis had been given to questions of how to produce the right number of graduates based on well-attuned, up-to-date VET curricula, the emphasis had changed to the question on how to instil the right skills and attitudes to the individual VET students, who should take the responsibility for maintaining their employability in ever-changing labour markets over the life course.

In the UK, for instance, the establishment of the Modern Apprenticeship programme in 1994 was seen as a means of simultaneously increasing participation in VET and ensuring that VET was delivering skills that had value in the labour market ([Cedefop, 2018b](#)). Creating a system that is responsive to the needs of the labour market (a demand-led VET system) was aided by some noteworthy developments: (a) the introduction of competence-based qualification systems; (b) reforming the role of business interest and employee interest organisations ('social partners') in establishing competence-based standards in VET (within the national qualifications system); (c) ensuring a degree of flexibility to serve local labour market needs.

Efforts to improve the responsiveness of VET to the needs of the labour market seem to have increased in all Member states and employers and employer organisations are increasingly invited to contribute to the design of curricula. For instance, in the UK, more prominence has been given to the employers when designing the occupational standards upon which the apprenticeship system is founded ([Cedefop, 2018b](#)), in Hungary the Chamber of Commerce and Industry has taken on responsibility for VET-related tasks since 2010, and was commissioned by the government to develop occupational profiles and framework curricula for 125 occupations, practically all skilled manual occupations in Hungary ([Cedefop, 2013a](#)); in Lithuania, in 2014-2015, the Ministry of Education and Science in Lithuania signed eight collaboration agreements with employers' associations to involve them in planning, implementation and review of VET ([European Commission, 2015](#)). More labour market intelligence and providing students with better labour market information (e.g. employment outlook, graduate tracking) is another common measure in this respect. However, up until now there is no yardstick according to which the success of such instruments could be measured.

The main shortcoming of previous empirical studies has been their exclusive focus on the short-term labour market and education outcomes ([Cedefop, 2018c](#)). Only more recently, several researchers have tried to investigate the relationship between VET and long-term employment outcomes using PIAAC data ([Brunello & Rocco, 2015](#); [Forster & Bol, 2018](#); [Hanushek, Schwerdt, Woessmann, & Zhang, 2017](#)), although research is limited by the cross-sectional nature of the data sets available. [Hanushek et al. \(2017\)](#) argue that, in general, 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 acquired in IVET are likely to become obsolete quickly in modern economies with rapid technological change while academic education's emphasis on general skills and the ability to learn new things quickly may help its graduates – supported by further training – to live up to ever changing job demands. Hence, there could be a trade-off between the short- and long-term benefits of vocational education: it may help when entering the labour market (as employers may prefer the ready-to-use skills of VET graduates) but general education contributes to a higher

¹⁷ Compare for instance the history of educational planning since the 1960ies (Bray & Varghese, 2011) with more recent attempts such as European Skills Panorama (<https://skills Panorama.cedefop.europa.eu/en>).

probability of being employed at older ages and individuals with general education are more likely to receive lifelong training. ([Cedefop,2018c](#))

Besides, returns to vocational education (throughout the whole lifespan) vary widely between occupational fields and among countries, even among countries with well-established apprenticeship systems (Lerman 2017, [Cedefop 2013b](#)). Dual systems (e.g. Denmark, Germany, Switzerland) have positive impacts on the labour market entry of VET graduates, sheltering them from unemployment and unskilled jobs and ensuring their entry to skilled positions on the occupational ladder. However, the long-term effect of vocational education seems to be less positive. In countries with school-based vocational education (e.g. Belgium, Bulgaria, Czech Republic, Croatia, Italy, Poland, Romania, Slovenia, Slovakia, Finland) VET functions in a more straightforward way as a part of the education system. In these group of countries VET seems to have quite a negative effect on initial labour market entry, in terms of occupational positions, but this negative effect somewhat weakens for the 30-34 age group ([Cedefop, 2018d](#); [Kogan et al., 2012](#)).

These and similar findings have to be further developed, related to individual economic and demographic country contexts and combined with insight of VET governance structures and feedback mechanisms. ([Cedefop, 2013](#); [Markowitsch & Hefler, 2018](#)). Currently, there is a risk to draw premature conclusions from these results and to assess the effectiveness of VET systems uncoupled from the contexts in which they are situated. New attempts to more holistic approaches in analyzing VET systems by considering their positioning within skill formation systems and larger historical contexts are needed. For this purpose, it will be necessary to combine different theoretical perspectives¹⁸ and also to develop new indicators, such as Cedefop's European Skills Index¹⁹.

VET systems between convergence and divergence and the role of Europeanisation

VET systems across countries – in stark contrast to general education systems on primary or lower secondary level – used to be marked by a staggering degree of dissimilarity. However, as in other domains of political economy, there is a long-standing debate about whether or not there are drivers present across countries which are strong enough to fuel a trend towards convergence of VET systems across Europe as well as one global scale. In conjunction with this debate, it is typically highlighted that similar drivers might lead to different outcomes across countries, driving up the divergence of VET systems: Countries might develop different responses to similar stimuli at hand, with path-dependency and institutional complementarities of their overall institutional set-ups among the key arguments for explaining 'exceptionalism' around ([Soskice & Hall, 2001](#)). Among the drivers potentially leading to more convergence or provoking further divergence, the effects of European integration and EU-level policy making on VET can certainly claim particular attention.

In the past two decades, common drivers for developments in VET across EU member states included structural ones as shrinking birth-cohorts or changes in skill demands induced by new technologies and digitalisation as well as institutional ones, as shared believes in particular ways of educational policy making as characterised by a growing emphasis on learning outcomes, or the introduction of qualification frameworks. However, common drivers may result in different outcomes given the peculiar situation of countries. For instance, while almost all countries have seen shrinking birth cohorts, the dramatically high net emigration of young people has caused a

¹⁸ Compare for instance the three perspective model developed in Cedefop (2017a)

¹⁹ <http://www.cedefop.europa.eu/en/events-and-projects/events/introducing-european-skills-index>

shortage of VET participants and skilled workers in Eastern Europe, while in Southern Europe the pattern of high levels of youth unemployment has prevailed.

All in all, when observing the developments of VET across Europe in the last two decades, a conclusion drawn by [Green et al. \(1999\)](#) after analysing VET systems in the EU-15 between 1985 and 1995 still seems to hold true. Green et al. found that, 'while [European VET systems] may have been moving in the same directions, it is not clear that countries are significantly more like each other than they were a decade or a generation ago' (ibid p. 200).

Nevertheless, enlarging the analysis to 30 European Countries and looking at the years 1995 to 2015 some additional observations can be made which are also guiding the future expectations for the convergent or divergent development of VET in Europe. ([Cedefop, forthcoming-a](#)).

Looking at VET in the EU28 as a whole and in particular when focussing on upper-secondary level education, we observe both an academic and vocational drift in practically all countries, which somewhat reduce the high divergence of VET systems observed in the more distant past. In the last 20 years, the share of participants in VET as a proportion of all students at upper-secondary level has decreased in countries which had a significant share (70% and above) while it has increased significantly in countries with traditionally low proportions of in VET students (compare also Figure 3 and 4 in the Annex). Decreasing shares in the Visegrád countries and increasing ones in the West Mediterranean countries illustrate this convergence in the distribution of student populations between VET and general education in upper secondary education. A similar pattern can be observed for work-based learning (apprenticeships). In countries in which work-based learning has dominated the VET system (e.g. Denmark and Germany), VET has been under substantial pressure due to academisation. In countries with both school-based and work-based tracks (e.g. in Austria, the Netherlands, Iceland) the apprenticeship track has lost terrain to the school-based track. In contrast, apprentice numbers have increased in those countries which used to have only minor apprenticeship tracks (e.g. Hungary, France, recently also Spain). Thus, some convergences with regard to the distributions of students across educational tracks can be observed, which may eventually result in a growing number of mixed systems and a better balance between VET and general education.

However, there is no doubt about the persistence of key differences between VET systems found throughout Europe. Adopting a period of observation of 20 years, no country has reported a wholesale system change. For instance, no country has traded a school-based VET system in for a dual system of the German or Swiss type. A new emphasis on the German dual system style apprenticeship in Hungary must not be taken as a sign that Hungary will establish a Germany-like VET system in the foreseeable future. The new emphasis of work-based learning in Sweden has not resulted in the establishment of an apprenticeship system comparable to those in Denmark and Norway and it is not likely that this will be the case in the next decade. The academic drift in all Visegrád countries and some Western countries – if continued at all – and the academic drift in Baltic and Southern European countries will probably not override the fundamental differences in their overall VET approaches in the short run given the significance of path dependency in VET. Thus, despite some convergence in key indicators mentioned above it is likely that the distinct character of European VET systems will prevail until 2030 and well after. Making the specifics of a countries' approach in VET with its strengths and weaknesses comprehensible to outsiders will remain as challenging as it has been proven to be in the past.

Europeanisation – denoting the societal effects of the European Union integration project – has certainly added to the complexities of the issue of convergence and divergence in VET. Contrary to general education, where EU member states forcefully defended their autonomy ([Lawn & Grek, 2012](#)), VET has been open to European cooperation right from the beginning of the European integration process ([de Olagüe Smithson, 2017](#)). The 1957 Treaty of Rome (European Economic Community, 1957) made a strong provision for vocational training, but it took ten years until a 'common vocational training policy' emerged in the form of ten 'common principles' (Council of the

European Communities, 1963), and another ten years to establish the European *Centre for the Development of Vocational Training* (Cedefop) as an agency for research and co-operation in 1975. Cedefop's early attempts at the 'approximation of standards' were not sustainable and it was later more successful in pushing for the learning outcomes approach and in contributing to the EU's transparency tools (see below). However, in parallel, the mutual recognition of Diplomas and Certificates developed into a separate strand of policies in VET in the 1980s.

By the early 1990s, a slump in economic growth and rising unemployment figures steered EU policy makers attention towards the mutual relationship between growth, competitiveness on global markets and education and training, paving the way for new approaches in supply-side employment policies ([Weishaupt, 2011](#)) and a new attention for lifelong learning ([West, 2012](#)). Finally, with the Copenhagen process and the attempt to replicate the Bologna process in the field of VET new forms of and a strengthened cooperation in VET have started. While mobility and cooperation projects within the *Leonardo da Vinci* programme²⁰ were already in place, the foundation for EU's current key policy instruments regarding VET date back to the Copenhagen Declaration (2002). Since then the European dimension in VET has been reinforced and various tools for the recognition and validation of competences and qualifications and approaches for improving quality assurance in VET have been established. However, with the exception of the Europass, the Common European Framework of Reference for Languages and the various mobility activities (all of them not specific to the field of VET policy), other instruments such as EQAVET, ECVET, EQF, ESCO or the EAfA²¹ have not yet reached European citizens (students and employers alike) in a sufficient way. But despite the limited use of some of these instruments and Member States' idiosyncratic ways of adopting to EU policies, some impacts of the Copenhagen process – in particular with regard to EQF – are visible in the Member states ([Ante, 2016](#); [Elken, 2016](#)). Hence, even if some instruments might never live up to the high expectations present at the time of the roll-out, and even if some instruments might even get abandoned in the years to come, the intensification of EU cooperation in VET is expected to survive well into the future. This statement will hold true, even when upcoming EU policies might replicate a rather loose and broad approach with regard to VET, as it has been criticized in the assessment of the ET2020 objectives ([Ecorys, 2014](#)).

The future of VET in Europe: Long-standing issues and emerging challenges

The Copenhagen process (reinforced by the Bruges Communiqué in 2010) has been a major factor in promoting VET reforms in European countries. According to [Cedefop \(2015b\)](#) VET has taken 'a more prominent position on national policy agendas and, for many national policy-makers, the Bruges communiqué has become both an inspiration and a catalyst for reform'. Based on a comprehensive monitoring of policy measures for the years 2010-2014 [Cedefop \(2015b\)](#) provided an individual policy priority profile for each member state which underlines the different starting positions and dynamics of each country. The report's findings include that work-based learning as well as measures to make VET more inclusive (e.g. reducing early school leaving, promoting LLL for

²⁰ A European Commission funding programme focused on the teaching and training needs of those involved in VET which started in 1995.

²¹ ECVET is the European Credit System for Vocational Education and Training, EQAVET is a network on European Quality Assurance in Vocational Education and Training, EQF is the European Qualifications Framework, ESCO the European Classification of Skills/Competences, Qualifications and Occupations and EAfA the European Alliance for Apprenticeships.

groups at risk) and the development of NQFs have been high on national policy agendas. However, in most countries, encouraging creativity, innovation and entrepreneurship has been a less prominent topic. Furthermore, progress has been also limited in the areas of monitoring and feedback to inform VET provision as well as the continuing professional development for VET teachers and trainers (*ibid.*, p. 109).

The clusters of countries classified according to their policy priorities in the aforementioned report do not provide any clear pattern as regards to their type of VET systems suggesting that there is practically no link between the fundamentals of VET systems and the recently championed VET policies. Also, the comparison of various labour market and education outcomes of different set-ups of upper-secondary VET does not provide any simple take-home message for policy making. In addition, it is difficult to assess VET systems as such, because they are always coupled with other parts of the education system as well as the employment and welfare systems. Rather than particular system features (e.g. whether the emphasis should be on work-based learning or transversal skills) the question on how to improve the adaptability and resilience of a VET system within a country's broader institutional setup will have to take centre stage.

The European Single Market, the free movement of goods, capital, services and labour in particular will continue to change the VET landscape across EU member states, with regions that used to be strongholds of manufacturing further losing ground and new regional clusters of industrial production emerging elsewhere, requiring high numbers of vocationally skilled workers. Effects of internal migration will ease or exacerbate the effects of declining birth rates in EU member states. Inflows from third country migrants and their future movement within the Union will require further adaptation of European education and lifelong learning systems, including VET. In the years up to 2030 the so-called fourth industrial revolution will very likely further add to a decline in demand for low and medium-skilled occupations, and a rise in demand for highly skilled, highly specialised workers (Eurofound, 2015; 2018, Oesch, 2013). Occupational roles are likely to become more demanding and specialised, asking for new bundles of skills; while it is an open question where and how these new skill bundles will be acquired, VET is certainly an option at hand.

VET will thereby have to incorporate research-based knowledge and breaking down the gap between knowledge mainly derived from participation in communities of practice and knowledge created by dedicated research. In this way, the academic drift of VET and the vocational drift of HE may become visible as two sides of one and the same process in a knowledge-based society, where practically all types of work require more and constantly updated skills. However, in a less optimistic scenario, work will be reorganised in ways resulting in high-skilled jobs on one extreme and jobs broadly deprived of demand for more advanced skills on the other, with the new low-skilled occupations left particularly vulnerable to low pay and unpleasant work conditions. It has been shown that VET – as a social institution – plays an active role in the processes leading to more or less pronounced levels of job polarisation (Fernández-Macías 2012). Broadly accessible, high-quality VET can weaken or even block trends towards job polarisation, as holders of intermediary skills can move forwards to do more demanding work and need not be replaced by higher education graduates. In short, there are good reasons to expect VET to have an impact on the routes taken in socio-economic development in the EU member states in the years ahead.

Finally, it will remain a key question whether or not VET graduates feel rightly entitled and committed to act as active citizen, forcefully supporting a liberal, democratic society and an overall positive stance with regard to European integration. At least in a number of countries, a fault line can be felt in many countries between the low and the highly educated as well as the graduates from VET tracks and their academic or HE opposite, with the former displaying fundamentally different political preferences than the latter (Bovens & Wille, 2017; Lauß & Schmid-Heher 2017). Former patterns, present in many countries, where academic tracks held all promises and pupils in academic tracks were considered as members of the future 'elite', while vocational tracks left little space for hope and chartered students to strictly non-elite positions, still cast their shadow. For moving forward towards a political union, and for safeguarding the fundamental values of the

European Union, it is therefore of vital importance to regard civic education as a component vital to VET and to obtain equal social esteem – including pay – for graduates of general/HE and VET streams. The recalibration of the EU policy goals with regard to education and the new emphasis on the importance of education for a European identity already have started to pave the way for that.²² In this respect VET policy makers need to perceive VET reform as an engine of change, not only for responding to changing needs of the labour market, but also for shaping the ways of cultural and social development. Indeed, it has to be questioned if any sharp dichotomy between VET and general/HE should have a place in the future at all.

²² See European Commission (2017) as well as: http://europa.eu/rapid/press-release_IP-17-4521_en.htm
http://ec.europa.eu/education/initiatives/european-education-area_en (accessed 31.10.2018)

List of abbreviations

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|----------|---|
| Cedefop | Centre Européen pour le Développement de la Formation Professionnelle (The European Centre for the Development of Vocational Training) |
| CEE | Central and Eastern Europe |
| CTE | Career and Technical Education |
| CVET | Continuing Vocational Education and Training |
| DACH | Germany (D), Austria (A) and Switzerland (CH) |
| EaFA | European Alliance for Apprenticeships |
| ECVET | European Credit System for Vocational Education and Training |
| EHEA | European Higher Education Area |
| EQAVET | European Quality Assurance in Vocational Education and Training |
| EQF | European Qualifications Framework |
| ESCO | European Classification of Skills/Competences, Qualifications and Occupations |
| ET2020 | Education and training 2020 (EU the framework for cooperation in education and training) |
| EU | European Union |
| EUROSTAT | A Directorate-General of the European Commission providing EU statistics |
| HE | Higher Education |
| ISCED | International Standard Classification of Education |
| IVET | Initial Vocational Education and Training |
| NQF | National Qualifications Framework |
| OECD | Organisation for Economic Co-operation and Development |
| OMC | Open method of coordination |
| PIAAC | Programme for the International Assessment of Adult Competencies |
| QCF | Qualifications and Credit Framework (of England, Northern Ireland and Wales) |
| TVET | Technical and Vocational Education and Training |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| VET | Vocational Education and Training |

References

- Ante, C. (2016). *The Europeanisation of Vocational Education and Training*. Springer.
- Baumeler, C., & Engelage, S. (2017). Neue Steuerung durch Klassifikationssysteme: Nationale Qualifikationsrahmen in der Schweiz, Österreich und Deutschland. In A. Bolder, H. Bremer & R. Epping (Eds.), *Bildung für Arbeit unter neuer Steuerung* (pp. 223-245). Wiesbaden: Springer VS.
- Becker, M., Balzer, L., Kammermann, M., & Spöttl, G. (2018). *Ausbildung zum Beruf. Internationaler Vergleich der berufsformigen Ausbildungskonzepte für benachteiligte Jugendliche*. Frankfurt am Main: Peter Lang.
- Bosch, G. (2016). Typologien nationaler Berufsbildungssysteme. *Zeitschrift für Berufs- und Wirtschaftspädagogik*, 112 (1), 15-36.
- Bovens, M. & Wille, A. (2017). *Diploma democracy. The rise of political meritocracy*. New York: Oxford University Press.
- Bray, T., & Varghese, N. (2011). *Directions in Educational Planning: International Experiences and Perspectives*: UNESCO & International Institute for Educational Planning.
- 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* (168).
- Busemeyer, M. R., & Trampusch, C. (Eds.). (2012). *The Political Economy of Collective Skill Formation*. Oxford: Oxford University Press.
- Cedefop. (2013a). *Renewing VET provision - Understanding feedback mechanisms between initial VET and the labour market*. Luxembourg: Publications Office of the European Union.
- Cedefop (2013b). *Labour market outcomes of vocational education in Europe. Evidence from the European Union labour force survey Luxembourg*. Publications Office of the European Union.
- Cedefop (2014) *Terminology of European education and training policy. A selection of 130 key terms. 2nd Edition*. Luxembourg: Publications Office of the European Union.
- Cedefop. (2015a). *Analysis and overview of national qualifications framework developments in European countries. Annual report 2014*. Luxembourg: Publications Office of the European Union.
- Cedefop. (2015b). *Stronger VET for better lives: Cedefop's monitoring report on vocational education and training policies 2010-14*. Luxembourg: Publications Office of the European Union.
- Cedefop. (2017a). *The changing nature and role of vocational education and training in Europe. Conceptions of vocational education and training: an analytical framework* (Vol. Volume 1, Cedefop research paper; No 63). Luxembourg: Publications Office of the European Union.
- Cedefop. (2017b). *The changing nature and role of vocational education and training in Europe. Results of a survey among European VET experts* (Vol. Volume 2, Cedefop research paper; No 64). Luxembourg: Publications Office of the European Union.
- Cedefop. (2018a). *Apprenticeship schemes in European countries. A cross-nation overview*. Luxembourg: Publications Office of the European Union.
- Cedefop. (2018b). *The changing nature and role of vocational education and training in Europe. The responsiveness of European VET systems to external change (1995-2015)* (Vol. 3, Cedefop research paper; No 67). Luxembourg: Publications Office of the European Union.
- Cedefop. (2018c). *The changing nature and role of vocational education and training in Europe. Education and labour market outcomes for vocational education and training graduates in different types of VET systems in Europe* (Volume 5, Cedefop research paper 69). Luxembourg: Publications Office of the European Union.
- Cedefop. (forthcoming-a). *The changing nature and role of vocational education and training in Europe. Synthesis report*. Luxembourg: Publications Office of the European Union.

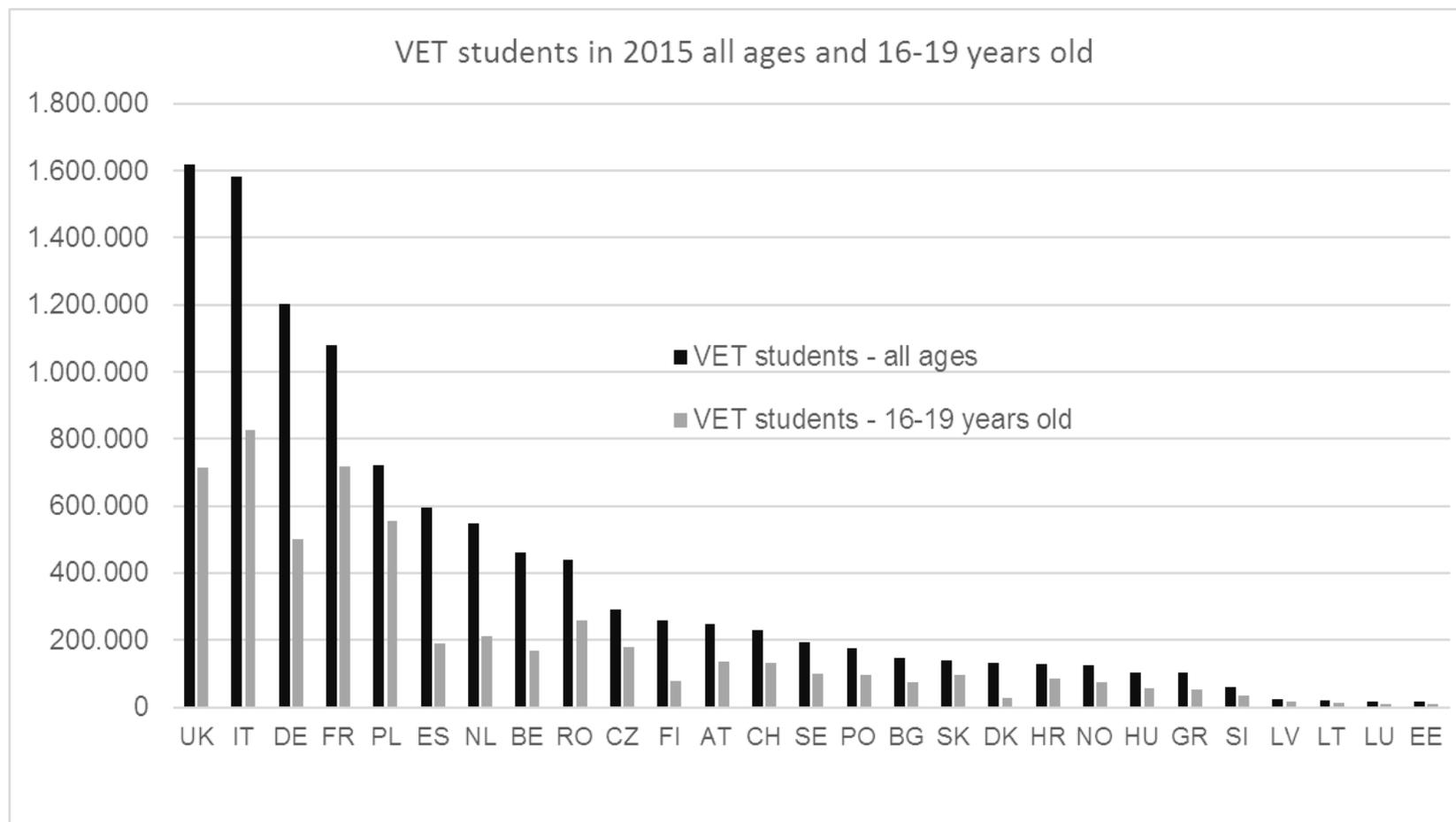
- Cedefop. (forthcoming-b). Financing and Co-funding of Apprenticeships in the EU. Luxembourg: Publications Office of the European Union.
- Cedefop. (2019a). The changing nature and role of vocational education and training in Europe: Finland Case study
- Cedefop. (2019b). The changing nature and role of vocational education and training in Europe: Netherlands Case study
- Cedefop. (2019c). The changing nature and role of vocational education and training in Europe: France Case study
- Cedefop. (2019d). The changing nature and role of vocational education and training in Europe: Austria Case study
- Cedefop. (2019e). *The changing nature and role of vocational education and training in Europe. Vocationally oriented education and training at higher education levels* (Vol. Volume 6, Cedefop research paper). Luxembourg: Publications Office of the European Union.
- Conlon, G., Halterbeck, M., Lane, M., Flytkjaer, R., Innes, D., Benard, C., . . . Hearn, D. (2013). An international comparison of apprentice pay.: Final Report: London Economics.
- de Olagüe Smithson, C. (2017). From coal to knowledge: A history of the VET policies in the European Union. *Revista Española de Educación Comparada*(29).
- Deissinger, T., Jørgensen, C. H., Fuller, A., & Aff, J. (2013). *Hybrid qualifications: Structures and problems in the context of European VET policy*. Bern: Peter Lang
- Ecorys. (2014). Interim Evaluation of the strategic framework for European cooperation in education and training (ET 2020). Final Report to the Directorate-General for Education and Culture of the European Commission. Luxembourg: Publications Office of the European Union.
- Elken, M. (2016). *Standardizing education? The development of the European Qualifications Framework and national qualifications frameworks (Dissertation)*. University of Oslo.
- Eurofound (2015). Upgrading or polarisation? Long-term and global shifts in the employment structure: European Jobs Monitor 2015. Luxembourg: Publications Office of the European Union.
- Eurofound (2018). Automation, digitisation and platforms: Implications for work and employment. Luxembourg: Publications Office of the European Union.
- European Commission. (2012). Apprenticeship supply in the Member States of the European Union - Final report Luxembourg: Publications Office of the European Union.
- European Commission. (2015). High-performance apprenticeships & work-based learning: 20 guiding principles.
- European Commission. (2017). Strengthening European Identity through Education and Culture. (COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS)
- Facer, K. (2009). Educational, social and technological futures: a report from the Beyond Current Horizons Programme.
- Facer, K., & Sandford, R. (2010). The next 25 years? Future scenarios and future directions for education and technology. *Journal of computer assisted learning*, 26(1), 74-93.
- Fernández-Macías, E. (Ed.) (2012). *Transformation of the employment structure in the EU and USA, 1995-2007*. Basingstoke: Palgrave Macmillan
- Forster, A. G., & Bol, T. (2018). Vocational education and employment over the life course using a new measure of occupational specificity. *Social Science Research*, 70, 176-197.
- Gonon, P. (2016). 'Zur Dynamik und Typologie von Berufsbildungssystemen–eine internationale Perspektive'. *Zeitschrift für Pädagogik*, 62(3), 307-322.
- Green, A., Leney, T., & Wolf, A. (1999). *Convergence and divergence in European education and training systems*. London: University of London, Institute of Education.

- Greinert, W.-D. (2004). European vocational training systems: the theoretical context of historical development. In W.-D. Greinert & G. Hanf (Eds.), *Towards a history of vocational education and training (VET) in Europe in a comparative perspective: proceedings of the first international conference October 2002, Florence. Volume I, The rise of national VET systems in a comparative perspective*. (Vol. 103). Luxembourg: Office for Official Publications of the European Communities.
- Hanushek, E. A., Schwerdt, G., Woessmann, L., & Zhang, L. (2017). General education, vocational education, and labor-market outcomes over the lifecycle. *Journal of Human Resources*, 52(1), 48-87.
- Haskel, J., & Holt, R. (1999). *Anticipating future skill needs: Can it be done? Does it Need to be Done?* Sudbury: DfEE (Skills task force research group. Research paper 1).
- 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*, 13 (6), 683-698.
- Kogan, I., Noeke, C., & Gebel, M. (Eds.). (2012). *Making the transition - Education and Labor Market Entry in Central and Eastern Europe*. Stanford: Stanford University Press.
- Kyvik, S. (2008). *The dynamics of change in higher education: Expansion and contraction in an organisational field* (Vol. 27): Springer.
- Kyvik, S., & Lepori, B. (Eds.). (2010). *The Research Mission of Higher Education Institutions - Outside the University Sector Striving for Differentiation*. Dordrecht: Springer.
- Lawn, M., & Grek, S. (2012). *Europeanizing education governing a new policy space*. Didcot: Symposium Books.
- Lauß, G. & Schmid-Heher, S. (2017). Politische Bildung an Wiener Berufsschulen: Demokratische und autoritäre Potentiale von Lehrlingen. In: Mitnik, P. (Ed.). *Empirische Einsichten in der Politischen Bildung*. Innsbruck: Studienverlag, pp. 95-124.
- Lerman, R. (2017). Skill Development in Middle-Level Occupations. In: Warhurst, C., Mayhew, K., Finegold, D. & J. Buchanan (Eds). *The Oxford Handbook of Skills and Training*. New York: Oxford University Press, pp. 180-200.
- Markowitsch, J., & Hefler, G. (2018). Staying in the Loop: Formal Feedback Mechanisms Connecting Vocational Training to the World of Work in Europe. *International Journal for Research in Vocational Education and Training*, 5(4), 285-306.
- Markowitsch, J., & Wittig, W. (2019). Classifying apprenticeships in Europe. Towards a new conceptual framework for the changing notion of apprenticeship. In Deissinger, T., Hausschildt, U., Gonon, P. & S. Fischer (Eds.), *Contemporary Apprenticeship Reforms and Reconfigurations*. Zürich: LIT Verlag.
- McCoshan, A. (2008). Beyond the Maastricht Communiqué: developments in the opening up of VET pathways and the role of VET in labour market integration. *Consolidated Final Report, ECOTEC*.
- Mikulec, B., & Ermenc, K. S. (2016). Qualifications Frameworks Between Global and European Pressures and Local Responses. *SAGE Open*, 2016, Vol.6(2).
- Oesch, D. (2013). *Occupational change in Europe. How technology and education transform the job structure*. London: Oxford University Press.
- Pilcher, N., Fernie, S., & Smith, K. (2017). The impact of National Qualifications Frameworks: by which yardstick do we measure dreams? *Journal of Education and Work*, 30(1), 1-12.
- Rageth, L., & Renold, U. (2017). The linkage between the education and employment systems: Ideal types of vocational education and training programs: *KOF Working Papers*.
- Redecker, C., Leis, M., Leendertse, M., Punie, Y., Gijsbers, G., Kirschner, P., . . . Hoogveld, B. (2011). *The Future of Learning: Preparing for Change*. In JRC (Ed.), *JRC Scientific and Technical Reports*. Luxembourg: Publications Office of the European Union.

- Roosalu, T., & Saar, E. (2018). The Changing Nature and Role of vocational education and training in Europe. Work Assignment 2. Country Report Estonia. In Cedefop (Ed.).
- Scott, C. L. (2015). The futures of learning 3: What kind of pedagogies for the 21st century? In UNESCO (Ed.), *Education, Research and Foresight* (Vol. 15).
- Smeby, J.-C. (2006). *Professionalism in a knowledge society: The academic drift of professional education in the 'new' professions*. Working paper.
- Smeby, J.-C. (2015). *Academic drift in vocational education? From Vocational to Professional Education*. London: Routledge.
- Soskice, D. W., & Hall, P. A. (2001). *Varieties of capitalism. The institutional foundations of comparative advantage*. Oxford: Oxford University Press.
- Stoyanov, S., Hoogveld, B., & Kirschner, P. (2010). Mapping Major Changes to Education and Training in 2025 *JRC Technical Notes* (Vol. JRC59079 - 2010). Luxembourg: Publications Office of the European Union.
- Ulicna, D., Luomi Messerer, K., & Auzinger, M. (2016). Study on higher Vocational Education and Training in the EU. Final report. European Commission, Directorate-General for Employment, Social Affairs and Inclusion.
- Weishaupt, J. T. (2011). *From the Manpower Revolution to the Activation Paradigm - Explaining Institutional Continuity and Change in an Integrating Europe*. Amsterdam: Amsterdam University Press.
- West, J. (2012). The evolution of European Union policies on vocational education and training. *LAKESS research paper, 34*.
- West, J. (2013). Vocational Education and Training in Eastern Europe: Transition and Influence. *LLAKES Research Paper, 41*.

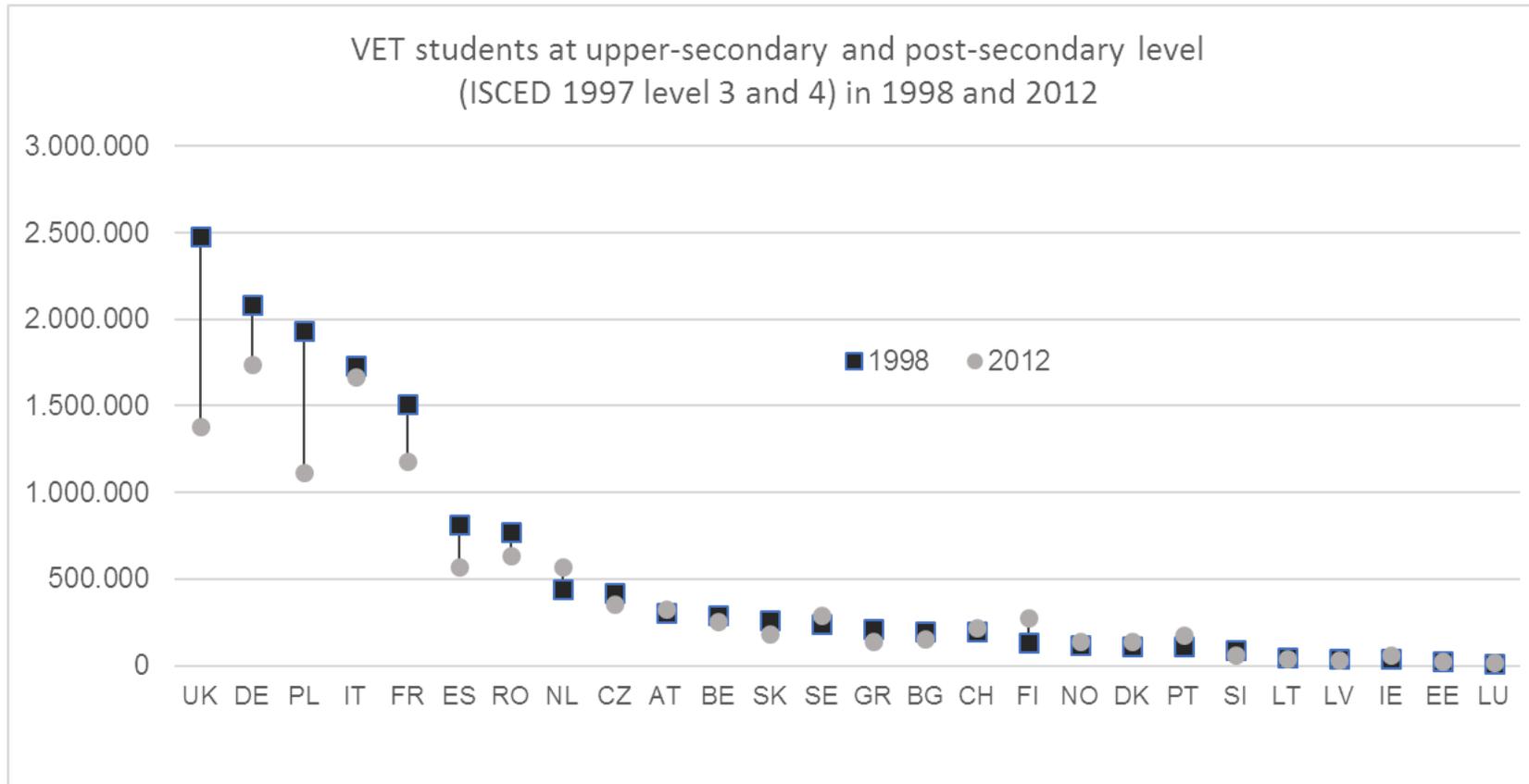
Annex

Figure 2: VET students at upper-secondary level all age groups and 16-19 years old in 2015 (ISCED 2011) – absolute figures



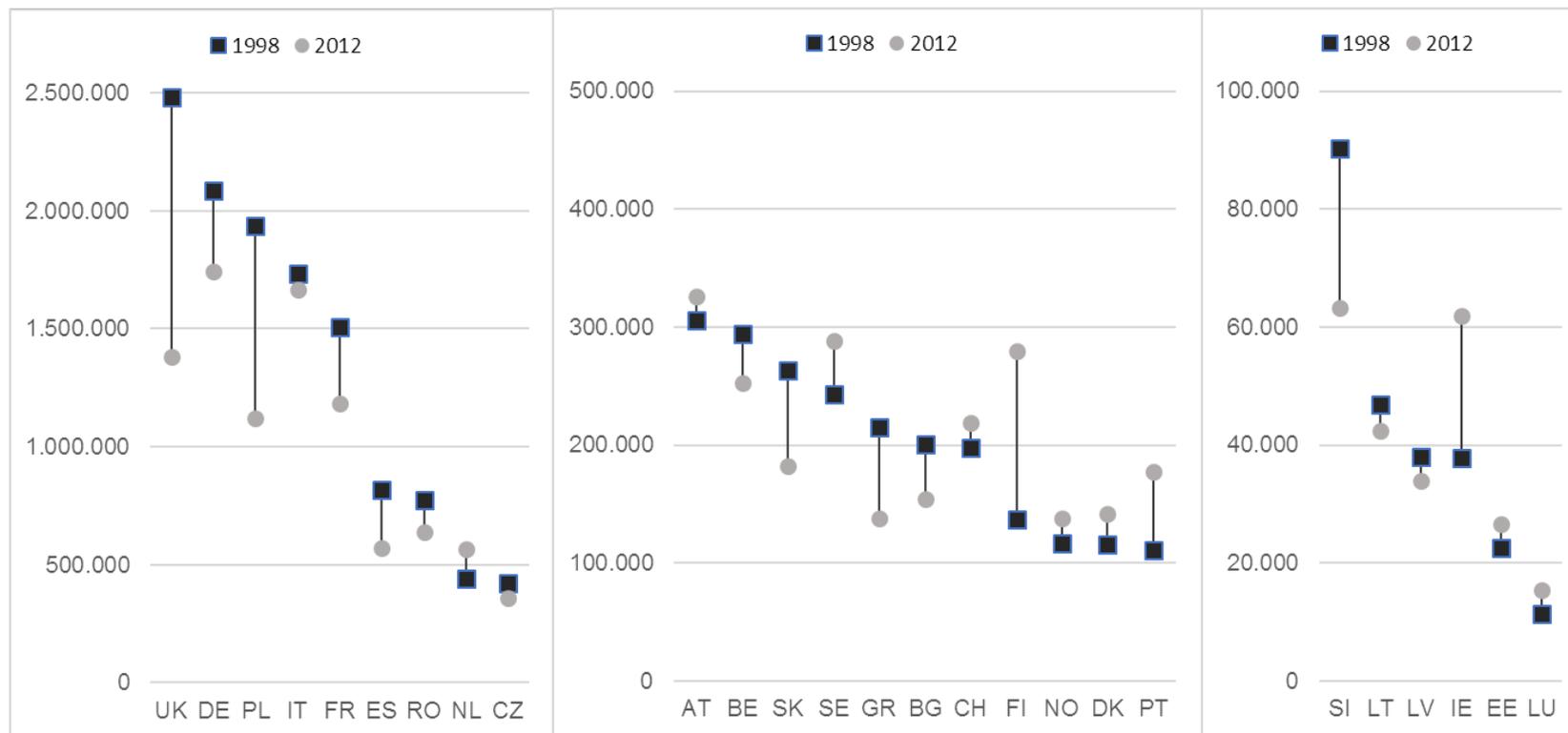
Source: Eurostat, [educ_uoe_enrs05], own calculations

Figure 3: VET students at upper-secondary and post-secondary level in 1998 and 2012 (ISCED 1997) – absolute figures



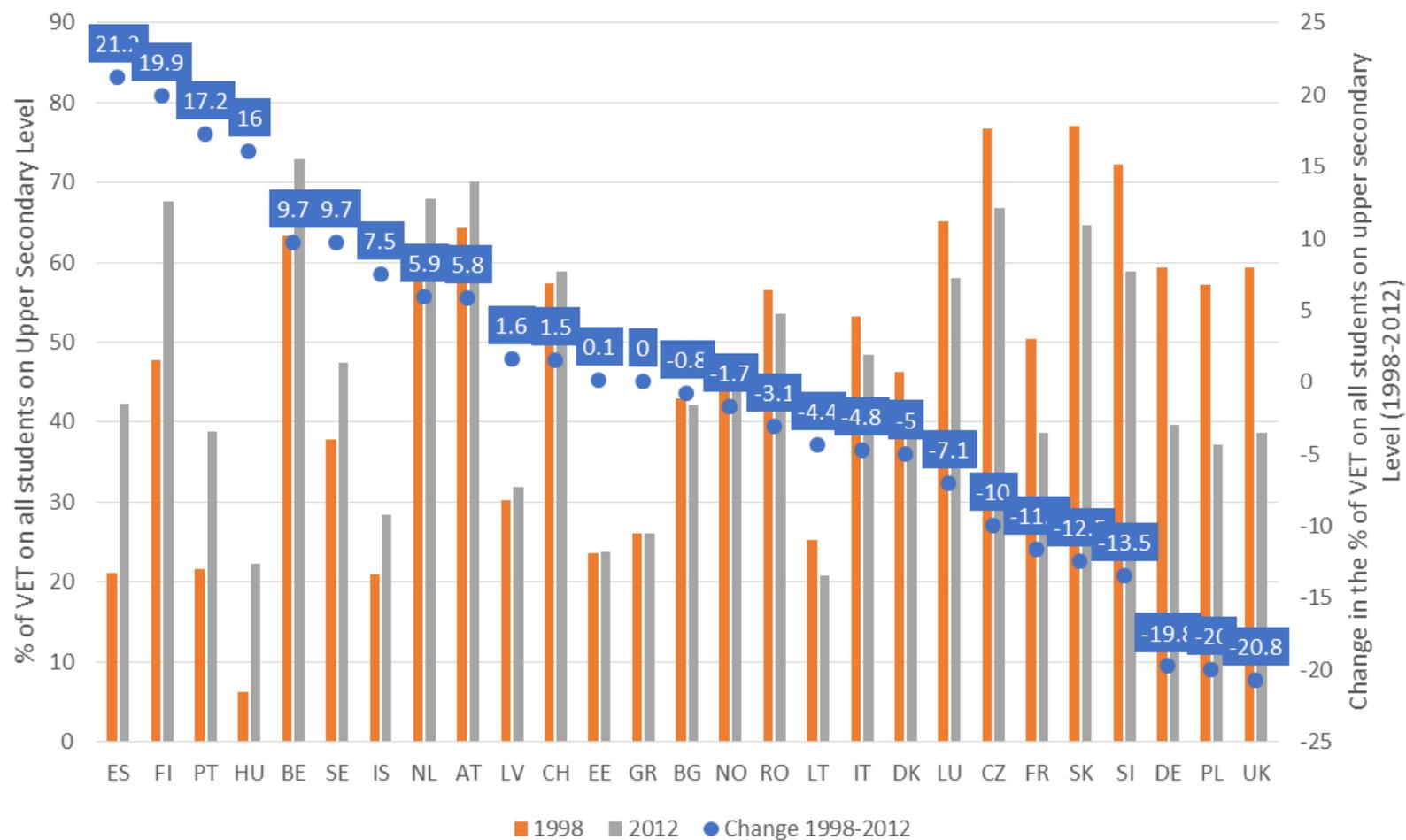
Source: Eurostat [educ_enr1at], own calculation, data for Belgium from 2011 instead of 2012

Figure 3b (Alternative): VET students at upper-secondary and post-secondary level in 1998 and 2012 (ISCED 1997) – absolute figures



Source: Eurostat [educ_enr1lat], own calculation, data for Belgium from 2011 instead of 2012

Figure 4: Change in the share of VET at upper secondary education from 1998 to 2012 (ISCED 1997 level 3) - percentage points



SOURCE: Eurostat [educ_ipart_s], own calculations, data for Switzerland from 2002, for Belgium from 1999

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