



From education to working life

The labour market outcomes
of vocational education and training



From education to working life

The labour market outcomes
of vocational education and training

A great deal of additional information on the European Union is available on the Internet.

It can be accessed through the Europa server (<http://europa.eu>).

Cataloguing data can be found at the end of this publication.

Luxembourg:
Publications Office of the European Union, 2012

ISBN 978-92-896-1125-1
ISSN 1608-7089
doi: 10.2801/92129

© European Centre for the Development of Vocational Training, 2012
All rights reserved.

Designed by Fotone - Greece
Printed in the European Union

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

E-mail: info@cedefop.europa.eu

www.cedefop.europa.eu

Christian F. Lettmayr, *Acting Director*

Hermann Nehls, *Chair of the Governing Board*

Foreword

The demand for skills has been modified not only by the current economic crisis, which has resulted in high unemployment for both young people and adults, but also by several longer-term trends: technical progress, globalisation, an ageing population and, more recently, greener economies raise the question of whether the skills and qualifications provided by education systems in Europe will be able to satisfy changing labour market needs.

Much European policy aims to address these challenges. *Europe 2020 – An agenda for new skills and jobs* and the *Bruges communiqué* both underline the importance of investing in people's skills and ensuring they remain relevant to labour market needs. They both point to the particular role of vocational education and training (VET) in this regard.

There is a considerable amount of empirical evidence on the effectiveness of education generally. But a lack of data has so far prevented a full and, above all, comparative European assessment of the consequences for young people of taking the VET route to the labour market.

This report fills this gap by providing a detailed comparative analysis using the European Union labour force survey 2009 ad hoc module on the entry of young people into the labour market. It looks not only at the final employment outcomes of young people but also at the process of transition to the labour market.

The findings of this report indicate a decidedly positive outcome for VET: higher employment rates in the young age groups, speedier transitions and better job matches. These findings should encourage policy-makers to strengthen policies aimed at modernising VET.

Christian F. Lettmayr
Acting Director of Cedefop

Acknowledgements

This report is the result of a team effort, with contributions from Cedefop colleagues Alex Stimpson, who coordinated and edited the study under the supervision of Pascaline Descy (Head of Research and Policy Analysis), along with Giovanni Russo and Marco Serafini, who provided valuable input and suggestions. Cedefop is grateful to the team at Gruppo Clas, Italy, and in particular to Emilio Colombo (University of Milano-Bicocca) for the research and drafting.

Table of contents

Foreword	1
Acknowledgements	2
Executive summary	8
1. Introduction	11
1.1. Education choices and the transition to the labour market	13
1.2. Linking education to labour market outcomes	13
1.3. Defining VET	15
1.4. Structure of this report	17
1.5. General empirical approach	17
1.6. Data issues and revisions	19
2. VET graduates in Europe	21
3. Characteristics and background of VET graduates	26
3.1. Gender	26
3.2. Influence of parental education	27
4. Education outcomes of VET	31
5. Labour market outcomes of VET	34
5.1. Overview of recent medium-level graduates	34
5.2. Overview of young adults	36
5.3. Overview of young adults no longer in education	38
5.4. Labour market outcomes by gender	39
5.5. Employability: experience matters	40
6. Transition to the labour market	46
6.1. Apprenticeship and tertiary education	50
6.2. Finding a good job: methods and practices	52

7. Occupations and sectors of activity	54
7.1. Occupations	54
7.2. VET and job polarisation	56
7.3. Sectors	60
7.4. Does VET promote entrepreneurship?	63
7.5. Job quality	64
8. Wages and income	68
8.1. The role of individual ability	71
9. Lessons for VET and its responsiveness to labour market needs	74
10. Summary of key findings	79
List of abbreviations	83
References	84

List of tables, figures and boxes

Tables

1. VET graduates by type of programme and gender, 15-34 year-olds, EU27+, 2009 (% and thousands)	27
2. Propensity of medium-level graduates to continue with education by orientation, 18-24 year-olds, EU-27+, 2009	31
3. Medium-level graduates not in education by occupational status, orientation and age, EU-27+, 2009 (%)	64

Figures

1. Labour status for medium-level graduates by educational orientation and age, EU-27+, 2009	19
2. Educational attainment, 15-34 year-olds, EU-27+, 2009	21
3. Educational attainment and orientation, 15-34 year-olds, EU-27+, 2009	22
4. VET graduates by type of programme, 15-34 year-olds, EU-27+, 2009	23
5. Distribution of medium-level graduates by educational orientation, 15-34 year-olds, 2009	24
6. VET graduates by type of programme, 15-34 year-olds, 2009	25

7. Educational attainment by orientation and gender, EU-27+, 2009	26
8. Educational attainment for 25-34 year-olds by parents' education background, EU-27+, 2009	28
9. Educational attainment and orientation for 15-34 year-olds by parents' education background, EU-27+, 2009	29
10. Proportion of medium-level graduates that continue with education by orientation, 18-24 year-olds, EU-27+, 2009	33
11. Labour status of medium-level graduates by orientation, 18-24 year-olds, EU-27+, 2009	35
12. Employment status by educational attainment and orientation, 25-34 year-olds, EU-27+, 2009	37
13. Employment status of medium-level graduates no longer in education by orientation and age, EU-27+, 2009	38
14. Employment status of medium-level graduates by orientation and gender, 25-34 year-olds, EU-27+, 2009	40
15. Employment rates for medium-level graduates by age and level of experience, EU-27+, 2009	42
16. Employment rates for medium-level graduates by orientation and level of experience, 25-34 year-olds, EU-27+, 2009	43
17. Difference in employment rates for medium-level graduates by orientation and level of experience, 25-34 year-olds, 2009	44
18. Employment rates for medium-level VET graduates by type of VET, level of experience and age, EU-27+, 2009	44
19. Length of time between leaving formal education and starting the first job, medium-level graduates by orientation, 25-29 year-olds, EU-27+, 2009	47
20. Time elapsed since start of current job for medium-level graduates by orientation and age, EU-27+, 2009	48
21. Duration of first job for medium-level graduates by orientation and age (solely jobs lasting more than three months), 25-29 year-olds, EU-27+, 2009	48
22. Minimum duration of periods without employment for medium-level graduates by orientation after leaving formal education for the last time, EU-27+, 2009	49
23. Education-to-work transition process indicator for medium-level graduates by orientation and age, EU-27+, 2009	50
24. Transition from formal education to the labour market for medium-level VET graduates by type of VET, 20-34 year-olds, EU-27+, 2009	51

25. Minimum duration of periods without employment after leaving formal education for the last time for medium-level VET graduates by type of VET and age, EU-27+, 2009	51
26. Channels for finding the first job of at least three months for medium-level graduates by orientation and age, EU-27+, 2009	52
27. Employed medium-level graduates by orientation and type of occupation, EU-27+, 2009	55
28. Employed tertiary-level graduates by type of occupation, EU-27+, 2009	55
29. Employed medium-level graduates by orientation and aggregated occupation, 25-34 year-olds, 2009	57
30. Routine intensity and importance and VET intensity, 20-34 year-olds, EU-27+, 2009	59
31. Offshorability and VET intensity, 20-34 year-olds, EU-27+, 2009	60
32. Employed medium-level graduates by orientation and sector of activity, 15-34 year-olds, EU-27+, 2009	61
33. Proportion of medium-level graduates working in the service sector by educational orientation, 15-34 year-olds, EU-27+, 2009	61
34. Proportion of medium-level graduates working in the primary, manufacturing and construction sectors by educational orientation, 15-34 year-olds, EU-27+, 2009	62
35. Distribution of medium-level graduates working in detailed manufacturing sectors by educational orientation, 15-34 year-olds, EU-27+, 2009	62
36. Medium-level graduates not in education by contract type, orientation, age and gender, EU-27+, 2009	66
37. Employed medium-level graduates not in education by full-time/part-time status, orientation and age, EU-27+, 2009	66
38. Employed medium-level graduates not in education by full-time/part-time status, orientation age and gender, EU-27+, 2009	67
39. Income decile of medium-level graduates by orientation, EU-27+, 2009	68
40. Mean income decile of medium-level graduates by orientation, 2009	69
41. Distribution of medium-level VET graduates by income decile and type of VET, EU-27+, 2009	70

42. Mean income decile of medium-level graduates by orientation, EU-27+, 2009	70
43. Mean income decile of medium-level graduates by orientation and age, EU-27+, 2009	72
44. Mean income decile of medium-level graduates by orientation and level of experience, 20-24 year-olds, EU-27+, 2009	72
45. Income decile of tertiary level graduates by type of tertiary education, 25-34 year-olds, EU-27+, 2009	73
46. Expansion and replacement demand by occupation, 15-64 year-olds, EU-27+, forecast to 2020; share of VET in total employment, 20-34 year-olds, EU-27+, 2009	76
47. Occupation-specific component of employment growth and VET intensity, EU-27+	77

Boxes

1. Educational orientation: key findings	25
2. Characteristics and background of VET graduates: key findings	30
3. Education outcomes of VET: key findings	32
4. Labour market outcomes of VET: key findings	45
5. Education-to-work transition: key findings	53
6. Occupations, sectors and job quality: key findings	67
7. Wages: key findings	73

Executive summary

The European labour market is undoubtedly undergoing major changes. On top of the recent problem of high unemployment, technical progress, globalisation – which has prompted reorganised production processes – and an ageing population have considerably modified the demand for skills over the past few decades. As a result of these long-term trends, it is not certain that the skills and qualifications provided by the European educational system will be able to satisfy current and emerging needs, which means that there is a possibility of further imbalances and gaps in the supply and demand for skills. To address these challenges, in December 2008 the European Commission launched the ‘New skills for new jobs’ initiative to provide a general framework for the implementation of policy actions in the European Union (EU). Building on this initiative, the Commission stressed the need to reinforce the attractiveness of VET through, for example, *An agenda for new skills and jobs: a European contribution towards full employment* and *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy* (European Commission, 2010a; 2010b).

To support evidence-based policy-making and adapt education and training, including VET, it is important to improve knowledge not only of the European labour markets, but also of the outcomes of the various education options. While there is a considerable amount of empirical evidence on the effectiveness of education in general, the lack of available data has prevented a full and, above all, comparative assessment of VET outcomes. This report fills this gap using the EU labour force survey 2009 ad hoc module, which is the first comprehensive and homogeneous database to enable cross-country comparisons of VET and labour market outcomes. For the first time, this sheds considerable light on the consequences of education choices for young people in Europe.

VET is a relevant education choice. Overall, in 2009, 35.2 million 15-34 year-olds had a medium-level VET education (ISCED 3 and 4) in Europe. Of the 58.5 million 15-34 year-olds that completed only medium-level education,

6 in 10 opted for VET. The popularity of VET varies from country to country, with VET systems most popular in the Czech Republic, Austria and Slovakia and least popular in Iceland, Ireland and Portugal.

Parental education appears to have a strong influence on the education choices of young Europeans: the higher the educational level of the parents, the higher education level attained by their children. This means that the educational attainment and orientation (VET or general) of parents influence young people when they make the choice between VET and general education.

For many young adults secondary and upper secondary education is only an intermediate step toward a higher level of education, so an assessment of the labour market outcomes of VET should be complemented by an assessment of the education choices that follow VET. Individuals with a general education are more likely to continue studying at the tertiary level, whereas VET graduates are more likely to seek employment after completing medium-level education. More specifically, while overall three quarters of 18-24 year-olds completing general education (upper secondary or post-secondary non-tertiary) continue their formal education, only 3 in 10 VET graduates continue their studies. In fact, 73% leave formal education to enter the labour market. Moreover, the stronger the workplace content of VET, the higher the propensity for students to move directly into the labour market rather than to continue studying.

This report also shows that VET is more successful than general education at getting individuals into work in the short and medium terms. Medium-level VET graduates from the youngest age groups are more likely to be employed or to be actively seeking work than medium-level general education graduates. Furthermore, the more workplace content in the education, particularly when combined with previous work experience, the better the labour market outcomes.

These results are confirmed by analysis of the transition from education to the labour market. VET graduates find employment faster than general education graduates. More generally, the transition is smoother for VET graduates, i.e. they establish more stable employment relationships over time. In particular, they have more cumulative spells of time in work and fewer without work. Their first job tends to last longer, which could indicate a closer match between occupations and skills. Finally, VET is more likely than general education to provide both men and women with access to permanent full-time jobs, especially early in their careers.

The better labour market outcomes of VET graduates are also reflected in higher initial earnings. VET carries a wage premium over general educa-

tion, even after controlling for age, gender and work experience. However, this premium appears to decline over time.

However, the fact that VET graduates are more likely than general education graduates to work rather than continue studying means that they are potentially sacrificing the longer-term gains associated with further education in favour of the short-term benefits. Overall, VET graduates with fewer years of education who enter the labour market earlier can be penalised in the longer term compared with their general education peers, who are more likely to attend tertiary level education and thus tend to invest more in education at the beginning of their working life. Supplementing initial VET with on-the-job training and continuing training would enable VET graduates to narrow this gap.

In addition, as a result of the substantial changes in European labour markets expected in the coming decades, the skill content of occupations is expected to change, particularly owing to new or different job tasks. Within this context, VET graduates naturally tend to be concentrated in technical occupations and particularly in medium-skill occupations (mainly craft and related trades). Although these medium-skill occupations will still create job opportunities due to replacement demand, a net contraction is expected over the medium term. This poses a major challenge and underlines the importance of the role of lifelong and work-based learning in upskilling the labour force and enabling individuals in medium-skill occupations to anticipate labour market restructuring.

Finally, the lack of jobs tends to force high-skill individuals to accept jobs that do not necessarily require high-level qualifications, which displaces individuals with lower-level qualifications and skills. This can be particularly problematic in regions with a high and growing proportion of graduates with tertiary degrees, who could exert supply-side pressure on people with an upper secondary or post-secondary (VET) qualification, leading to significant displacement in the labour market.

Notwithstanding the above concerns, overall the findings of this report are decidedly positive for VET, which should encourage policy-makers to strengthen policies that promote the modernisation of VET.

Introduction

The impact of several important factors on European labour markets has significantly changed the nature of the demand for skills over the past few decades. The literature and available evidence point to three main reasons for those changes: first, technical progress has shifted the bias towards skilled workers, giving them a premium over the unskilled; second (but complementary to the first), globalisation has prompted the reorganisation of production processes, with outsourcing and off-shoring increasing the relative demand for less skilled workers in developing and emerging economies, while the relative demand for highly skilled workers has increased in advanced economies; and third, demographic trends have significantly affected both the demand and supply sides of the skills market. In an ageing society, skills obsolescence intensifies the need for continuing training, and structural demand for certain skills, in particular those related to the health and care of the elderly, is likely to increase.

The overall impact of these factors has changed the quantity and quality of the demand for skills and qualifications in Europe. In the longer term, it is not certain that the skills and qualifications provided by the European educational system will be able to satisfy current and emerging needs, and there may be further imbalances and gaps in skills. To address this challenge, in December 2008 the European Commission launched the *New skills for new jobs* initiative to provide a general framework for the implementation of policy actions within the EU.

In addition, to keep pace with the rapid changes in European labour markets, the European Commission's recent communications, for example *An agenda for new skills and jobs: a European contribution towards full employment* and *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy* (European Commission, 2010a; 2010b) stress the need to make VET more attractive.

To support evidence-based policy-making and adapt education and training, including VET, it is important to increase knowledge not only of the European labour markets but also of the outcomes of the various education options. While there is considerable empirical evidence on the effectiveness

of education in general, lack of data has prevented a full and, above all, comparative assessment of VET outcomes, in particular concerning returns to education ⁽¹⁾. This report aims at helping to fill this gap.

The EU labour force survey (LFS) ad hoc module 2009 (AHM) is a major improvement in data provision as it is the first comprehensive and relatively homogeneous database to enable cross-country comparisons of VET and labour market outcomes. The AHM is specially designed to capture the transition from education to work (European Commission, 2008). However, when combined with the LFS core module, it also provides detailed information on labour market outcomes and, for the first time, sheds considerable light on the consequences of education choices for young people in Europe.

While not foreseen at the time of the AHM decision, the analysis coincides with an exceptional period for the European and world economies, which in 2009, the year of the survey, were experiencing one of the worst financial crises in decades. This will have a clear impact on the findings. Moreover, all recent analyses indicate the disproportionate impact of the crisis on young people (ILO, 2011; OECD, 2011), which is the main focus of the 2009 AHM.

While assessing the impact of the crisis on the European labour market is beyond the scope of this report, the current situation needs to be considered when interpreting its findings ⁽²⁾. Unfortunately, the AHM data are available for only one year and so it is not possible to carry out a temporal comparison, which is the main method used to isolate the effect of a particular year or period.

Is 2009 a representative year or an exceptional one? To be able to answer that question, the EU LFS would have to include on a regular basis a variable on the programme orientation of the highest attained level of education. This would enable regular and systematic assessment of the outcomes of various educational pathways and therefore support monitoring of the strategic objectives of the Bruges communiqué using an outcome-based approach.

In addition to the exceptional economic situation in 2009, a technical factor also likely to have an impact was that not all countries conducted the AHM in the same reference period: most countries conducted the survey in the second quarter, one third conducted a continuous survey and the rest used a different reference period altogether. Thus, the rapid deterioration in economic conditions during 2009 combined with the different survey reference periods may impair cross-country comparability to a certain extent.

⁽¹⁾ See, among others, Blundell et al. (2005); Harmon and Walker (1999); McIntosh (2006); Dearden et al. (2002); Dearden (1999). Cedefop (2011g) provides a qualitative analysis based on comparative research.

⁽²⁾ The implications of the current crisis on VET individuals are further explored in Chapter 9.

1.1. Education choices and the transition to the labour market

Two issues underpin the analysis of VET systems and their effects on labour market outcomes presented in this report. First, VET is only one of the possible education choices. Indeed, the major distinction emphasised in this report is that between VET and general initial education. Therefore, the strengths and weaknesses of medium-level VET are assessed by comparing it with general education and, on occasion, with technical or theoretical tertiary education. Second, the transition of young people from education to working life can be best described as a process. Labour market outcomes can be considered the final or intermediate step in this process, although ideally analysis of outcomes should be complemented by analysis of the transition process that preceded them.

The same employment outcomes can be achieved in several ways: through a smooth and easy process leading to a good job immediately after completing education, or through a bumpy process involving several periods of unemployment. Moreover, the qualitative features of both the outcome and the process can be different: a permanent job is different from a temporary one, and changing jobs frequently is not the same as keeping the same job for a longer period.

1.2. Linking education to labour market outcomes

The link between education and the labour market is the subject of a vast body of literature. Despite differences in the findings of the various studies, they share some problems and concerns, which often boil down to whether it is possible to identify a causal link between education and labour market outcomes, or whether interpretation should be restricted to simple correlations.

General consensus highlights the positive association between education and labour market returns. The fact that individuals with a higher level of education tend to get better and more highly paid jobs than those with lower levels of education raises the question of whether these better labour market outcomes truly reflect the level and type of education, or whether they reflect another variable that can be linked to both the education choice and the labour market. We know that factors such as family background – for example, wealthy or highly educated parents – are also associated with

better labour market outcomes. The access of individuals from richer or better educated families to wider, more powerful networks enables them to get a better, more highly paid job regardless of the attained level of education ⁽³⁾. Personal qualities could play an even greater role since more able individuals are likely to achieve higher educational levels and, thus, better jobs and higher earnings. But how is it possible to disentangle the effect of education, which is observable, from the effect of ability, which is not observable? Since education is observable and ability is not, ignoring the latter may lead to the erroneous attribution of ability to education.

Returning to issues more closely related to the main focus of this work, the comparison between different types of education, for example, VET and general education, can be made only if the choice between general education and VET is truly 'random', i.e. when it is not systematically related to the individual (personal qualities and abilities) or to the nature of his or her background (family). Otherwise, as confirmed by the literature and the first part of this report, the association between VET and labour market outcomes cannot be interpreted as a causal link. This can be illustrated by looking at the effect of gender. VET is chosen predominantly by men, who are more likely to have better labour market outcomes (i.e. higher probability of getting a job, higher wages, etc.). Therefore, without controlling for gender when comparing the labour market outcomes of VET with those of general education, the gender effect could be mistakenly attributed to VET.

A similar problem arises in relation to ability. As argued by Meer (2007), students with stronger practical and manual abilities benefit more from VET-oriented education programmes than from more academically oriented ones. However, the actual outcome is inevitably linked to the demand side of the market (i.e. the demand for skills and qualifications in the labour market).

Finally, outcomes depend clearly on how the different VET systems are organised. VET programmes are occupation-specific in some countries but more general in others; some countries place more emphasis on workplace-based training, while school-based programmes prevail in others ⁽⁴⁾.

It is hard to overcome such problems, which are generally resolved by introducing control covariates into the analysis, i.e. to condition the relationship between education and labour market outcomes on all observable individual factors. This is the approach adopted by this report, with the limitation that

⁽³⁾ See Miller (1998) and Iannelli (2002) on the effect of family background on youth unemployment. See Pellizzari (2010) and Pistaferri (1999) on the role of family and extended networks.

⁽⁴⁾ See Field et al. (2010) for a comparison of different VET systems. See also Cedefop's VET in Europe project for an in-depth analysis at country level.

the currently available data are not at the individual level, which restricts the identification strategy to a few general categories. Nevertheless, forthcoming Cedefop research based on LFS microdata is expected to help overcome some of these limitations.

1.3. Defining VET

VET is mainly designed to enable participants to develop the practical skills, know-how and understanding needed to find employment in a particular occupation or trade or class of occupations or trades ⁽⁵⁾.

VET often involves a combination of workplace training with off-the-job training (traditional school activities). Therefore, VET differs from the more traditional types of education, which in this report are classified as general education because they are relevant to a wide range of non-specific jobs or trades. Also, national systems differ greatly in their practical definition of VET and non-VET programmes.

In the 2009 LFS AHM, VET and general education refer to the orientation of the highest level of education attained (variable *hatvoc*), and the distinction is applied only to ISCED 2-4. More specifically ⁽⁶⁾:

- a) general education: less than 25% of the programme content is vocational;
- b) vocational (and pre-vocational) education and training: at least 25% of the programme content is vocational (oriented towards a specific category of occupations or trades and leading to a labour market relevant qualification).

Furthermore, in countries where it is possible to draw such distinctions ⁽⁷⁾, VET is divided into:

- a) mainly school-based VET: where at least 75% of the vocational education or training hours is spent in a school, college or training centre and the balance in a work environment (enterprise or other);
- b) mainly workplace-based VET: where at least 75% of the vocational education or training hours is spent in a working environment (enterprise or other) and the balance in a school, college or training centre.

⁽⁵⁾ The international standard classification of education, ISCED 97 (Unesco, 1997).

⁽⁶⁾ The categories proposed conform to the ISCED definitions applied in the Unesco-OECD-Eurostat data collection and the discontinued Eurostat VET data collection as agreed by Member States (EUROSTAT/E3/2000/VET02 includes a definition for VET).

⁽⁷⁾ Estonia, Italy, Netherlands, Norway, Poland, Portugal and the Slovak Republic did not distinguish between the different VET types. This report groups these countries under the separate category 'no distinction possible' for purposes of comparison.

- c) Combined school and workplace-based VET (e.g. dual system, alternate programmes) where less than 75% of the vocational education or training hours is spent in a school, college or a training centre with the rest spent in a work environment (enterprise or other).

Naturally, the different VET programmes offered by the national educational systems vary from country to country ⁽⁸⁾. Moreover, not all national school systems cover the three distinct VET categories.

Regardless of national differences, initial VET is designed specifically for young individuals and is related to secondary and post-secondary non-tertiary education, although its role is growing at the tertiary level (see in particular Cedefop, 2011b).

The 2009 LFS AHM applies the question about education orientation only to respondents who have a secondary or post-secondary non-tertiary level of education. However, in this report, certain indicators will also distinguish between theoretical or general programmes (ISCED 5a) and technical or occupational programmes (ISCED 5b) in tertiary education. Despite the methodological weaknesses, especially in terms of international comparability, ISCED 5b could be considered a proxy for tertiary level VET until further improvements have been incorporated into the revised ISCED 2011.

Although the AHM distinguishes between VET and general education from ISCED 2 and 3c short, these two educational levels are excluded from the major part of the analysis. Education at this level focuses mainly on general programmes (88.4%) because many countries do not include VET programmes at ISCED 2 ⁽⁹⁾. To include ISCED 2 would create a bias in the results, without helping to explain differences within and between countries. Therefore, in this report, and except where indicated otherwise, the VET analysis will be restricted to upper secondary and post-secondary non-tertiary education (ISCED 3 and 4), excluding ISCED 2 and 3c short.

Finally, apprenticeship is defined as systematic, longer-term training in which trainees alternate their training hours between the workplace and the educational institution or training centre. The apprentices have a contractual relationship with their employers and are remunerated (wage or allowance). Employers are responsible for providing the trainees with training to equip them with the skills needed for a specific category of occupations or trades

⁽⁸⁾ Detailed information can be found in the country reports published as part of Cedefop's 'VET in Europe' initiative at <http://www.cedefop.europa.eu/EN/about-cedefop/projects/vet-in-europe/index.aspx> [accessed 17.4.2012].

⁽⁹⁾ Czech Republic, Spain, Italy, Cyprus, Hungary, Austria, Poland, Romania, Slovenia, Slovakia, Finland as well as Norway and Switzerland provided solely data on ISCED 2-general orientation.

(Cedefop, 2008). Some countries (such as Austria, Germany and Switzerland) incorporate apprenticeship into the dual educational system as a VET system building block. Other countries (e.g. Italy) adopt a simple contractual relationship between the firm and the apprentice that has little to do with the education system. For the purposes of this report, apprenticeship is defined as two categories of the variable *hatvoc*: ‘combination of school and workplace’ and ‘VET mainly workplace’; therefore, this report tends to exclude those countries where apprenticeship exists, but for which the EU LFS makes no distinction by type of VET.

1.4. Structure of this report

After providing an overview of the VET landscape in Europe, this report looks at the extent to which the characteristics and backgrounds of VET graduates determine their choice of education level and orientation. The report then analyses the labour market outcomes of VET in comparison with those of general education in particular. More specifically, Chapter 4 looks at the outcomes of entering the labour market compared with continuing in education. Chapter 5 considers the employment status of individuals with different levels and orientations of education. Chapter 6 contrasts the education-to-work transition process for graduates of VET with that for graduates of general education, while Chapters 7 and 8 look at outcomes by occupation and industry, the quality of jobs and the effect on wages. Finally, Chapters 9 to 11 look at what that means for the EU bearing in mind the structural changes likely to take place in labour markets, before summarising the key findings.

1.5. General empirical approach

The description above is a necessarily restrictive definition of ‘labour market outcomes’ since the available data are not sufficient for an investigation either of the subjective dimension of work (i.e. work satisfaction) or of the impact on firms and their organisational structure ⁽¹⁰⁾. Nevertheless, the research has wider implications. Better labour market outcomes are generally associated with improved social outcomes, as documented in a recent Cedefop report

⁽¹⁰⁾ These two aspects are explored respectively by Beicht and Walden (2005) and by Cedefop (2011f).

(2011c) which provides evidence of the positive social outcomes of VET, namely better job quality, increased civic participation and better health.

The report complements another recent Cedefop research report (Cedefop, 2011d) that analyses the economic return on investment in VET using individual information from different data sources (the European community household panel, ECHP; the EU statistics on income and living conditions, EU-SILC; and the International social survey programme, ISSP).

Before a more detailed discussion of the findings, a few words of caution are called for. In particular, the initial conditions of individuals with VET may differ from those of individuals with general education, which could already have an impact on the transition process from education to working life. For example, VET graduates tend to enter the labour market fairly early in life, while graduates from general education are more likely to continue studying until they are older. Therefore, a general comparison of employment outcomes may appear to favour VET graduates (especially those in younger age groups).

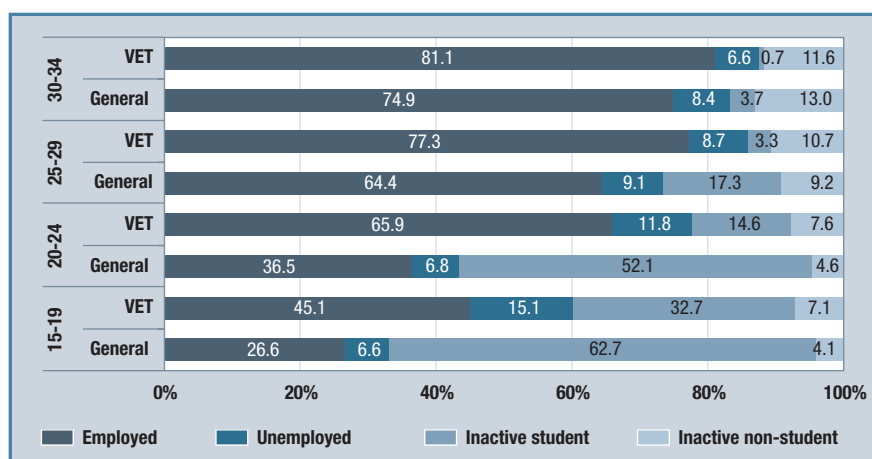
Figure 1 illustrates this situation and anticipates some of the results that will be discussed in the following sections. The figure shows the breakdown of medium-level graduates by employment status, age group and type of education. The inclusion of the lowest age groups takes account of the different graduation ages of each country, since anybody who has not yet graduated from medium-level education will anyway be excluded from the data. The inactive group has been split into two subgroups: those who are studying and those who are not ⁽¹¹⁾. Figure 1 produces some interesting findings. First, VET graduates achieve better employment outcomes than general education graduates, regardless of the age group. Second, the inactive share of general education graduates is larger than that of VET graduates because individuals with general education are more likely to continue studying and are therefore not classed as employed (unless they are working in some capacity during their studies). In short, the data confirm that both the VET and the general education paths deliver what they have been designed for: VET is strongly geared to the labour market, while general education, at this level, is typically seen as a step towards tertiary education.

This is especially true for the younger age groups, which is the reason for the decision generally to use the 25-34 age group for comparative purposes.

(11) Several countries conduct the AHM during the second quarter, a period in which it is possible that some individuals have completed an educational programme but not yet started a new one, making it difficult to separate the inactive from the unemployed.

Young people in this age group are far more likely to be out of the education system and, from the conceptual point of view, comparative indicators are sounder. The approach used for other indicators in this report excludes students altogether. Thus, comparisons are made only for individuals who want to be part of the labour market (and are employed or actively seeking work) or who are inactive but not because they are in formal education.

Figure 1. **Labour status for medium-level graduates by educational orientation and age, EU-27+, 2009**



1.6. Data issues and revisions

Country data provision and validation procedures have placed slight constraints on some of the analysis variables, in particular:

- no breakdown by orientation (variable *hatvoc*) is available for Norway, which has been excluded from both EU aggregate and country data whenever this variable is used;
- the difficulties reported by some countries in extracting precise and reliable information from the variable *jobstart* (year or month of start of the first job held for more than three months after leaving formal education). In turn, *jobstart* is used to construct some derived variables, such as employment duration, no-employment duration, transition, school-to-

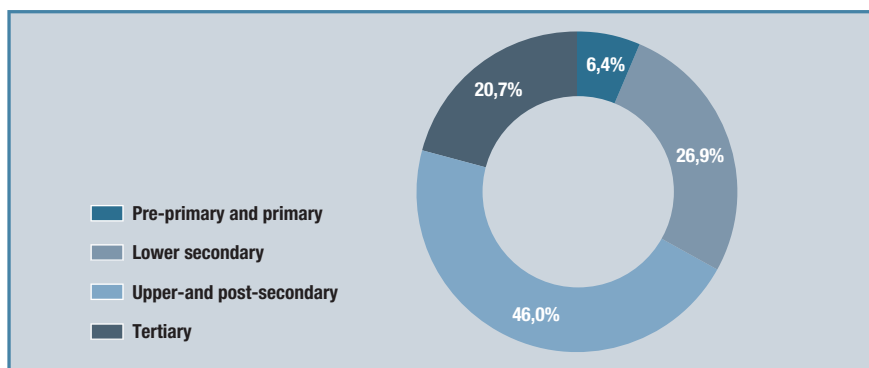
work (see, in particular, the analysis illustrated in Chapter 6). Germany and Switzerland were the countries most affected by these problems while the UK (high number of non-responses) was affected to a lesser extent. Therefore, when using jobstart or its derived variables, Germany and Switzerland are excluded from the analysis (at both country and aggregate level), while caution is strongly advised when interpreting the data for the UK.

VET graduates in Europe

In 2009, the 27 EU Member States plus Iceland and Switzerland (the EU-27+) had slightly more than 130 million persons aged between 15 and 34. About one third of those had low-level education (primary or lower secondary school) ⁽¹²⁾, 45.3% had medium-level education (upper and post-secondary non-tertiary education) and 20.5% had high-level education (tertiary education), as shown below in Figure 2. Recent Cedefop (2010) forecasts show that, despite a substantial increase in the number of adults with tertiary education (16 million) and only a modest increase in the number of those with medium-level qualifications (only 1 million), the latter will still account for around half of the European labour force in 2020 (Cedefop, 2012).

The ISCED medium-level qualification category features the highest number of people with a VET-oriented education: 35.2 million people or 60.1% of the total of 58.5 million people.

Figure 2. **Educational attainment, 15-34 year-olds, EU-27+, 2009**



NB: Pre-primary and primary: ISCED 0 and 1.

Lower secondary: ISCED 2 and 3c short.

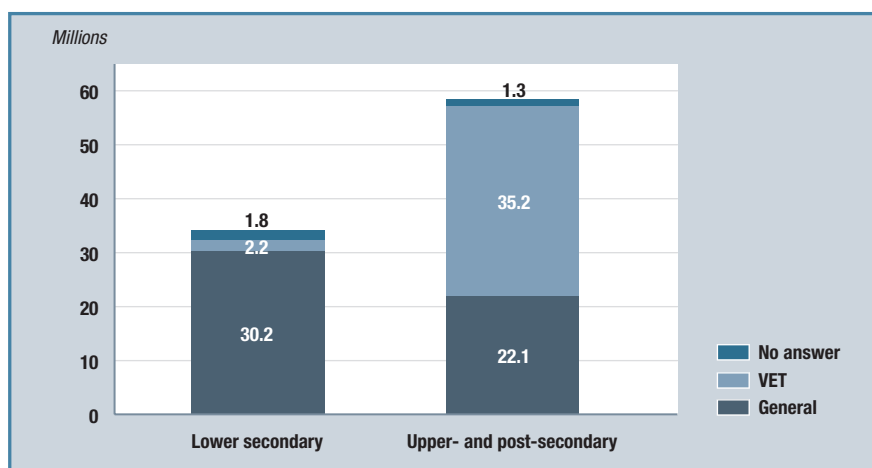
Upper- and post- secondary: ISCED 3 without 3c short ISCED 4.

Tertiary: ISCED 5 and 6.

⁽¹²⁾ Low level: ISCED 0, 1, 2 and 3c short; medium level: ISCED 3-4, without 3c short; high level: ISCED 5 and ISCED 6.

Figure 3 underlines that, in most countries, education systems incorporate VET courses mainly at upper secondary and post-secondary educational levels. Many countries do not have VET at lower secondary level and, therefore, the lower secondary education level is excluded from the following analysis.

Figure 3. **Educational attainment and orientation, 15-34 year-olds, EU-27+, 2009**



Moreover, using the distinction between ISCED 5a and 5b as a proxy for orientation at tertiary level and ISCED 5b as a proxy for VET ⁽¹³⁾, the number of 15-34 year-olds with an ISCED 5a was 19.9 million while the number of those with an ISCED 5b stood at 6.1 million, or 23.5% of the total ISCED 5 level ⁽¹⁴⁾.

The 2009 AHM also distinguishes between different categories of VET, i.e. mainly (or solely) school-based, a combination of school and workplace-based, mainly workplace-based or vocational education with no distinction possible. This latter category accounts for one third of individuals and includes six countries (Estonia, Italy, Netherlands, Poland, Portugal and Slovakia). The national programmes of some of those countries make no distinction between the three types of VET (e.g. Estonia and Italy), while others were unable to

⁽¹³⁾ Although not provided for all countries, information from ISCED mappings shows that, in several countries, VET programmes also exist for ISCED 5a. Therefore, ISCED 5b is likely to underestimate the true value of tertiary level VET.

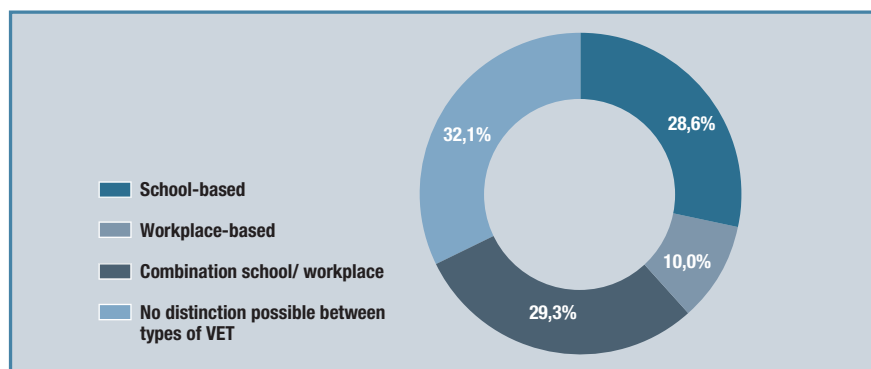
⁽¹⁴⁾ Information on ISCED 5a and 5b is available for each country except Poland, while only Iceland shows reliability problems in relation to the size of the available sample in its LFS.

provide the requested data owing to statistical constraints ⁽¹⁵⁾. Furthermore, specific types of VET are not relevant in some countries and so information is not collected. For instance, Bulgaria has only school-based vocational education, while Greece and Romania reported that their formal educational system makes no provision for mainly workplace-based VET programmes.

Figure 4 shows the breakdown of the EU population by VET category. People with mainly school-based VET account for 28.6% of the total compared with 29.3% for combined school and workplace-based VET. These two types both correspond to approximately 10 million people each. Three countries account for more than half of the mainly school-based VET category: France (24% of the total), Romania (18%) and Spain (10%). On the other hand, the combined school and workplace VET category is made up mainly of Germany (67%), the Czech Republic (10%) and Austria (6%).

The mainly workplace-based VET category is less popular, accounting for 10.0% of the EU total (approximately 3.5 million people), and is composed mainly of two countries: the United Kingdom (55% of the total category) and France (40%).

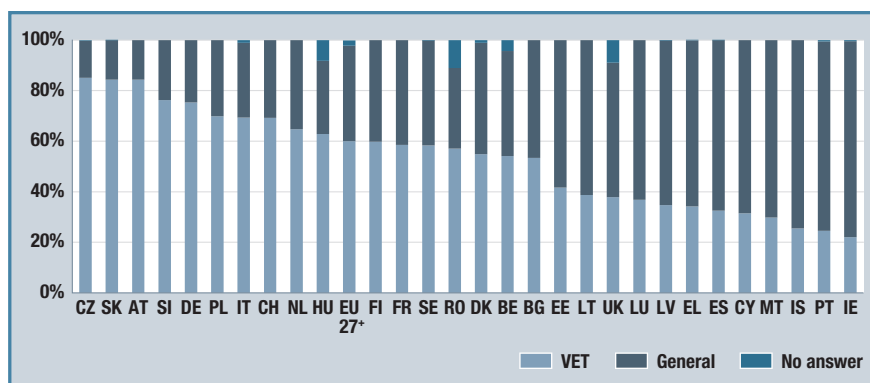
Figure 4. VET graduates by type of programme, 15-34 year-olds, EU-27+, 2009



An analysis by country indicates a high degree of heterogeneity. Figure 5 shows the breakdown of the population of 15-34 year-olds, with the highest level of education equivalent to an upper secondary or a post-secondary non-tertiary level by education orientation (general versus VET). One group of

⁽¹⁵⁾ The Netherlands was unable to add extra questions to the survey.

Figure 5. **Distribution of medium-level graduates by educational orientation, 15-34 year-olds, 2009**



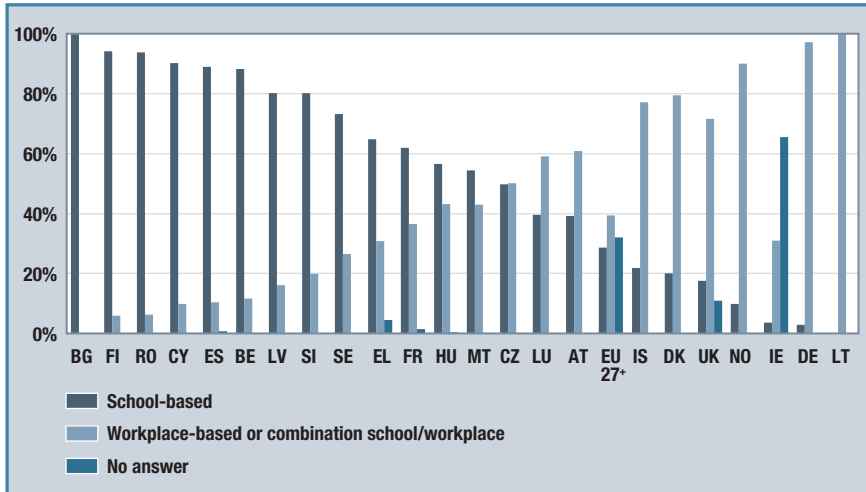
countries has a very high proportion of people with VET-oriented education, led by the Czech Republic, Slovakia and Austria with 84-85%, which are all well above the average (60.3%).

On the other hand, another group of countries has a considerably lower-than-average share of the population with a VET-oriented education, namely Ireland with 22% and Portugal and Iceland with 25%.

The variation between countries could depend on several factors related to both the supply and the demand sides of the education and training systems. The educational systems of the countries concerned offer a wide range of types and levels of VET course (Figure 6) and of professional paths opened up by the various levels and types of education. These differences all have an impact on the educational options of individuals.

History also plays a role. Some countries have a long tradition of VET (i.e. Austria, Germany and Switzerland), supported by institutions and companies, which consider it a key factor in matching the demand and supply of skills more closely. People in these countries are more inclined to choose VET than people in countries that traditionally attach greater importance to general education, for example, Italy⁽¹⁶⁾. Figure 6 shows the breakdown of young adults by VET type and country as well as how school-based VET systems predominate in several countries.

⁽¹⁶⁾ This analysis has clear links with the literature on 'varieties of capitalism' and the implications of different capitalist models for education provision and skill production. The interested reader can refer to, among others, Hall and Soskice (2001), and Powell and Solga (2008).

Figure 6. **VET graduates by type of programme, 15-34 year-olds, 2009**

NB: Sampling limitations mean that the VET school-related data for Ireland and Malta should be treated with caution. The figure excludes those countries that reported solely the category 'VET-no distinction possible'.

Box 1. Educational orientation: key findings

- In 2009, 35.2 million 15-34 year-olds in Europe had a medium-level VET education (ISCED 3 and 4). Six in 10 of the 58.5 million 15 to 34 year-olds with at most medium-level education opted for VET.
- The popularity of VET varies between countries, with VET systems most popular in the Czech Republic, Austria and Slovakia, but less popular in Iceland, Ireland and Portugal.
- In addition, 6.1 million people held a technical degree (ISCED 5b), which represents 23.5% of the 26 million people with tertiary education at ISCED 5 level.

Characteristics and background of VET graduates

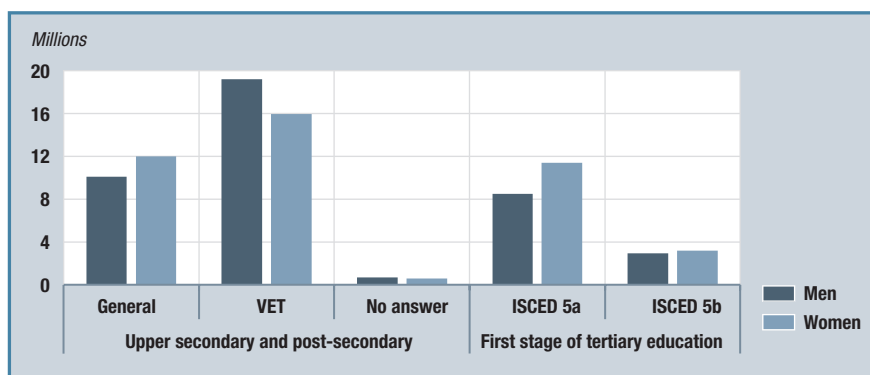
3.1. Gender

In the 15-34 age group, slightly more men than women are likely to have attained medium-level education (45.9% compared with 44.7%), although women are more likely than men to have completed the first stage of tertiary education (23.3% and 17.9% respectively). These results are in line with the general European trend for women to study more and for longer than men.

The data indicate a gender imbalance for medium-level VET, with young men more likely than women to have completed VET-oriented education: 64% against 55.9% of those with medium-level education. While women who have attained at most a medium-level education are more likely to have done so through VET, men still account for 54.7% of all young medium-level VET graduates in the European labour market.

In the first stage of tertiary education, women are more likely than men to achieve an ISCED 5a degree (78.1% compared with 74.5%).

Figure 7. **Educational attainment by orientation and gender, EU-27+, 2009**



These trends are due to several factors. The fact that women tend to study longer (up to university level) to gain better positions in the labour market means they prefer to attend general upper secondary and post-secondary education, which, as illustrated in Chapter 4, increases the chances of enrolment in tertiary education (see following sections). On the other hand, individual preferences and cultural factors mean that women are more likely to choose more general or academic educational paths ⁽¹⁷⁾.

Table 1 shows the breakdown of VET types by gender.

Table 1. VET graduates by type of programme and gender, 15-34 year-olds, EU27+, 2009

Education orientation	Men	Women	Total
General education	33.7%	42.1%	37.8%
VET	64.0%	55.9%	60.1%
of which:			
• school-based;	18.0%	16.4%	17.2%
• workplace-based or combination school/ workplace;	25.0%	22.1%	23.6%
• no distinction possible between types of VET;	21.0%	17.5%	19.3%
• no answer.	2.3%	2.0%	2.2%
Total (%)	100%	100%	100%
Total (in thousands)	30 011	28 518	58 529

3.2. Influence of parental education

Family background is usually considered a major influence on individual education choices. In developed and developing countries there is a strong positive correlation between parents' education levels and those attained by their offspring. This pattern is rooted in culture, but also has an economic explanation deriving from the high degree of correlation observed in the data on education, qualification and wages, which indicates that the children of 'highly educated' parents are able to study for longer than the children of less well-off families and thus postpone their entry into the labour market.

Moreover, the educational levels of the population as a whole have increased substantially over the past decades, also as a result of the steady

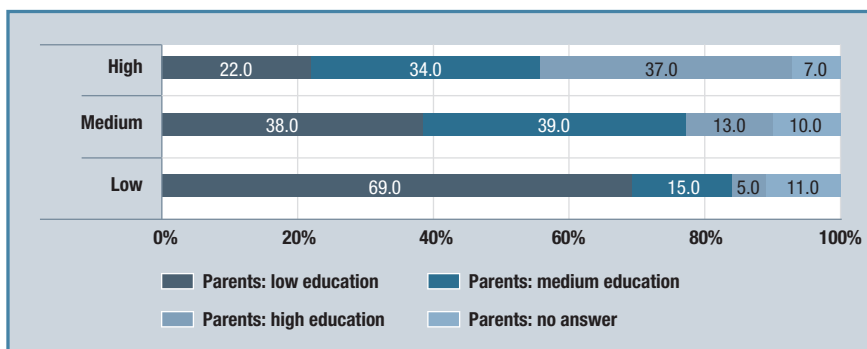
⁽¹⁷⁾ See the recent analysis by Flabbi (2011).

increase in the length of compulsory education and the increasing accessibility of higher education to a wider segment of the population. Indeed, increasing educational attainment was a major target of the EU's Lisbon strategy.

In our sample, one third of the population of 15-34 year-olds have parents with a low-level education, 36.1% have parents with a medium-level education and 22.4% have parents with a high level of education ⁽¹⁸⁾.

In the case of individuals aged 25 years and over who have mostly completed their education, the data confirm a clear relationship between their own educational attainment and that of their parents. Figure 8 highlights how education choices are strongly correlated across generations. Specifically, most of the population with a low level of educational attainment (69.6%) have parents with the same education level, whereas most of those with a high level of education (37.1%) have highly educated parents and people with a medium level of education mainly have parents with an intermediate education.

Figure 8. Educational attainment for 25-34 year-olds by parents' education background, EU-27+, 2009



It is very rare for people with a low level of education (4.9% of cases) to have highly educated parents and less than 15% have parents with a medium level of education. The educational attainment of parents of individuals with a university degree is more evenly distributed, given that 37.1% have a tertiary education, 33.8% a medium-level education and 22.0% a low-level education.

The level of parental educational attainment also appears to be linked to whether young people choose VET or general education. Individuals opting for VET among those with upper secondary or post-secondary school

⁽¹⁸⁾ Relatively high number of 'no answers'. Information on parental educational levels is not available for about 10 million people or 7.7% of the surveyed population.

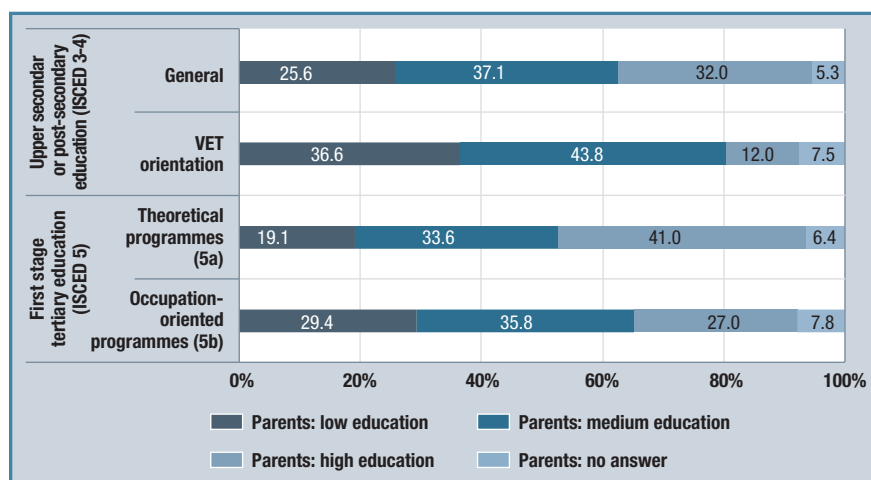
attainment, mainly have parents with a low or medium level of education (only 12% have parents with tertiary education).

On the other hand, those who opted for a general orientation are more likely (one in three) to have parents with a university degree. A large number of young graduates (under 19) with general upper secondary education follow in their parents' footsteps by enrolling at university.

The impact of parents' education on the education choices of the young is more striking at the time of enrolment in tertiary education and the decision on the type of study programme: 41% of those who graduated from theoretical programmes have parents with a university degree, with the percentage falling to 27% for graduates from occupation-oriented programmes. At the other end of the scale, 19% of graduates from theoretical programmes have parents with a low level of education compared with more than 29% of graduates from occupation-oriented programmes.

The strong parental influence on education choices is often attributed to the centralised and uniform quality of education in several European countries, in particular at university level, which reduces variety and therefore the attractiveness of investing in human capital. That situation makes children from poorer families less competitive than those from wealthier families, resulting in less intergenerational upward mobility between both occupations and education levels. See Checchi et al. (1999) for a discussion.

Figure 9. Educational attainment and orientation for 15-34 year-olds by parents' education background, EU-27+, 2009



Box 2. Characteristics and background of VET graduates: key findings

- Men account for around 55% of VET graduates at the medium level while women account for a similar proportion of graduates at the tertiary level (not differentiating for orientation).
- Parents' education has a strong influence on the education choices of young Europeans: the higher the parents' level of education, the higher the level of education attained by their children.
- Parents' education also influences whether young people choose VET or general education.

Education outcomes of VET

On completing upper secondary or post-secondary non-tertiary education, many young people continue their studies rather than enter the labour market. This can be considered to be an education outcome rather than a labour market outcome, but one that will lead to a labour market outcome once tertiary education is completed.

Thus, when comparing VET outcomes with general education outcomes, entering the labour market should be seen as a dynamic choice, i.e. individuals can choose to enter the labour market immediately after leaving secondary education or to postpone entry and invest more time in tertiary education. In line with the more traditional design of the education system, the decision to continue studying tends to be related to education orientation.

Shifting the focus to recent graduates from upper secondary or post-secondary education, i.e. those aged between 18 and 24, approximately three in four of those with a general orientation are still in formal education (only one in four has stopped studying). Those ratios are inverted for VET-oriented individuals, with only 27% of young graduates still students (or apprentices) while 73% have concluded their educational path.

Table 2. Propensity of medium-level graduates to continue with education by orientation, 18-24 year-olds, EU-27+, 2009

Education orientation	In education	Not in education	Total
General education	74.8	25.2	100.0
VET	26.8	73.2	100.0
of which:			
· school-based;	35.1	64.9	100.0
· workplace-based or combination school/ workplace;	14.6	85.4	100.0
· no distinction possible between types of VET;	33.0	66.9	100.0
· no answer.	29.3	70.7	100.0
Total (%)	52.0	48.0	100.0

There are also differences between the types of VET, depending on the purposes for which it is intended: the propensity to continue studying is higher for school-based VET (around 35% of graduates are still in education) compared with – mainly or partly – workplace-based VET (14.6%). That would suggest a clear link between a stronger workplace content of education and a lower propensity to continue studying.

This is a general pattern and no significant differences can be observed either between countries or between men and women (although, as underlined earlier, women generally tend to study for longer and to choose general education more frequently than VET).

However, the propensity of VET graduates to continue studying varies considerably from country to country and depends on factors such as the type of VET studied, the ease of progression and openness of the education system, the types of programmes offered at the higher level, and the labour market institutions of each country.

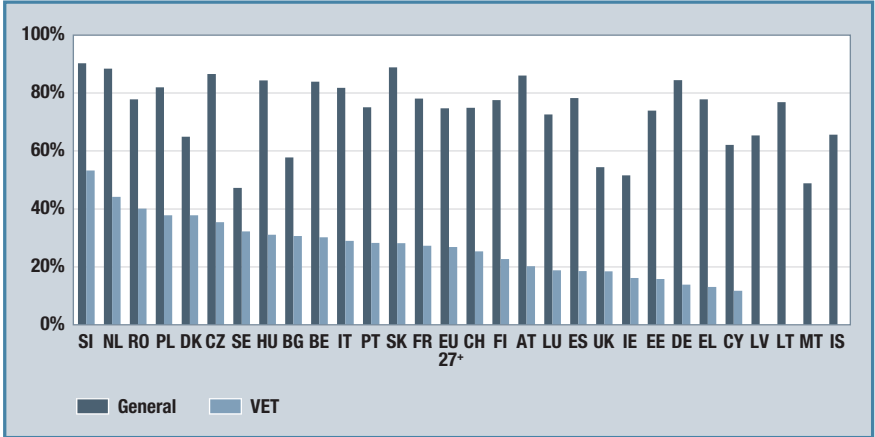
The propensity of VET graduates to continue studying is higher in eastern Europe (except for Estonia) and the Nordic countries (except for Finland) than elsewhere. In the Netherlands and Slovenia high proportions of VET graduates are students (44.2% and 53.3% respectively), while VET graduates in Cyprus, Greece, Germany and Estonia, at below 16% across the board, show the weakest propensity to continue their education (Figure 10).

High youth unemployment rates in some countries are thought to spur young people to study longer but the data show only a very weak, albeit positive, correlation.

Box 3. Education outcomes of VET: key findings

- Individuals with a general education are more likely to continue studying at the tertiary level, while VET graduates are more likely to seek employment after completing medium-level education.
- Three in four 18-24 year-olds complete upper secondary or post-secondary non-tertiary general education and then continue their formal education. Three in ten individuals who choose a VET orientation continue with formal education and 73% leave formal education to seek entry into the labour market.
- The stronger the workplace content of VET, the higher the propensity to move directly into the labour market and the lower the propensity to continue studying.

Figure 10. **Proportion of medium-level graduates that continue with education by orientation, 18-24 year-olds, EU-27+, 2009**



NB: Due to sampling limitations, data on VET relating to CY, EE and LU should be treated with caution.

Labour market outcomes of VET

Youth employment and employability are key issues in Europe. Almost 6 in 10 15-34 year-olds are employed, which is below the general EU average for 15-64 year-olds (64.6%). The overall unemployment rate for 15-34 year-olds of 12.8% in 2009 was well above the EU average of 8.9%. Since then youth unemployment has increased still further.

Nevertheless, the low employment rate of individuals in the youngest age groups is mainly due to the fact that a large number are still studying. oriented individuals, with only 27% of young graduates still students (or apprentices) while 73% have concluded their educational path.

5.1. Overview of recent medium-level graduates

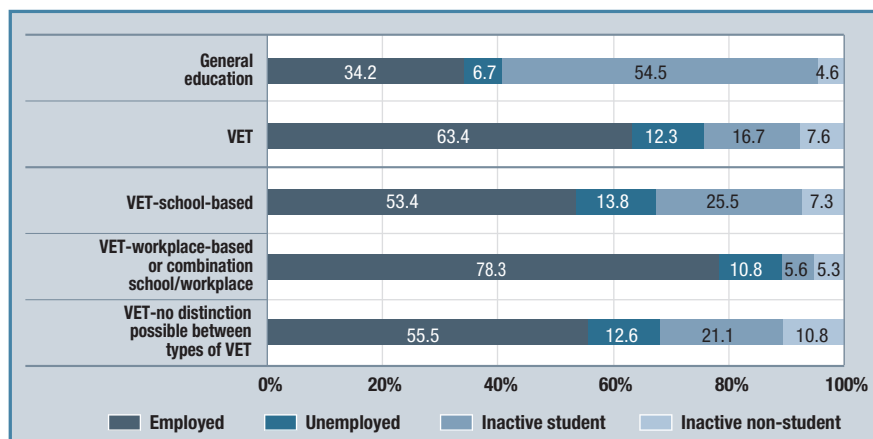
This report has already confirmed that in Europe many general education stream graduates go on to tertiary education, which is most relevant in the 18-24 age group. Almost 48% of 18-24 year-olds with upper secondary or post-secondary education are employed, 9.3% are seeking employment and 42.8% are inactive. Most are still completing their education, given that 36.8% of inactive 18-24 year-olds are in education compared with 6.0% not in education or training.

Figure 11 confirms that VET graduates seek to enter the labour market mainly after having completed medium-level education. VET graduates have a higher employment rate than general education graduates (63.4% and 34.2% respectively) and a higher proportion of jobseekers (12.3% and 6.7%, respectively). Figure 11 highlights the significant difference between the two streams as regards the proportion of people who continue their education: 54.5% of general education graduates and 16.7% of VET graduates. Conversely, the share of individuals not studying is low for both general education and VET, accounting for 4.6% and 7.6%, respectively.

The unemployment shares shown in Figure 11 provide further insights. This young age group has a lower proportion of unemployed workers with

a general education than with vocational education. The pattern is reversed for workers over 25 years of age (Figure 12). A possible interpretation is that workers with general education, who are more inclined to continue studying, leave school only when they receive a good job offer, while VET students tend to leave education earlier whether or not they have a job offer, resulting in higher unemployment at lower ages. Despite the fact that VET is relatively successful in getting young adults into work, it could expose them to the risk of early unemployment.

Figure 11. **Labour status of medium-level graduates by orientation, 18-24 year-olds, EU-27+, 2009**



The different types of VET orientation follow two broad patterns. The proportion of employed graduates that graduated from workplace-based (or workplace-based combined with school-based activities) secondary and post-secondary non-tertiary education is noticeably higher (78.3% of the total population). Within this group, the proportion of inactive people is just 10.9% of the total (of which those not in education account for around 5%). Whereas when VET is mainly school-based, the employment rate for graduates is 53.4% and the share of inactive people increases to almost one third (although the percentage of those not in education remains at 7%).

Those patterns suggest that VET with a higher workplace content leads to stronger (and better) labour market outcomes for the youngest age group. This observation has clear policy implications. VET appears to be effective at getting the youngest age groups into work by bringing workplace-based

training into the education domain, with apprenticeship appearing particularly valuable. Developing training and education in the workplace instead of schools has several advantages. First, there are specific aspects of workplace training that are difficult to replicate in learning processes based on traditional teaching methods, in particular the use of up-to-date equipment and the focus on the development of practical and soft skills, such as customer relations. Second, workplace training improves the two-way flow of knowledge and information between employers and employees, thereby improving the employee's chances of being offered a job. Third, the direct effect on production that trainees often have is a clear indication of the market value of VET programmes.

Consequently, the design and structure of VET programmes could be improved by strengthening the links between schools and enterprises, in accordance with the Bruges communiqué on enhanced European cooperation in VET ⁽¹⁹⁾ and encouraging enterprises to participate more actively in the design of education programmes and to use teachers to complement workplace training. Chapter 6 shows how this would better equip the VET system to manage the risk of polarisation, which affects those jobs that are more likely to be carried out by VET graduates.

5.2. Overview of young adults

The previous section showed that many people in the 25-34 age group have completed their education. Concentrating on this age group should therefore enhance the comparability of labour market outcomes across education streams.

Slightly more than 33 million persons in this age group graduated from upper secondary or post-secondary school and approximately 22 million from the first stage of tertiary education. Among the first subset, 76.5% are employed, 7.8% are seeking employment, 4.4% are inactive still in education and 11.4% are inactive not in education.

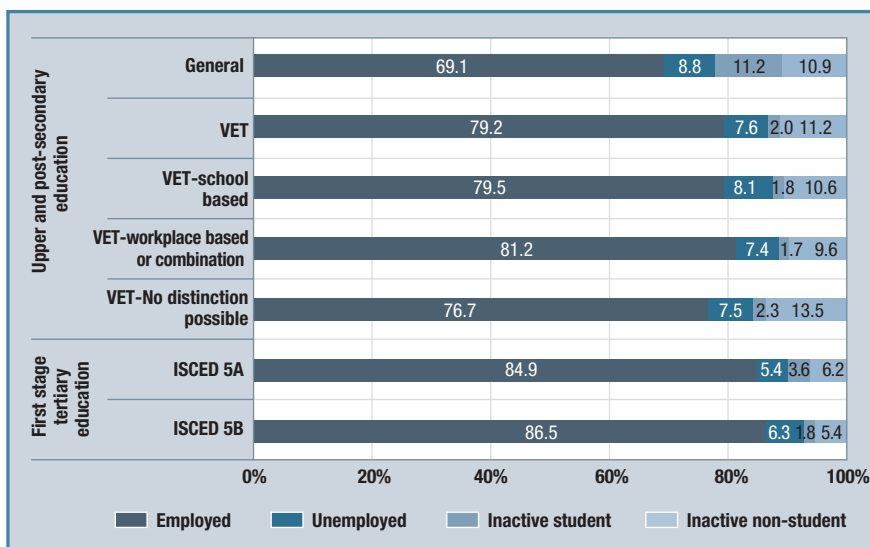
The employment rate for individuals with VET-oriented upper secondary or post-secondary education is higher among those with a general education orientation (80% versus 69% respectively). Moreover, the employment rate for workplace-based VET graduates (or those with a combination of workplace and school-based activities) is higher than for mainly school-based VET graduates, even though, at 82% and 79% respectively, the difference is only about three percentage points (Figure 12).

⁽¹⁹⁾ Council of the EU and European Commission, 2010.

A similar pattern is found in the first stage of tertiary education. The differences in the employment status of those having completed occupation-oriented programmes (ISCED 5b) and those having completed theoretical programmes (ISCED 5a) are negligible.

Figure 12 shows how employment outcomes improve in line with the level of education. Employment rates are considerably higher for graduates of tertiary education than for those who have completed only secondary or post-secondary education. However, the difference in employment and unemployment shares is smaller when university graduates are compared with VET graduates at upper secondary or post-secondary non-tertiary education. Comparisons should be treated with caution, however, because not only have the two groups attained different educational levels but they have different work experiences, which is not clear from the data (VET graduates start their working life earlier). Nevertheless, the results indicate that VET is comparatively successful in terms of labour market outcomes, even though the results are limited to employment status, i.e. whether a person is employed, unemployed or inactive, and they do not take account of the type and the quality of the employment. Chapters 6 to 8 underline how VET graduates are likely to be employed in medium-level skill occupations at risk of polarisation, which poses a challenge to the VET system, as discussed in Chapter 9.

Figure 12. **Employment status by educational attainment and orientation, 25-34 year-olds, EU-27+, 2009**



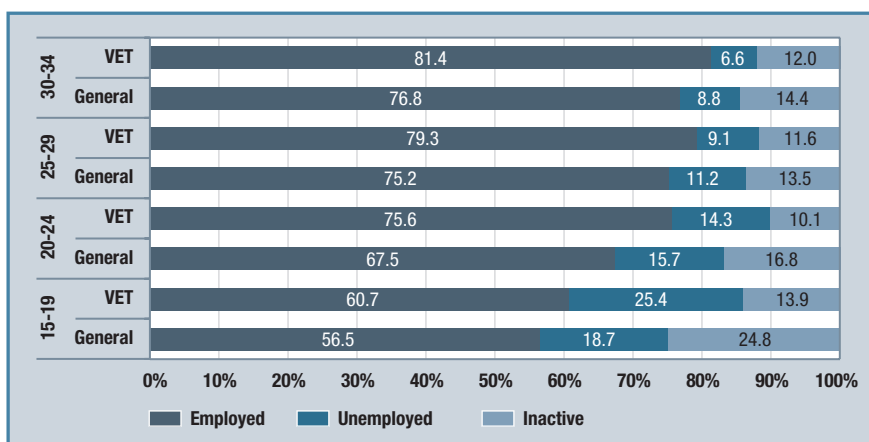
5.3. Overview of young adults no longer in education

Considering the different education and labour market outcomes of medium-level general education and VET graduates (individuals from the general stream are more likely to go on to tertiary education), this section filters out individuals who are still in education and compares the employment rates and unemployment shares of the two streams. The labour market outcomes of this subgroup (approximately 70% of the relevant population) are therefore more comparable. Figure 13 shows that the VET employment rate is higher than that for general education regardless of age group. The results by country indicate that the phenomenon is widespread. Indeed, the pattern is the same for most countries and age groups.

Similarly, the share of unemployed tends to be lower for medium-level VET graduates than for the general stream graduates, with the exception of 15-19 year-olds ⁽²⁰⁾.

Young people with a VET education are also more likely to be an active part of the labour market, whereas general stream graduates no longer in education are more likely than their VET counterparts to be inactive, whatever the age group. Differences are especially pronounced in the youngest age groups

Figure 13. **Employment status of medium-level graduates no longer in education by orientation and age, EU-27+, 2009**



⁽²⁰⁾ The high share of unemployed for EU-27+ VET graduates aged 15-19 is significantly influenced by high VET unemployment in France and, to a lesser extent, in Spain.

(15-19 and 20-24) and tend to decrease for older age groups due in part to a decline in the share of inactive general stream men no longer in education (compared with the youngest age groups). However, it is also an effect of the increasing proportion of inactive women from the VET stream compared with general stream graduates, given that 2 in 10 women in the 25-34 age group are inactive, regardless of their educational orientation (see next section).

These results are significant and can be summed up as follows: regardless of gender, medium-level VET graduates from the youngest age groups are more likely to be employed or to be actively seeking work than the medium-level general stream graduates.

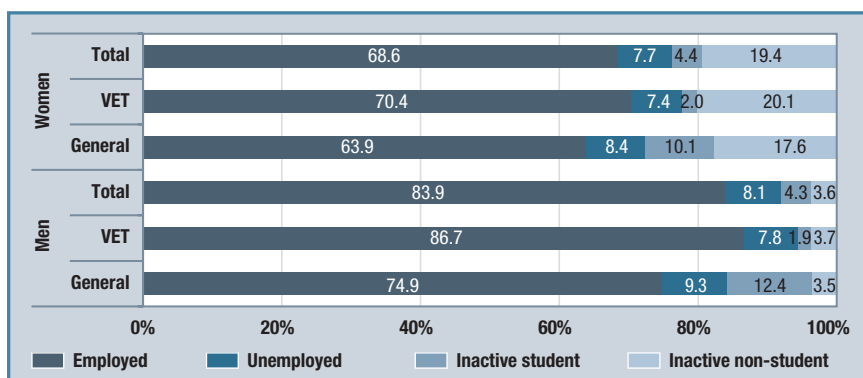
5.4. Labour market outcomes by gender

Previous sections have shown how gender affects the choice of the level and the orientation of education. However, since gender can also lead to different labour market outcomes (employment rates are usually higher for men than for women), it is important to control for gender differences when assessing the employment outcomes of different educational orientations.

Figure 14 shows the significant difference in the activity rates by gender for VET graduates: 22.2% of women aged 25-34 are inactive (with 20% inactive not in education) compared with 5.5% of men (3.7% inactive not in education). High inactivity rates for women are also recorded for general education graduates but are considerably lower for graduates of tertiary education, for which two possible explanations can be advanced. First, 25-34 is an age group in which women are more likely to have significant family commitments, which means that they could opt out of the labour force, even temporarily, delaying career choices to have children. The tendency of VET graduates to enter the labour market early and those with general education to continue to study could explain why the share of 25-34 year-old inactive women not in education is higher for VET than for general education. Chapter 8 illustrates a similar pattern in part-time jobs that corroborates this evidence. The second – more problematic – explanation is that because employment opportunities are fewer for women than for men, unsuccessful attempts to find employment could have discouraged them and led them to abandon the labour force. This would explain why the gender difference is considerable among graduates from secondary education (VET or general) but far smaller for graduates from tertiary education. Unfortunately, an

analysis of discouraged jobseekers within the age and education limits of this report would produce numbers that are too small to use for reliable estimates. Further research in this area is definitely required.

Figure 14. **Employment status of medium-level graduates by orientation and gender, 25-34 year-olds, EU-27+, 2009**



5.5. Employability: experience matters

The report has already shown that general education graduates are more likely to enrol in tertiary education whereas VET graduates are more likely to succeed in the labour market immediately after leaving secondary or post-secondary non-tertiary education. This section investigates the effect of work experience on both general education and VET graduates.

Interpretation of the results should take into account tertiary education drop-out rates since the relatively high drop-out rates in some countries ⁽²¹⁾ are likely to have a negative effect on work experience and, as a result, on labour market outcomes.

For example, a 21-year-old with VET probably started work at 18 while a 21-year-old with general education who enrolled in university but then dropped out would not have started working (or looking for a job) until they were 20, leading to different labour market outcomes because, all other things being

⁽²¹⁾ In 2008, the average survival rate in tertiary education (i.e. the percentage of those initially enrolled to complete the degree) in Europe was 70%. However, the relative rates for several large countries are considerably lower: 50% in Italy, 64% in France and 51% in Sweden (OECD, 2009).

equal, despite having finished secondary education at the same time, they entered the labour market at different ages. Moreover, if they were both working at the time the LFS was conducted, employment length would be different (the former would have been working for three years and the latter for one year), affecting both the type and the quality of the job and, as a result, wages. For countries with a high tertiary education drop-out rate, the impact of VET on labour market outcomes may be overstated. This is a well-known problem in economics and is related primarily to an inability to control appropriately for the initial conditions. The standard way of dealing with unobservable differences in initial conditions is to factor in the long-term outcomes, the implicit assumption being that differences in the initial conditions will fade over the longer term. The above example shows that a two-year difference in employment length initially makes a big difference to the level of pay but has a negligible effect at a later age, for example, at the age of 50. Such an analysis is not possible with the ad hoc module, which is restricted to 15-34 year-olds.

Since the LFS cannot give a precise indication of work experience/employment length, proxy variables can be used, in particular:

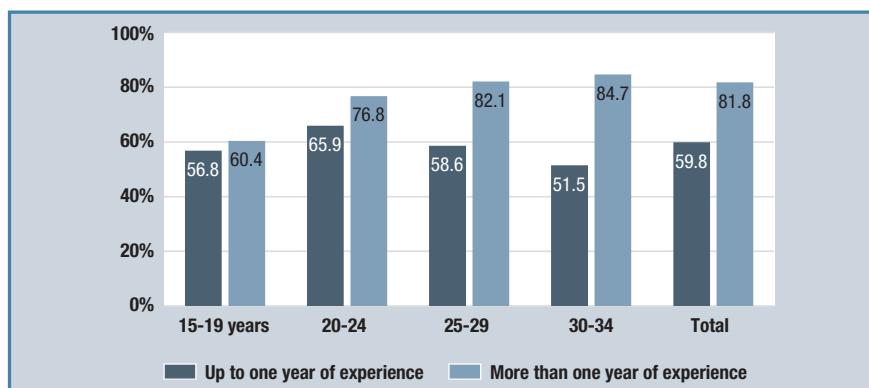
- a) age: this is the roughest approximation to work experience with the advantage that it is measured precisely;
- b) employment length: this is a derived variable in the 2009 AHM and can be used to compute employment length because it measures the minimum cumulative duration of employment after leaving formal education for the last time. Chapter 6 shows clearly that, all other things being equal, employment length is longer for VET graduates than it is for general education graduates. However, the variables have two drawbacks. First, reliability problems have necessarily excluded Germany and Switzerland from the use of this variable and, second, it identifies only two categories: employment length of less than one year and employment length of greater than one year, which limits the depth of the analysis.

These caveats aside, work experience has a clear impact on employability. Figure 15 shows that 81.8% of the EU-27+ 15-34 year-olds already working for more than one year are in employment and that the employment rate drops to 59.8% for those with work experience of less than one year.

The experience premium for employability increases with age, resulting in a virtuous circle: employment generates experience, which favours employment, which generates further experience ⁽²²⁾.

⁽²²⁾ When controlling for work experience, the sample is also restricted to individuals no longer in education in order not to distort the results by including individuals that support their studies with part-time jobs.

Figure 15. **Employment rates for medium-level graduates by age and level of experience, EU-27+, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample.

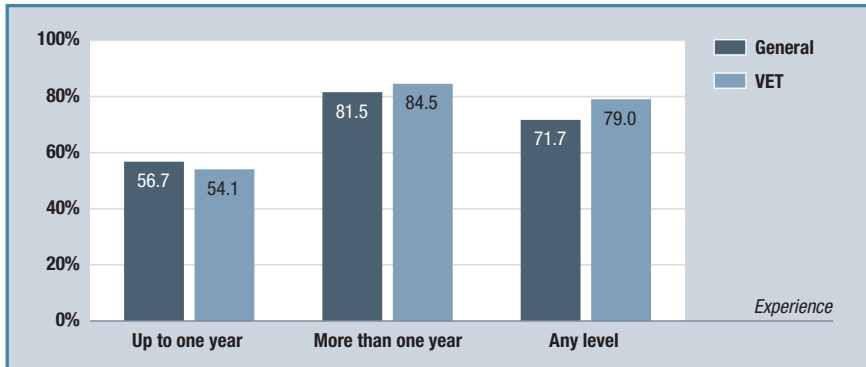
Conversely, except in the case of the very young, lack of experience reduces employability as age increases and can lead to exclusion from the labour market. The decline in employment rates (from 66% in the 20-24 age group to 51.5% in the 30-34 age group) are not accompanied by an increase in the unemployment shares (approximately 20-21% of 20-34 year-olds) but by an increase in inactivity. The inactive share rises from nearly 11% in the 20-24 age group to more than 16% in the 25-29 age group and to over 23% in the 30-34 age group, which could mean that older persons who have not accumulated sufficient work experience have given up looking for a job.

The more work experience a person has, the greater their employability, regardless not only of age but also of orientation. The data show consistently higher employment rates for people with a general education or VET orientation who have more than one year of experience than for people with less experience.

In the 25-34 age group, VET graduates achieve better employment rates than general education graduates only if they have more than one year of experience. The employment rates for young adults with experience of less than one year are comparatively low for both streams, the VET stream being affected in particular by the results from Poland and the UK and to a lesser extent from France and Spain.

Focusing on individual countries, Figure 17 shows the breakdown of the different employment rates of 25-34 year-olds with medium-level VET and general education. The positive values indicate that VET individuals are

Figure 16. **Employment rates for medium-level graduates by orientation and level of experience, 25-34 year-olds, EU-27+, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample.

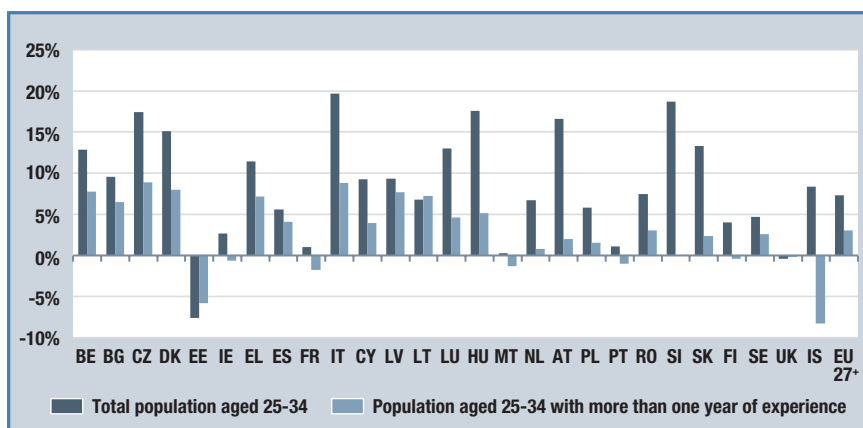
more likely to be employed than those with general education. For example, the employment rate for 25-34 year-olds in Belgium with VET plus one or more years of experience is 90.9% compared with 83.2% for those with a general education, which corresponds to a difference of 7.7 points (light blue bar). The gap widens when work experience is not taken into account (dark blue bar, at 12.9 points).

The above results imply that work experience matters, and its absence has a particularly negative impact on the ability of medium-level graduates to find work, perhaps generating a stigma effect. Increasing the amount of work experience is one of the focus areas of the 'youth on the move' flagship initiative.

Apprenticeship as a way of gaining work experience

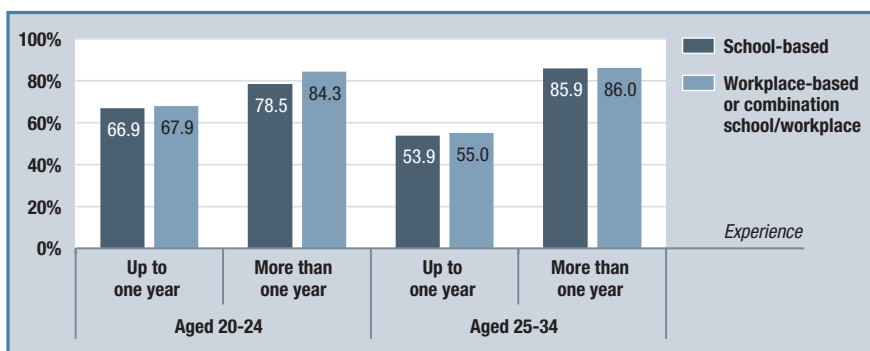
In the EU-27+ generally, Figure 18 underlines the increased likelihood of being employed after attending a VET course with workplace content when combined with previous experience; apprenticeships improve the knowledge of both the trainee and the company as well as the chance of subsequent recruitment, reducing the time it takes to find the first job. This is true of younger workers (20-24) but its effect is negligible for people of 25 years or more, regardless of work experience. Chapter 6 illustrates the importance of apprenticeship to younger age groups and how apprenticeship is particularly effective in the transition from education to work.

Figure 17. **Difference in employment rates for medium-level graduates by orientation and level of experience, 25-34 year-olds, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample.
Positive values mean higher employment rates for VET versus general education, and negative values mean that the same rates are lower.

Figure 18. **Employment rates for medium-level VET graduates by type of VET, level of experience and age, EU-27+, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample along with countries for which no distinction by type of VET is possible.

Box 4. Labour market outcomes of VET: key findings

- VET is relatively successful at getting individuals into work in the short to medium term. Regardless of gender, medium-level VET graduates from the youngest age groups are more likely to be employed or to be actively seeking work than medium-level general education graduates.
- Labour market outcomes are different for men and women, with men enjoying higher employment rates and women lower unemployment shares. Control for gender confirms that VET leads to better labour market outcomes than general education.
- Employment rates are higher for graduates of VET programmes with workplace content.
- Work experience matters and a lack of it has a particularly negative impact on the ability of medium-level graduates to find work.
- Apprenticeships appear to be effective for the young age groups when combined with previous experience.
- Tertiary education carries a clear employability premium over upper secondary and post-secondary education.

Transition to the labour market

Analysing the education-to-work transition process of young adults provides further interesting insights.

Defining the transition process is not easy because various dimensions are involved ⁽²³⁾.

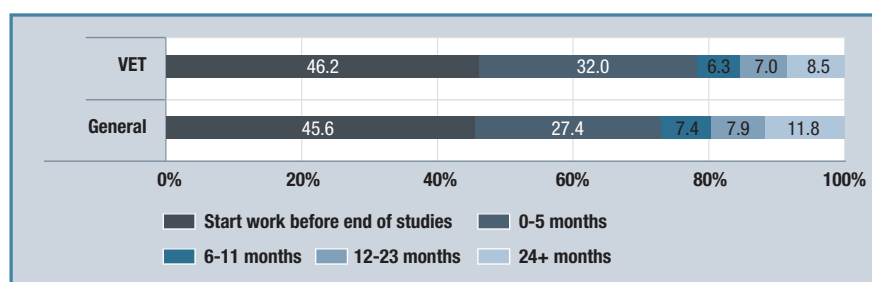
The first dimension is the speed of transition. In theory, the speed at which a suitable job is found after completing education is the actual time it takes to find a good match for the individual's skills and personal abilities among the jobs offered on the market. In practice, young adults experience major difficulties in finding a job at all, let alone a good job in a reasonable time. Thus, the speed of transition to the labour market becomes crucial because if people spend too much time looking for a job, they tend to lose confidence and drop out of the labour force to become inactive.

Figure 19 directly measures the speed of the education-to-work transition, i.e. the length of time between completing formal education and starting the first job. To improve the conceptual link between education and the first job, the ad hoc module considers the first job to be one that lasts more than three months. The figure shows clearly that VET graduates tend to find a job faster than those with general education. This pattern is consistent also taking into account the breakdown by gender and employment status (i.e. excluding the inactive population and the unemployed). In this respect, VET

⁽²³⁾ The variables presented in this chapter contain a high number of invalid/not applicable cases, which have been excluded from both the numerator and denominator of calculated indicators. The high number of invalid/not applicable cases is mainly due to the fact that several of the variables used to analyse the transition process are based on jobstart data (year or month of start of the first job to last more than three months after definitively leaving formal education). Such retrospective questions are typically prone to memory effects, whereby the accuracy of the data reduces over time. As pointed out in the introduction, the difficulties reported by some countries in implementing this variable in the module has led to the exclusion of Germany and Switzerland from the sample when this variable is used. Given this limitation, the data presented in this chapter should be treated with more caution than the data presented in the other chapters. To partly overcome these constraints, this chapter uses several indicators, including those derived from the core module (i.e. duration of current job) not affected by the aforementioned problems. Taken as a whole, these indicators depict a coherent picture.

graduates benefit from the stronger, more direct link between their education pattern and the labour market. Section 6.2 underlines the implications of this situation for the method used to find a job, with VET graduates relying more on formal channels.

Figure 19. **Length of time between leaving formal education and starting the first job, medium-level graduates by orientation, 25-29 year-olds, EU-27+, 2009**



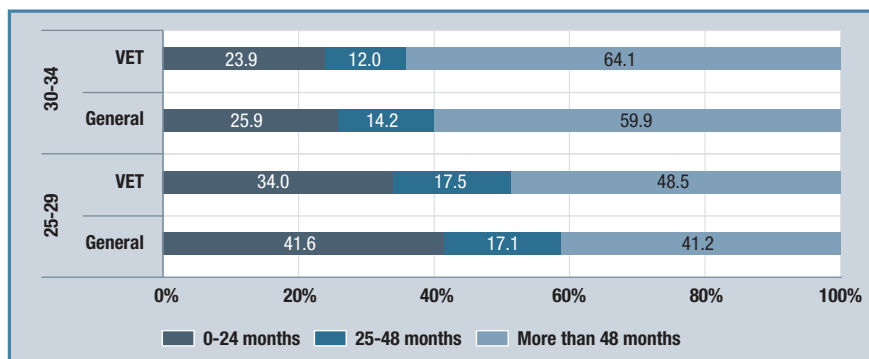
NB: Germany, Norway and Switzerland have been excluded from the sample.

The second dimension of the transition process is the stability of the employment relationship. Even when young adults find a job relatively quickly, their employment status can remain unstable, characterised by alternating periods of unemployment and employment. In such cases, instability is interpreted as the potential difficulty to capitalise on accumulated work experience (especially if the experience has been gained only over short periods of time in different sectors and in different jobs), which reduces job prospects. Therefore, individuals who have already started their working life must have a steady and stable employment relationship if they are to derive maximum benefit from their work experience.

Several indicators have been used to capture employment stability. Figure 20 shows the breakdown of the start date of the current job (the sample is therefore restricted only to those employed) and that, regardless of age group, the duration of the current job is longer for those with VET than for those with a general education. When the current job is also the first, it suggests that VET graduates enter the labour market sooner and enjoy a more stable employment relationship ⁽²⁴⁾.

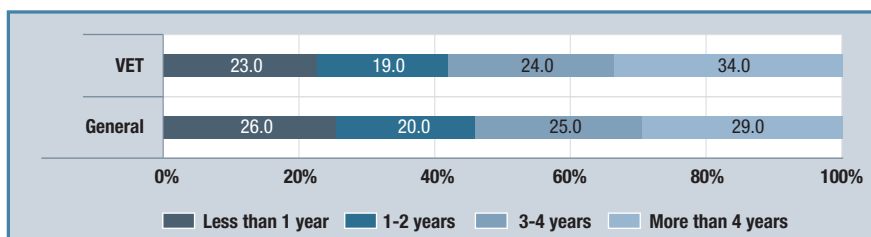
⁽²⁴⁾ There are clear limitations to using information about the current job to draw conclusions on the education-to-work transition process. This indicator is used to corroborate the evidence of the variables that measure transition more directly.

Figure 20. **Time elapsed since start of current job for medium-level graduates by orientation and age, EU-27+, 2009**



Second, the duration of the first job, as shown in Figure 21 ⁽²⁵⁾, indicates a clear link between VET and the longer duration of the job (with a large number of longer spells), regardless of the individual's current employment status (i.e. currently employed, unemployed or inactive). This suggests that VET graduates are able not only to find a job faster but also one that is a good match for their skills, thus enabling a stable relationship to be established already during the first job.

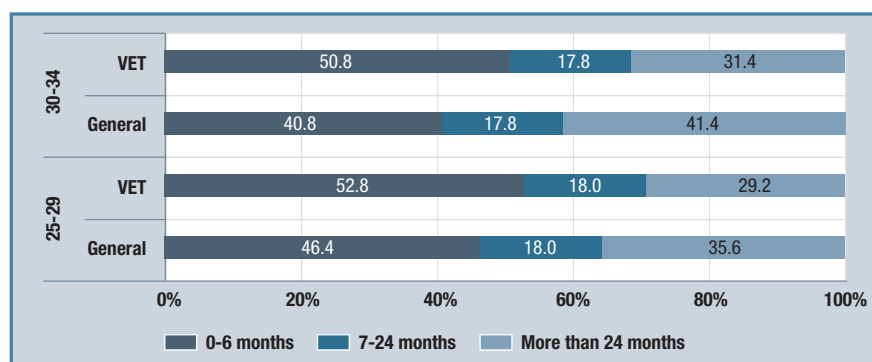
Figure 21. **Duration of first job for medium-level graduates by orientation and age (solely jobs lasting more than three months), 25-29 year-olds, EU-27+, 2009**



⁽²⁵⁾ Technically, the measurement refers to the duration of the first job that lasted for more than three months after leaving formal education.

Third, the minimum cumulative duration of employment since leaving formal education, which more precisely captures the employment length even over different jobs, shows that VET graduates are more likely to have a longer cumulative employment record than general education graduates. A complementary measure calculates the minimum duration of periods without employment after leaving formal education for the last time. Figure 22 shows the breakdown of this variable by age group and educational orientation, highlighting that VET is also associated with lower cumulative periods without employment than general education.

Figure 22. **Minimum duration of periods without employment for medium-level graduates by orientation after leaving formal education for the last time, EU-27+, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample.

Overall, the above evidence indicates that VET is more likely to lead to a faster transition to more stable and better matched employment relationships. To provide a comprehensive picture of the transition process, it is possible to calculate a synthetic indicator to factor in labour market status, speed of transition and length of employment, and periods without employment ⁽²⁶⁾. The indicator is linked to four different outcomes, specifically:

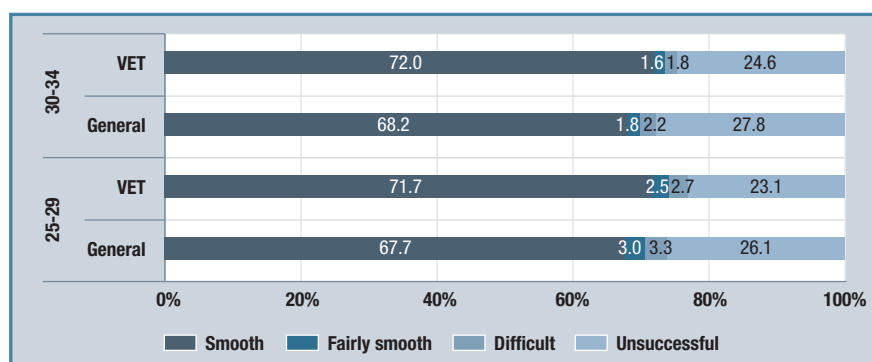
- smooth transition with few or no problems – no risk of exclusion and a strong foundation in the labour market;

⁽²⁶⁾ The indicator is based mainly on the employment status (employed, unemployed or inactive) defined as more or less than one year's employment before being upgraded or downgraded according to employment duration, aggregate periods of unemployment (unemployment length) and speed of education-to-work transition.

- b) fairly smooth transition – has either made it into the labour market or has strong potential to succeed;
- c) difficult transition – unsuccessful transition from school to employment but has past experience or the will to succeed;
- d) unsuccessful transition from school to employment and have either been too long out of the labour market or have no work experience to help get employment.

According to Figure 23, VET graduates fare better also in terms of this comprehensive measure of job transition.

Figure 23. **Education-to-work transition process indicator for medium-level graduates by orientation and age, EU-27+, 2009**



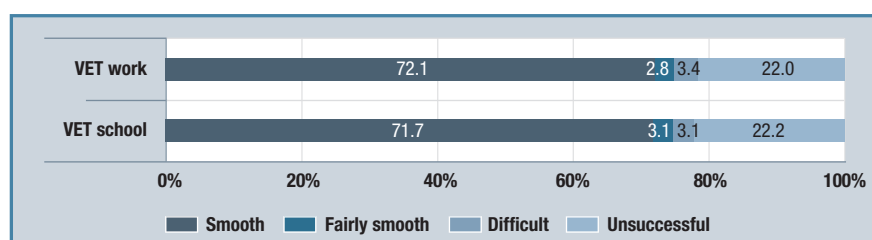
NB: Germany, Norway and Switzerland have been excluded from the sample.

6.1. Apprenticeship and tertiary education

Section 5.2 illustrates how apprenticeship is associated with higher employment rates when combined with previous experience for the young age group, a situation that appears to be supported by the education-to-work transition process ⁽²⁷⁾. Figures 24 and 25 show that while the transition to the labour market appears to be similar for school-based and workplace-based VET, the cumulative periods without work are shorter for graduates of workplace-based programmes.

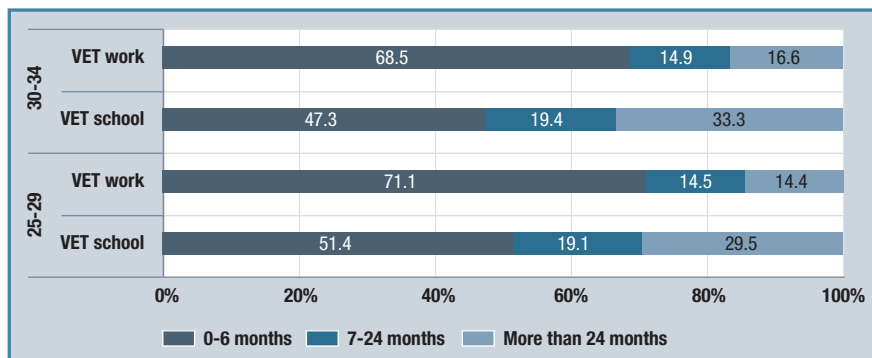
⁽²⁷⁾ The indicator is based mainly on the employment status (employed, unemployed or inactive) defined as more or less than one year's employment before being upgraded or downgraded according to employment duration, aggregate periods of unemployment (unemployment length) and speed of education-to-work transition.

Figure 24. **Transition from formal education to the labour market for medium-level VET graduates by type of VET, 20-34 year-olds, EU-27+, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample.

Figure 25. **Minimum duration of periods without employment after leaving formal education for the last time for medium-level VET graduates by type of VET and age, EU-27+, 2009**



NB: Germany, Norway and Switzerland have been excluded from the sample.

Thus, apprenticeship would be particularly effective in facilitating the entry of young adults into the labour market. However, one in five people experience unsuccessful transition regardless of educational orientation, attesting to the difficulties young adults face when entering the labour market. In this respect, increasing the level of education significantly improves their chances because moving from a secondary/upper secondary level to a tertiary level of education almost halves the percentage of individuals at highest risk of an unsuccessful transition (not in chart).

6.2. Finding a good job: methods and practices

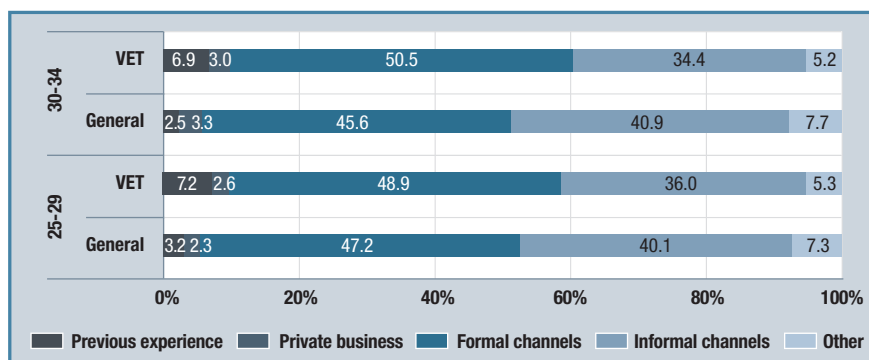
Informal methods, such as social contacts, friends and relatives, are a common means of finding a job in several countries.

Economic literature on the subject produces conflicting results in both theoretical and empirical terms. On the theoretical side, the literature argues that while informal contacts reduce uncertainty about the quality of the match between worker and employer, therefore improving the efficiency of the search process, individuals only use informal information sources as a last resort, in which case it is the lack of alternatives that lead them to use informal methods to obtain a match, which is likely to reduce job quality ⁽²⁸⁾.

On the empirical side, while the available evidence shows that informal methods accelerate the matching process, the results on the quality of the match are more controversial. The latest studies indicate that jobs found through personal contacts are associated with lower wages and higher quit rates than jobs obtained through more formal networks.

Figure 26 indicates the frequency of job search methods by education orientation and shows that VET graduates are more likely to use previous experience and less likely to rely on informal methods. This would suggest that VET degrees are more successful in providing initial contacts and a clear direction to their graduates. Conversely, when the direction is less

Figure 26. **Channels for finding the first job of at least three months for medium-level graduates by orientation and age, EU-27+, 2009**



⁽²⁸⁾ A full comparison with Section 5.2 is not possible since Germany and Switzerland are excluded from the sample in this chapter and therefore from several indicators.

clear and the connection with the working environment weaker, as is the case for general education graduates, informal methods are needed to compensate for the deficiencies. Combining this evidence with the evidence of the previous sections on the speed of transition and on the duration of the first job suggests that work experience already gained in the educational programme such as through apprenticeship can help the individual to find a formal and stable job.

Box 5. **Education-to-work transition: key findings**

- VET is more successful than general education at supporting the transition from education to work.
- The speed of transition is generally faster for VET graduates than for general education graduates.
- The transition is smoother for VET graduates in that (a) the cumulative spells in work are longer, just as periods of time without work are shorter; (b) the first job lasts longer; (c) the current job lasts longer.
- The speed of transition appears similar across all types of VET, but graduates of work-oriented programmes spend less time without work.
- VET graduates are more likely to use previous experience when jobseeking.

Occupations and sectors of activity

After investigating the possible outcomes and transitions for graduates of different educational levels and orientations in Chapters 4, 5 and 6, the ensuing chapters will analyse the outcomes within the labour market, based on a sample of employed persons, in particular looking at the occupation and sector of employment (Chapter 7), job quality (Chapter 8) and wages (Chapter 9).

Given that there are 73.4 million employed people in the 15-34 age group in the EU, the size of the sample is substantially larger than the samples used earlier in the report.

7.1. Occupations

In general terms, and regardless of the type of educational orientation, the most common occupations for individuals with an upper or a post-secondary education are services, shop and market sales ⁽²⁹⁾ with more than 8.4 million workers (22.5% of the total), followed by craft and related trades ⁽³⁰⁾ and technicians and associate professionals ⁽³¹⁾ with approximately 17%-18% of total workers. This ranking is due to the prevalence of the service sector in Europe.

Figure 27 shows the occupational breakdown of workers by educational orientation. VET graduates tend to be concentrated in manual medium-skilled occupations (mainly craft and related trades), while medium-skilled occupations performed by workers with a general education are concentrated in the services, retail sales and clerical category. A comparison of the two types of educational orientation shows that the proportion of low-skill occupations (basic occupations, plant and machine operators) is approximately the same

⁽²⁹⁾ ISCO major group 5

⁽³⁰⁾ ISCO major group 7

⁽³¹⁾ ISCO major group 3

Figure 27. **Employed medium-level graduates by orientation and type of occupation, EU-27+, 2009**

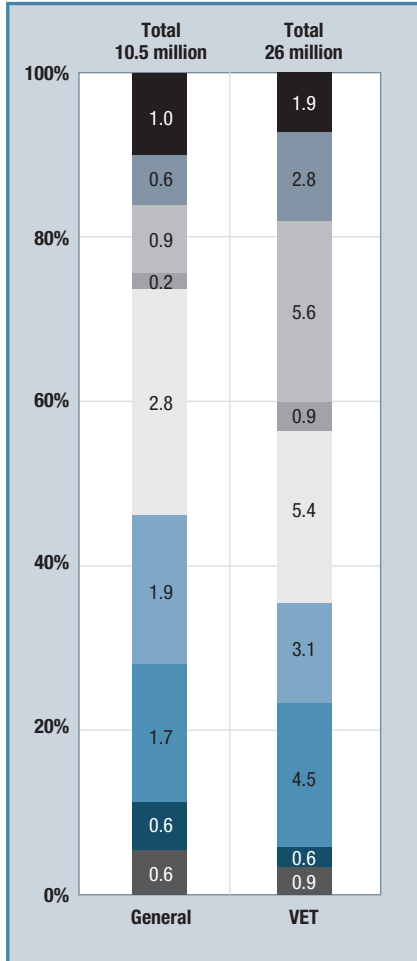
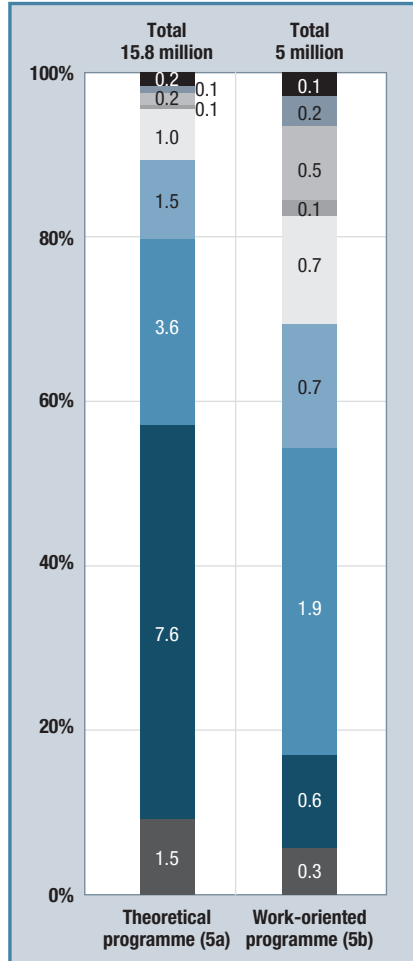


Figure 28. **Employed tertiary-level graduates by type of occupation, EU-27+, 2009**



- Elementary occupations
- Plant and machine operators and assemblers
- Craft and related trades workers
- Skilled agricultural and fishery workers
- Service and shop sales workers
- Clerks
- Technicians and associate professionals
- Professionals
- Legislators, senior officials, managers

NB: Figures in bars refer to millions of employees while the left axis indicates the share in %.

regardless of orientation, and that high-skill occupations (professionals, senior officials and managers) are more likely to be performed by individuals with a general degree.

The pattern of occupational specialisation is stronger at the tertiary education level (Figure 28). University graduates tend to perform high-skill occupations. Those with a theoretical degree are employed mainly as professionals (47% of the total) and those with more technical degrees mainly as technicians (37%). Chapter 8 underlines the strong impact of that situation on pay levels as professionals generally enjoy higher salaries than technicians.

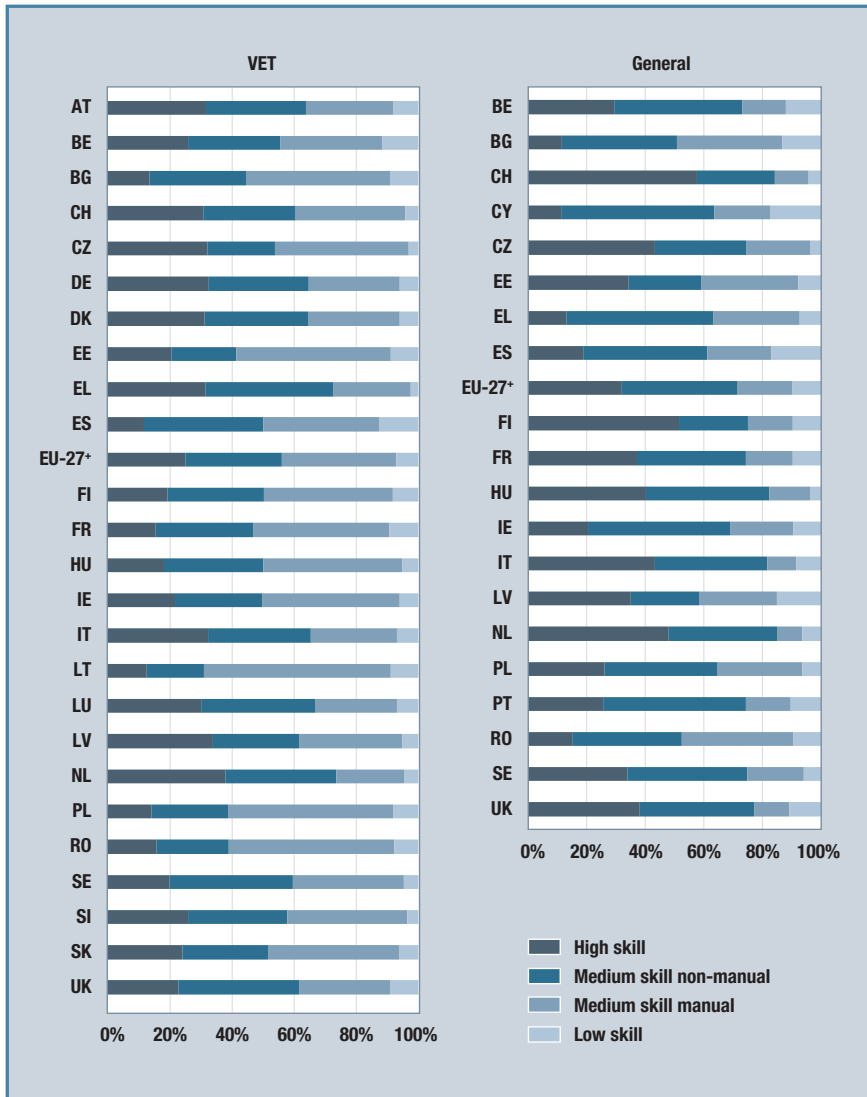
Detailed ISCO data by country suffer from the reliability constraints of specific countries, limiting the analysis to the occupations of VET graduates by major ISCO groups (Figure 29). Some countries (the Czech Republic, Germany, Italy, Latvia and the Netherlands) show particularly high levels of high-skill occupations for VET graduates (32-37%). On the other hand, Belgium and Spain show relatively high levels of low-skill jobs among VET graduates. These countries carry a higher risk of job polarisation.

7.2. VET and job polarisation

The previous section showed that VET graduates are more likely to perform medium-skill technical jobs. This concentration occurs within a general context where, in advanced economies, the demand for both high and low-skill workers is increasing and the demand for medium-skill workers is less dynamic, resulting in a phenomenon known as job polarisation, which has been the subject of intensive research over the past decade (Chapter 9 provides a more in-depth analysis). Moreover, the introduction to this report emphasised the role of technological progress and globalisation in reshaping the demand side of the skills market and the occupational structure of employment.

Recent economics research has enabled better understanding of the mechanism and channels at work and suggests the following general explanations. As initially argued by Autor et al. (2003), technology has a stronger impact on routine tasks than on non-routine tasks. Consequently, industries that require more intensively routine tasks and that tend to replace labour with machines have a significant impact on demand and the skill composition of the labour force. In practice, there is no precise correlation between the level of skill and the level of routine. While in manufacturing several low-skill production line jobs can be described as 'routine', the same applies to many more skilled jobs, such

Figure 29. **Employed medium-level graduates by orientation and aggregated occupation, 25-34 year-olds, 2009**



NB: The high-skill group includes ISCO groups 1-3 (legislators, senior officials and managers, professionals, technicians and associate professionals), medium-skill non-manual ISCO 4-5 (clerks, service, shop and market sales workers), medium-skill manual ISCO 6-8 (skilled agricultural and fishery workers, craft and related trades workers, plant and machine operators and assemblers), low-skill ISCO 9 (elementary occupations). Armed forces are excluded. Some countries are excluded due to reliability constraints.

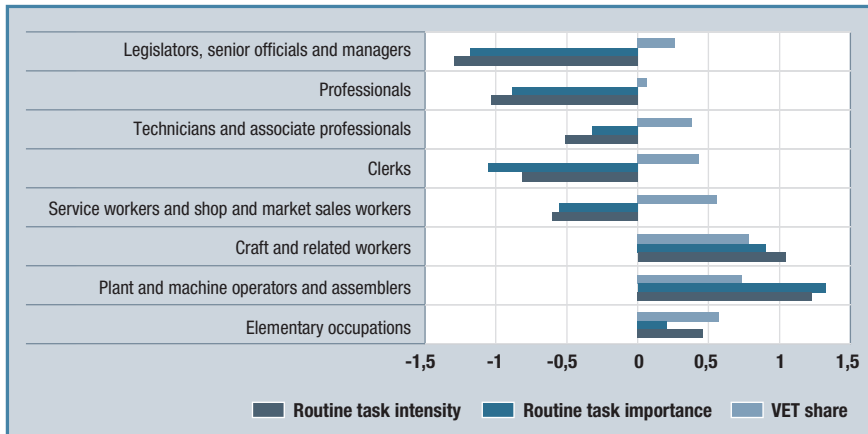
as craft and clerical jobs. In contrast, several elementary occupations, such as housekeeping, personal care, catering, etc. are non-routine in nature and have therefore been relatively unaffected by technological change. The overall effect is a polarisation of job distribution with employment growth concentrated in the highest and lowest skilled jobs whereas slower growth is evident in medium-skilled occupations. This tendency has been documented in both the US (Acemoglu and Autor, 2011; Autor and Dorn, 2010; Autor et al. 2006; 2008) and in Europe (Goos and Manning, 2007; Goos et al., 2009; 2010; Cedefop, 2011a).

Globalisation affects the composition of employment demand in slightly different ways. The crucial factor is the potential division of the production process into different phases to be performed by various units in different countries though off-shoring or outsourcing⁽³²⁾. Production phases that require low-level skills (such as assembly) can be outsourced abroad, which reduces the demand for low-level skills and increases the demand for high-level skills in advanced economies. Recent contributions by Goos et al. (2010) use the detailed task description of each occupation at ISCO 2 digit available from the O*NET system to calculate the degree to which each occupation is routine and can be offshored. In particular, the authors construct an index of routine intensity and routine importance and an index of offshorability⁽³³⁾, and then test which factor has the greatest effect on job polarisation in Europe. Their findings show that routinisation caused by technological progress has a major impact on job polarisation, while the effect of globalisation (through outsourcing/offshoring) is more limited. Using the analysis model of Goos et al. (2010), the indices of routinisation and offshorability at ISCO 1 digit level were aggregated and compared with the level of VET intensity by occupation (i.e. the proportion of employed people with a VET degree). The routine/offshorability indices are normalised to zero while higher values in the index indicate a greater level of offshorability or of intensity or importance of routine tasks in the occupation.

⁽³²⁾ The terms outsourcing and offshoring identify different practices. Offshoring generally indicates the delocalisation of a company or a business process abroad, while outsourcing identifies the practice of contracting out a business process to another company. For the purposes of this report, both practices have similar effects on the demand for skills and are used interchangeably.

⁽³³⁾ The O*NET survey separates tasks into three groups: routine, abstract and service. Routine tasks are those that can be performed with relative ease by computers/machines. Non-routine tasks are then split into abstract tasks (i.e. problem-solving, decision-making, etc.) and service tasks (i.e. care work). Each worker interviewed is asked to define how important (on a scale of 1-5) each task is to his or her job. This is the basis for identifying the degree of importance of routine tasks in each occupation. While the importance of routine tasks is an absolute measure, routine task intensity is a relative measure, since the routine task importance is divided by the sum of abstract and service task importance. Goos et al. (2010) construct their indices at ISCO 2 digit level, while the figures used in this report are based on the aggregates of their results at the ISCO 1 digit level. The reader is referred to the original article for a detailed description of the methodology.

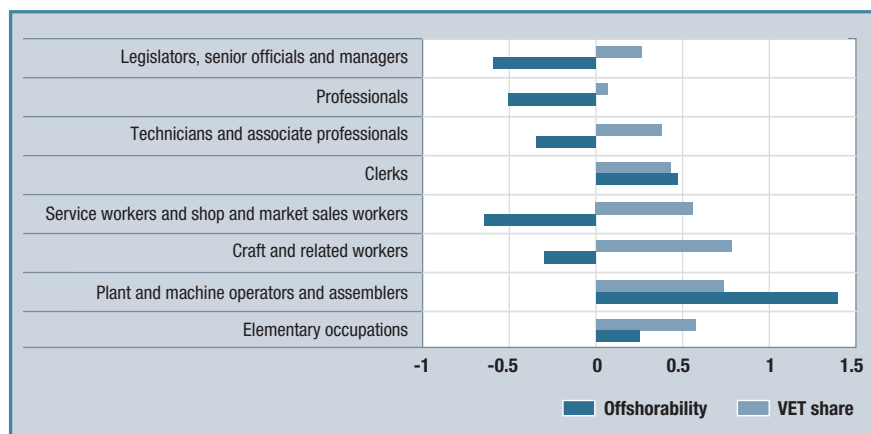
Figure 30. **Routine intensity and importance and VET intensity, 20-34 year-olds, EU-27+, 2009**



NB: Goos et al. (2010) exclude ISCO group 6 skills agricultural and fishery from the analysis. Routine task intensity is defined as Routine task importance divided by the sum of Abstract and Service task importances, subsequently standardized to mean 0 and standard deviation 1. A higher value means a task is more intensive. The VET share is presented as a fraction.

Figure 30 shows that individuals with a VET degree tend to be more concentrated in occupations where tasks have higher routine intensity/importance and are therefore more exposed to the risk of job polarisation. The occupational groups with the highest exposure to this risk are Group 7 'Craft and related workers' and Group 8 'Plant and machine operators and assemblers', occupations in which human labour can most easily be replaced by computers or machines.

Figure 31 replicates the same exercise using the index of offshorability. Two aspects are worthy of note. First, the most offshorable occupations are not the same as the most routine occupations. For example, clerks have a high offshorability index and a low routine intensity index. This is because, despite the spread of ICT in these occupations, the tasks involved are not predominantly routine intensive. On the other hand, ICT technology has fragmented several administrative processes into tasks that can be delocalised abroad. The second aspect to emerge from Figure 31 is the far weaker link between the concentration of VET in certain occupations and their degree of offshorability: whereas occupations in Groups 8 and 4, where VET intensity is high, are also exposed to the risk of offshorability, in Groups 5 and 7 the risk is low.

Figure 31. **Offshorability and VET intensity, 20-34 year-olds, EU-27+, 2009**

NB: Standardised to mean 0 and standard deviation 1. A higher value means that the occupation is more offshorable. The VET share is presented as a fraction.

The analysis shows a risk of decline for some VET occupations, primarily due to the effect of technological change on tasks.

The fact that job polarisation appears to be driven more by technological progress than by globalisation is important because it means that instruments and changes can be incorporated in VET systems to allow them to meet the challenge of job polarisation. VET systems can be tailored to the changing needs of the production process, more so than general education. Chapter 9 will illustrate how strengthening the link between VET programmes and the workplace and complementing initial VET with lifelong learning can equip the entire system of VET policies with the instruments needed to upgrade the skills of specific groups of individuals in jobs at risk of polarisation.

7.3. Sectors

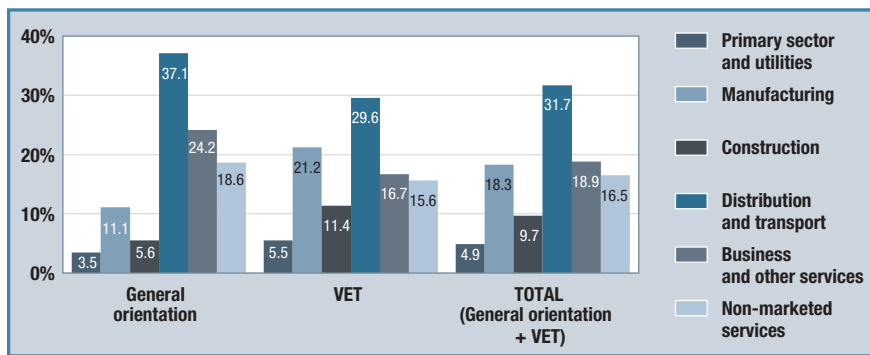
This section investigates whether the sectors that tend to employ workers with a vocational orientation are different from those that tend to employ workers with a general orientation.

Sector outcomes of upper secondary or post-secondary diploma holders

In Europe, most workers, including young workers with an upper secondary or post-secondary education, are employed in services. Figure 32 illustrates

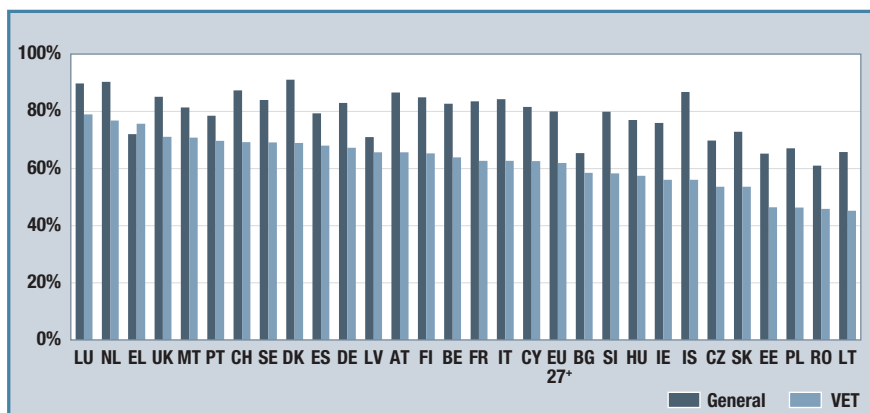
how, in the EU-27+, more than two-thirds of the 15-34 age group work in service sectors (31.7% in distribution and transport, 18.9% in business and other services, and 16.5% in non-marketed services (defence, education, health and social work)).

Figure 32. **Employed medium-level graduates by orientation and sector of activity, 15-34 year-olds, EU-27+, 2009**



Those patterns are common to most countries (Figure 33) but, as can be seen from Figure 34, manufacturing is a key sector of employment for medium-level VET graduates.

Figure 33. **Proportion of medium-level graduates working in the service sector by educational orientation, 15-34 year-olds, EU-27+, 2009**



VET graduates are more likely than general education graduates to work in non-service sectors: 37.8% of VET graduates work in non-services compared with 20.5% of all medium-level general education graduates. This pattern is found in all countries except for Greece (Figure 34) and is most pronounced in eastern European countries as well as in Ireland and Iceland.

Figure 34. **Proportion of medium-level graduates working in the primary, manufacturing and construction sectors by educational orientation, 15-34 year-olds, EU-27+, 2009**

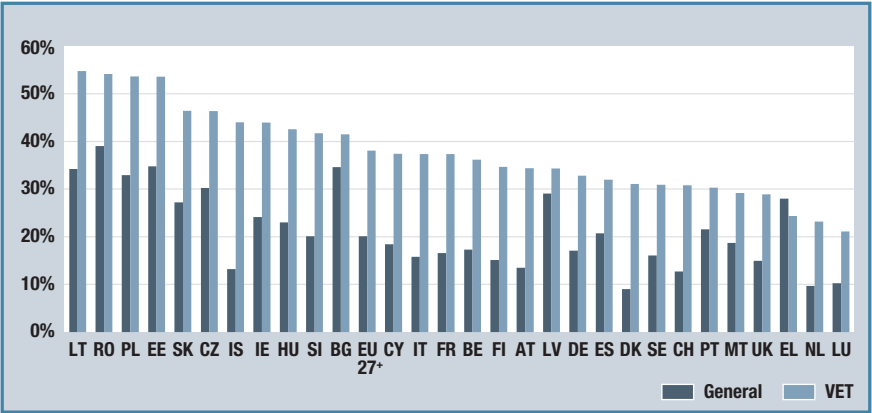
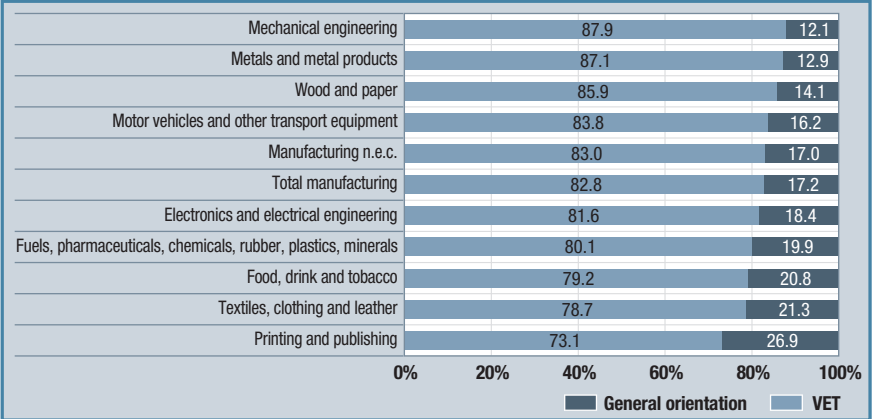


Figure 35. **Distribution of medium-level graduates working in detailed manufacturing sectors by educational orientation, 15-34 year-olds, EU-27+, 2009**



A more detailed analysis of the manufacturing sector shows the marked prevalence of VET graduates: on average, 82.8% of 15-34 year-old workers with a secondary or upper secondary diploma are VET graduates. Figure 35 shows that it is greatest in the mechanical engineering, metals and wood sectors, where manual skills typically acquired in the workplace are most important. Conversely, the prevalence of VET workers is less pronounced in printing especially, which requires softer skills.

7.4. Does VET promote entrepreneurship?

Given its workplace orientation, VET should have an advantage over general education in fostering entrepreneurship. Indeed, entrepreneurship is included at least to some extent in the national curricula for VET courses in almost all European countries. Moreover, the Commission has taken a formal stance on this subject in the 'Oslo agenda for entrepreneurship education in Europe' (European Commission and Norwegian Government, 2006) and the 2006 communication 'Fostering entrepreneurial mindsets through education and learning' (European Commission, 2006).

It is important to understand that 'entrepreneurship education' does not mean generic courses in economics or business but courses and training with the goal of enabling individuals to turn ideas into actions by promoting innovation, creativity and self-employment.

Recent research (Oosterbeek et al., 2010) analysing the Junior achievement young enterprise student mini-company (SMC) programme shows that entrepreneurial education fails to achieve its aims as it has a negative or insignificant effect on entrepreneurial intentions and skills. These negative effects are also documented in the recent report of the Commission's group of experts on entrepreneurship in VET (European Commission, 2009).

To investigate this issue, it is necessary to analyse the breakdown of employment categories by educational orientation. It might be argued that 'self-employed' is not an appropriate category to capture entrepreneurship since it includes several occupations such as consultancy or manual jobs (i.e. plumbers) performed by single individuals. Dividing the self-employed group into the two categories, namely 'with' and 'without' employees, reveals that the latter group is three times larger than the former. Table 3 shows the breakdown of workers by employers, employees and family workers. Most work as employees and only 10% are employers. In this group, there seems to be no significant statistical difference between different educa-

tional orientations. Further, an analysis of the initial choice after completing formal education shows that 1% to 2% of young adults choose to start a private business, without a significant statistical difference between general education and VET graduates.

Table 3. Medium-level graduates not in education by occupational status, orientation and age, EU-27+, 2009

		20-24	25-29	30-34
General education graduates (ISCED 3-4)	Employee	94.4	89.1	85.6
	Family worker	1.7*	1.4*	1.6*
	Self-employed with employees	0.6*	2.2	4.1
	Self-employed without employees	3.3	7.3	8.7
VET graduates (ISCED 3-4)	Employee	93.7	89.2	86.4
	Family worker	1.8	1.5	1.2
	Self-employed with employees	0.4*	2.2	3.4
	Self-employed without employees	4.1	7.1	9

* Denotes unreliable figures due to small sample size.

7.5. Job quality

The concept of labour market outcomes should not be restricted only to employment status but should also consider the type and quality of the job. Defining job quality is difficult given its multidimensional nature, which involves both the objective dimension of the job (what is done and how) and its subjective dimension (who does it) ⁽³⁴⁾. Indeed the slogan of the Lisbon Strategy was ‘more and better jobs’, which is a direct reference to the qualitative dimension (better) of the job. The European Parliament report, ‘Indicators of job quality in the European Union’ (European Parliament 2009), provides an overview of existing work quality indicators with the objective of eventually producing an EU-wide job quality index.

The LFS provides a limited set of variables and indicators that can be used to assess job quality. The preceding analysis on sector, occupation and job polarisation already provides a partial description of job quality. This section

⁽³⁴⁾ Generally, employee surveys identify the quality of the job as perceived by the workers (i.e. job satisfaction).

focuses on the contractual form of the job: (a) temporary versus permanent; (b) part-time versus full-time. The common interpretation is that full-time permanent contracts are 'better' because they provide the employee with a stable employment relationship. However, this assessment must be revised when taking age and sex into account. Job stability is not necessarily an asset at the beginning of a career, when the type of job and pay may be more important than the duration of the employment contract. Later, when family commitments may be greater, job stability becomes more important. On the demand side, firms may prefer to offer temporary contracts at the beginning of the employment relationship and to replace them with long-term contracts after an initial trial period ⁽³⁵⁾.

The distinction between part-time and full-time does not have any obvious quality implications. However, when linked to gender it acquires a different dimension. Women may prefer part-time jobs during certain periods of their careers, especially if they need to reconcile family commitments with work.

Figure 36 shows the breakdown of contractual form by educational orientation, age group and gender. As expected, the share of permanent contracts increases with age, regardless of educational orientation. However, VET graduates have a higher proportion of permanent contracts than general education graduates, regardless of gender.

Figure 37 shows the breakdown of contract duration by educational orientation, age group and gender. The share of part-time contracts is more concentrated in the earlier stages of careers, with VET graduates more likely to have a full-time contract than general education graduates. To eliminate a bias in the result owing to students taking part-time jobs, this section considers solely individuals not in education.

In terms of gender, the first aspect to note is that women account for a higher share of part-time contracts regardless of age group and educational orientation. A second aspect is that the pattern for women is different from that of men. Women VET graduates are less likely to have a part-time job in the younger age groups and more likely to have a part-time job in the older age group.

This difference can be explained by the fact that VET graduates tend to enter the labour market earlier than general education graduates. When the decision to accept a part-time job is made for family reasons, it is more likely to occur after some years of work experience. This result complements and corroborates the findings of Chapter 5.

⁽³⁵⁾ This is an area where the impact of the 2009 crisis can make a difference. In some countries, strict legislation imposes severe restrictions on permanent contracts, transferring the cost of the crisis to individuals with temporary contracts (often young people).

Figure 36. **Medium-level graduates not in education by contract type, orientation, age and gender, EU-27+, 2009**

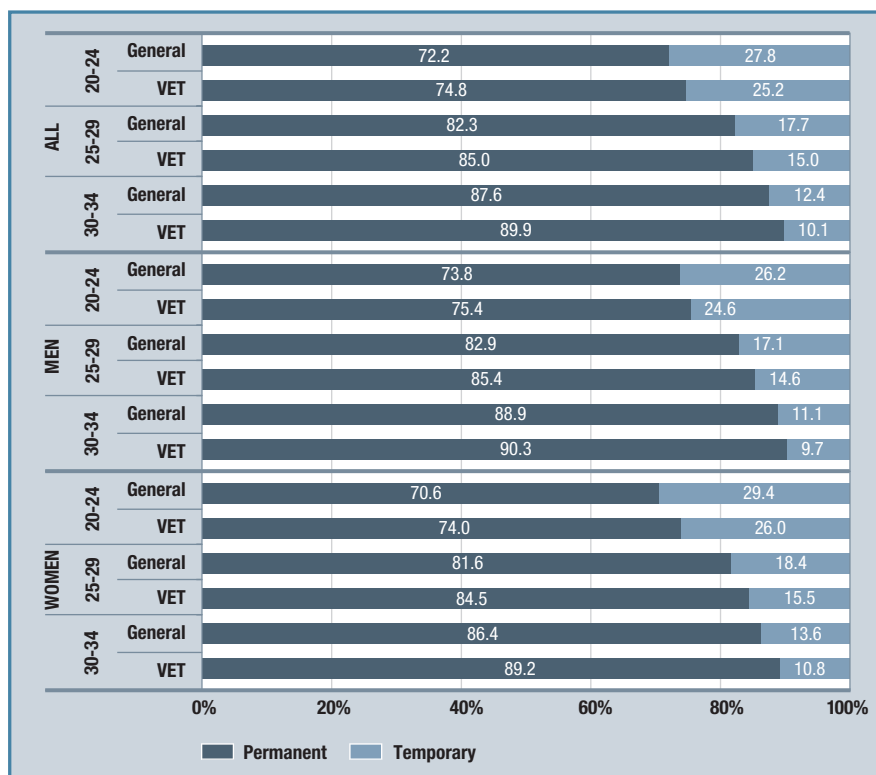


Figure 37. **Employed medium-level graduates not in education by full-time/part-time status, orientation and age, EU-27+, 2009**

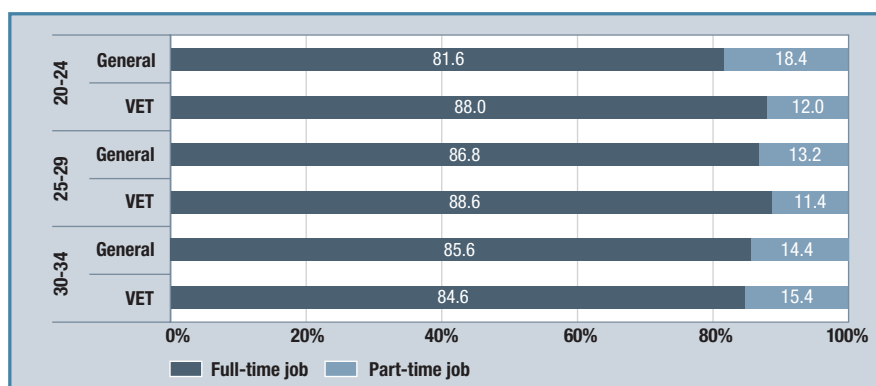
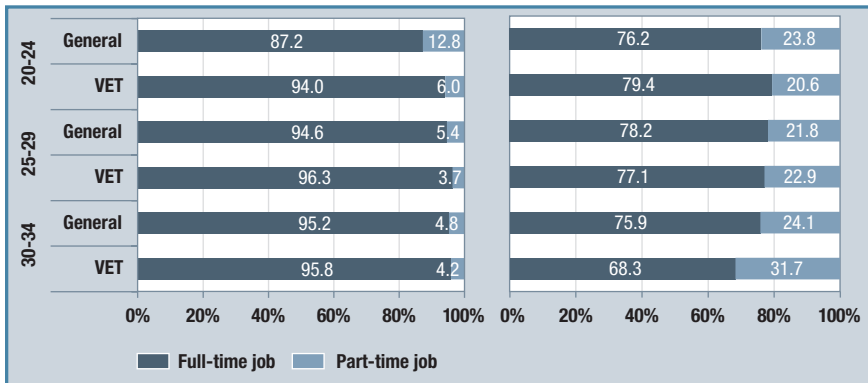


Figure 38. **Employed medium-level graduates not in education by full-time/part-time status, orientation age and gender, EU-27+, 2009**



Box 6. Occupations, sectors and job quality: key findings

Compared with general education graduates, VET graduates tend to be more concentrated in medium-skill manual occupations (mainly craft and related trades) and in technical occupations.

- While most workers are employed in the service sector regardless of age group, educational level and orientation, VET graduates are predominant in the manufacturing sector, particularly in sectors where manual abilities are important (mechanical, wood, metal).
- VET graduates are more likely to be employed in occupations experiencing medium-term decline in demand due to technological change. The effect of offshoring and outsourcing as a source of polarisation seems to be less relevant.
- VET does not appear to foster entrepreneurship either among the self-employed or among the self-employed with employees.
- Generally the share of permanent contracts and the share of full-time contracts increase with age for graduates of both VET and general education.
- VET is more likely than general education to provide both men and women with access to permanent jobs, in particular early in their careers.
- VET is more likely to provide access to full-time jobs at the beginning of the career. This pattern is reversed for women in the later stages of their careers.
- VET systems can be tailored to changing workplace needs more easily than general education.

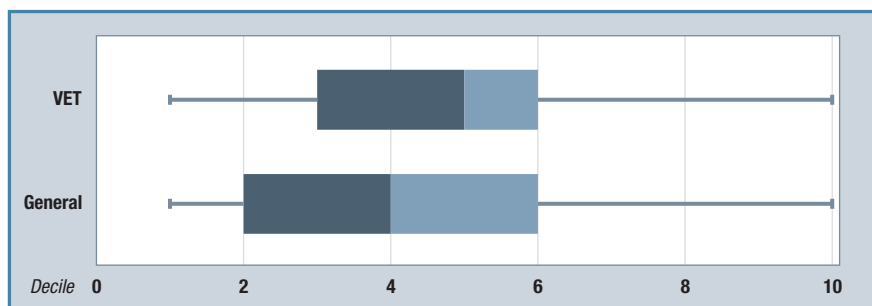
Wages and income

The report emphasises that VET increases the probability of being employed and enables a smoother and faster transition to the labour market than general education. This raises the question of whether VET can be associated with higher wages.

In 2009, the LFS incorporated information that can partly answer this question. The survey asks a compulsory question about the salary earned by the individual interviewed. The information does not report the exact wage but only the decile of the country's wage distribution. Moreover, the question is put only to employees while the self-employed (with or without employees) and family workers are excluded. This greatly reduces the sample size given that the AHM focuses on 15-34 year-olds, many of whom were studying rather than working at the time of the interview.

It is well known that cross-country income comparisons are problematic due to differences in gross/net salary, irregular payments, and payments in kind, etc. Moreover, several countries obtain income data from administrative sources and the income variable (Incdecil) has a delivery date of up to 21 months to allow the correct use of administrative data. Therefore, at the time of writing, the data on income deciles for seven countries (Czech Republic, Iceland, Ireland, Malta, Netherlands, Norway and Sweden,) were still not

Figure 39. **Income decile of medium-level graduates by orientation, EU-27+, 2009**



available. In addition, some countries (in particular Lithuania, Portugal, Slovak Republic and the UK) generate a high share of non-responses.

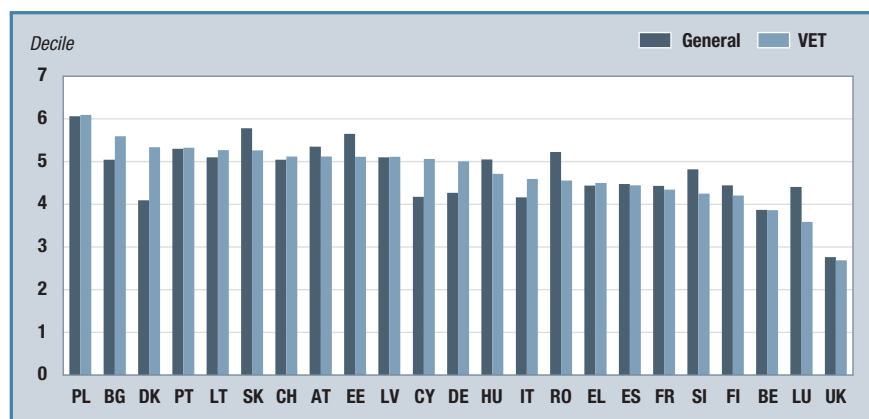
Despite these limitations, the fact that income data are collected in deciles alleviates the problem of comparability of exact figures across countries. The remainder of the analysis will focus on individuals aged 20+ not in education whose highest attained level of education is at least ISCED 3 and 4.

Figure 39, which indicates the breakdown of income by educational orientation using box plots⁽³⁶⁾, shows that the distribution of income for individuals with VET is skewed towards higher deciles compared with individuals with medium-level general education.

In terms of country analysis, Figure 40 indicates the mean income decile for general education and for VET in those countries for which the information is available and shows that the pattern at European level is generally the same at country level.

Figure 41 shows the breakdown of income by VET type aggregating countries where the distinction between VET types is available and provides a more

Figure 40. **Mean income decile of medium-level graduates by orientation, 2009**



⁽³⁶⁾ The box plot is a useful tool for a quick examination of the distribution of a given variable. The graph is composed of a box and two lines above and below the box called whiskers. The upper edge (hinge) of the box indicates the 75th percentile of the data set, while the lower hinge defines the 25th percentile. Therefore the box itself contains the middle 50% of the data. The range of the middle two quartiles is known as the inter-quartile range. The line in the box defines the median value of the data. The ends of the vertical lines (or whiskers) indicate the minimum and maximum data values, unless outliers are present, in which case the whiskers extend to a maximum of 1.5 times the inter-quartile range. The points outside the ends of the whiskers are outliers.

direct comparison of the distribution of income deciles using histograms ⁽³⁷⁾. The figure shows how income distribution is more skewed to higher deciles for workplace-based VET than for school-based VET. In short, like the results of the employment opportunities analysis, it indicates that a direct link with the workplace seems to pay off in terms of wages (Chapter 5).

Figure 42 compares the mean income decile for upper and post-secondary education. On the one hand, the figure shows that education carries a clear premium (higher education levels earn higher wages) but also that the premium for VET is higher for post-secondary education than for upper secondary education.

Figure 41. **Distribution of medium-level VET graduates by income decile and type of VET, EU-27+, 2009**

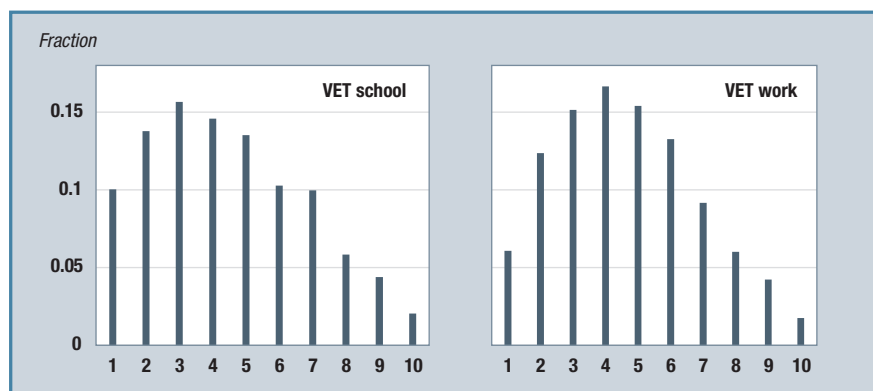
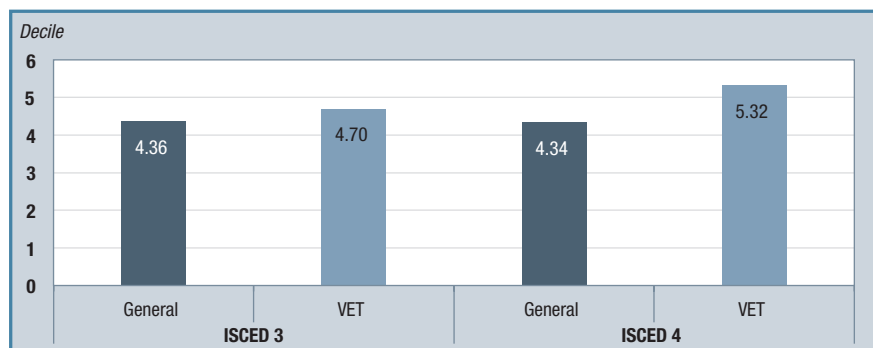


Figure 42. **Mean income decile of medium-level graduates by orientation, EU-27+, 2009**



⁽³⁷⁾ In this case the height of the histogram measures the frequency (in percentage terms) of each category. The sum of the height of all the bins is equal to 1 (100%).

8.1. The role of individual ability

The income premium associated with VET can be the outcome of several factors, some of which could distort the link between educational orientation and wages.

As the data show, VET tends to be more common among men than women. However, despite the fact that men usually earn more than women, even when the sample is controlled for gender, it is still clear that VET enjoys a wage premium over general education at this educational level.

We also know that general education graduates are more likely than VET graduates to continue their studies into tertiary education. When general education students work to support their studies, their wages are lower than those of people who leave vocational education to start work as their main activity. The analysis therefore excludes individuals still in education even when they are working.

Another factor to consider is that vocational education tends to favour specialisation as it provides more specific skills than general education. These skills are often associated with a wage premium at the beginning of the career, which could, however, decline at a later stage. Basically, the wage profile is flatter than for those with a general education. Since the object of the analysis is young people, the wage premium for VET is probably overrepresented in the sample ⁽³⁸⁾.

The data do not permit a control for individual wage profiles, although it is possible to control for this effect partially by using age to condition the distribution of wages. Figure 43 presents the results of that control, confirming that higher age groups earn smaller VET premiums, and in the 30-34 age group the premium almost disappears.

The age effect emphasised above could have also captured a wage experience/duration effect. Given that individuals with a general education are more likely to continue their education, they are likely to enter the labour market later than those with VET, which translates into shorter job durations and, consequently, lower wages, regardless of age group. Figure 44 conditions the distribution of mean deciles by the level of work experience using the employment length variable from the AHM for the youngest age group of 20-24, where there should be fewer differences in job duration.

⁽³⁸⁾ Using evidence from individual data over a lifetime, Hanusheck et al. (2011) find support for the existence of a trade-off for VET graduates between better employment opportunities at the early stages of their career and declining opportunities at later stages.

The figure shows VET is associated with a wage premium in both groups. In the first group, where there are necessarily fewer differences in job duration (i.e. a few months), the wage premium should reflect the educational orientation more directly.

Figure 45 shows the distribution of income deciles across tertiary education (ISCED 5a and 5b). In this case, the pattern is inverted, with the income distribution for young people with academic degrees (ISCED 5a) skewed towards the higher deciles compared with those that have more technical degrees (ISCED 5b). As highlighted in Chapter 6, this is partly due to the

Figure 43. **Mean income decile of medium-level graduates by orientation and age, EU-27+, 2009**

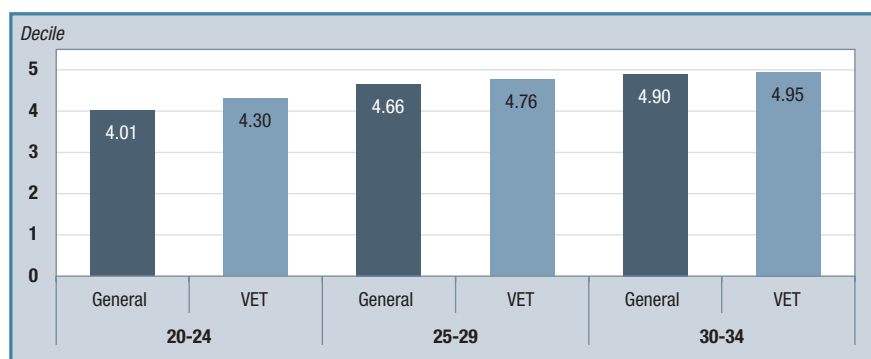
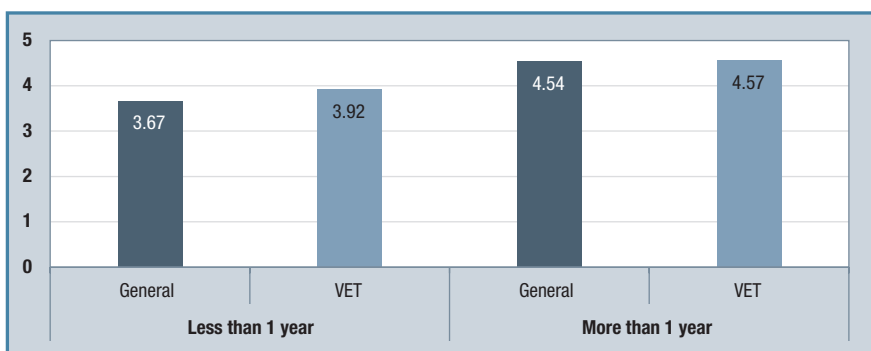
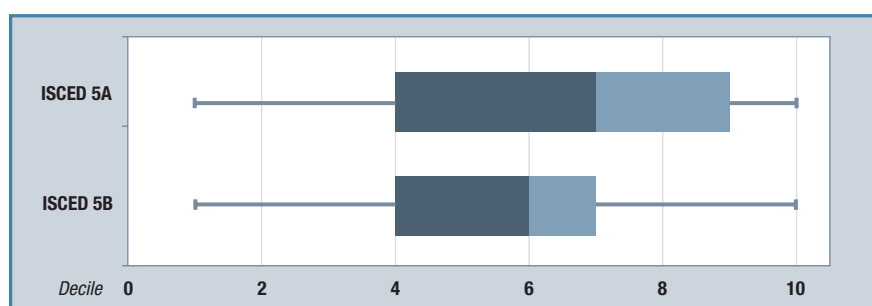


Figure 44. **Mean income decile of medium-level graduates by orientation and level of experience, 20-24 year-olds, EU-27+, 2009**



higher share of ISCED 5a graduates working as professionals. Overall, however, tertiary education earns a clear premium over secondary and post-secondary education: the mean income decile is one point higher on average, regardless of age group.

Figure 45. **Income decile of tertiary level graduates by type of tertiary education, 25-34 year-olds, EU-27+, 2009**



Box 7. **Wages: key findings**

- The wage distribution for employees indicates that VET carries a wage premium over general education, even after controlling for age, gender and work experience.
- The same is generally true at the country level. Only Greece, Hungary, Latvia, Romania and Slovakia report an 'income premium' for general education over VET for the individuals surveyed.
- The wage premium for VET appears to decline over time as wages for VET and medium-level general graduates tend to converge later in careers.
- As with employment opportunities, a direct link with the workplace is desirable because higher incomes seem to be associated with VET that is more workplace-based.
- Tertiary education graduates earn markedly more than graduates of secondary and post-secondary education.
- Graduates from ISCED 5a earn more than 5b graduates, which reflects the fact that a higher share of ISCED 5a graduates work as professionals.

Lessons for VET and its responsiveness to labour market needs

This report has used several different indicators to analyse the labour market outcomes of VET. Overall, the findings show that VET lives up to expectations by being comparatively successful in getting young adults into work in the short and medium terms. Regardless of gender, VET graduates appear more likely to be employed than general education graduates, especially in younger age groups. Moreover, VET graduates enjoy a smoother and faster transition from education to work. Finally, compared with general education graduates at the same level of education and regardless of gender or work experience, VET graduates earn more at the beginning of their career.

These findings produce a decidedly positive result for VET, which should encourage policy-makers to strengthen the policies that support the modernisation of VET such as fostering cooperation between VET and businesses either to develop work-based learning or to have teachers and trainees spending time in enterprises to keep their knowledge up to date. The results of this study indicate that by providing specific skills and work-based learning elements, VET programmes and related experience respond to labour and skills demand.

Nevertheless, such conclusions need to be balanced against broader considerations. The first is the role of education. It is well known that education is an important driver of consistently better labour market outcomes for individuals with higher education. The report demonstrates that VET has a clear propensity to lead to a labour market outcome rather than an education outcome. The fact that VET graduates are more likely than general education graduates to work rather than continue studying means that they are potentially giving up the longer-term gains associated with further education in favour of the short-term benefits. Overall, over a career, the general education option will deliver greater benefits if continued through to successful completion of higher education.

The gap in outcomes between VET and tertiary general education can be reduced by providing additional training opportunities either after the secondary level or on the job after formal VET education. Recent research by Cedefop (2011e) shows that the average (earnings) return on additional years (beyond secondary level) of initial VET is around 7% a year, which is comparable to the rate of return from tertiary education. Moreover, as regards continuing vocational training, the same research finds yearly returns to be an average of 10% for men and 7% for women. That would indicate that investing in workplace training after entry into the labour market seems to pay off as much as investment in further education. In short, supplementing initial VET with on-the-job training and continuing training would enable medium-level VET graduates to narrow the gap with those graduates from tertiary education.

In addition, the first chapters of this report highlight how major forces in the European labour market have different impacts on sectors and occupations. Some of these factors are international by nature (i.e. technical progress and globalisation) while others are more specific to Europe (ageing population, European industrial structure). The overall effect will be a substantial change in the demand for skills at different levels: some occupations are expected to grow faster than others (mainly due to their relative importance in more or less dynamic sectors), but also the skill content of occupations is expected to change as a result of changes in tasks within occupations.

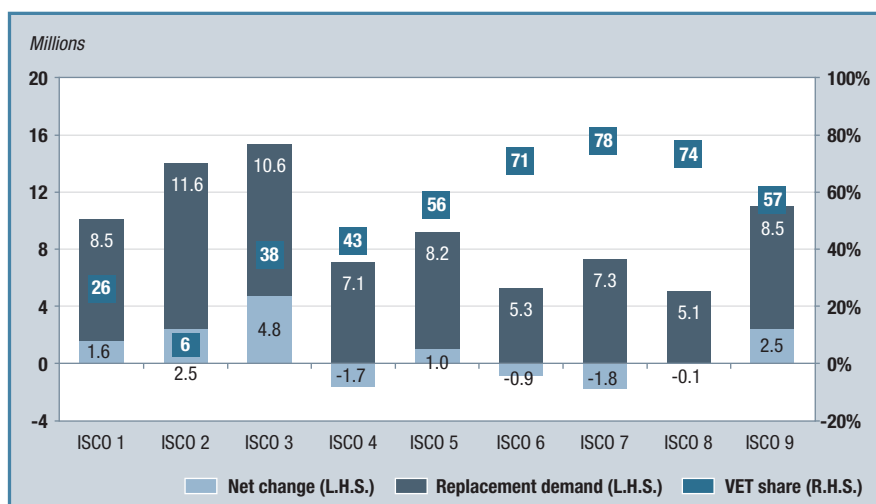
That situation has led Cedefop to conduct regular forecasts of the demand for and supply of skills at European-level up to 2020. Here, it is important to distinguish between two types of demand:

- a) expansion demand (net change): the demand for labour generated directly by employment growth, which is determined mainly by economic growth at sector level;
- b) replacement demand: the demand for labour generated by the outflow of labour from a given stock of the labour force, which is determined by retirement, temporary leave, occupational mobility, etc.

The overall demand for labour is the sum of both types of demand and is a proxy for job openings. Expansion demand provides information about emerging needs due to growing or declining occupations. Replacement demand is the number of workers needed to fill the vacancies created by previous job-holders.

Figure 46 shows Cedefop's forecasts for both replacement and expansion demand in millions. For example, the group of professionals is expected to increase by 14.1 million between 2010 and 2020, driven by a 2.5 million net increase and replacement demand of 11.6 million.

Figure 46. **Expansion and replacement demand by occupation, 15-64 year-olds, EU-27+, forecast to 2020; share of VET in total employment, 20-34 year-olds, EU-27+, 2009**



NB: ISCO: 1. Legislators, senior officials, managers; 2. Professionals; 3. Technicians and associate professionals; 4. Clerks; 5. Service and shop sales workers; 6. Skilled agricultural and fishery workers; 7. Craft and related trades workers; 8. Plant and machine operators and assemblers; 9. Elementary occupations.

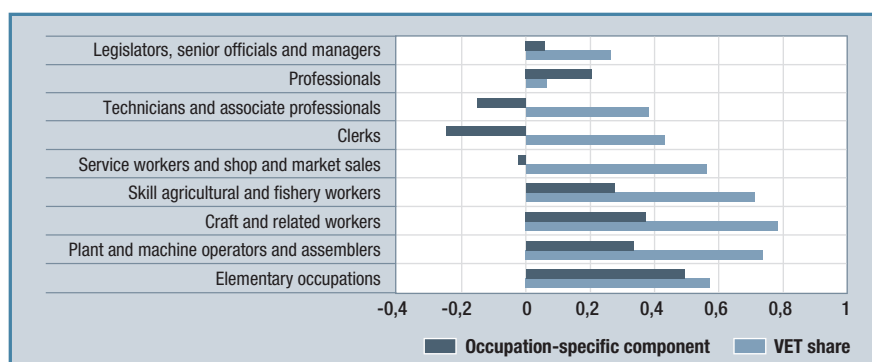
Source: Cedefop and LFS.

In addition to replacement and expansion demand, the figure shows the percentage of medium-level VET graduates among all 20-34 year-olds employed in any given occupation group.

The expansion demand displays a clear tendency towards polarisation of skills: skill and knowledge-intensive occupations are expected to grow in tandem with elementary occupations, while medium-skill occupations are expected to decline. As highlighted in Chapter 7, this tendency is a potential problem for VET given that, as Figure 46 indicates, VET graduates tend to be concentrated in medium-skill occupations. However, and despite this phenomenon, medium-skilled and VET occupations will continue to represent the largest share of jobs in the EU (about 50%) and will continue to experience a high replacement demand. Considering labour demand and the need to support upskilling, which is important to counter the increase in global competition (for low-skill jobs especially), VET systems obviously complement academic tertiary education to provide diversified educational pathways that meet the diverse current and future skill needs.

Furthermore, concentrating on the occupation-specific component of growth, generally attributed to the organisational or technological change affecting each occupation, it is clear that occupations with a greater share of VET graduates tend to be more affected by changes in the nature of the jobs (Figure 47) ⁽³⁹⁾.

Figure 47. **Occupation-specific component of employment growth and VET intensity, EU-27+**



The fact that VET graduates tend to be concentrated in occupations affected by a high level of change poses a major challenge but also underlines the importance of the role of work-based and lifelong learning. This can help provide the skills required by the labour market and upskill the labour force to enable individuals in medium-skill occupations to anticipate labour market restructuring. It is therefore important that VET is considered as a process that integrates initial VET with firm-level training over an individual's career.

Finally, the economic crisis affecting the European and world economies has been more severe and persistent than expected. We know from experience that economic crises tend to accentuate and accelerate sectoral change. The trends described above are therefore likely to underestimate the real extent of the effect on the European labour market. Moreover, as seen in Chapter 7, VET graduates tend to be more concentrated in manufacturing and construction, both of which have contracted considerably during the crisis. The second phenomenon generally observed during recessions is a lack of jobs, which significantly increases competition. Heightened

⁽³⁹⁾ This takes the occupation-specific component of a shift-share analysis, which looks at both structural and occupation-specific components of occupation growth (see annex for details).

competition could force high-skill individuals to accept jobs that do not necessarily require a high level of qualifications, a situation that displaces individuals with lower levels of qualifications and skills. Such a scenario can be particularly problematic in regions with a high and growing share of graduates with tertiary degrees, who could exert supply-side pressure on people with an upper secondary or post-secondary (VET) degree. Ensuring the labour market relevance of skills provided to VET graduates along with opportunities to upskill may help respond to this displacement phenomenon.

Summary of key findings

Educational orientation:

- a) in 2009, 35.2 million 15-34 year-olds in Europe had a medium-level VET education (ISCED 3 and 4). Six in 10 of the 58.5 million 15 to 34 year-olds with at most medium-level education opted for VET;
- b) The popularity of VET varies between countries, with VET systems most popular in the Czech Republic, Austria and Slovakia, but less popular in and Iceland, Ireland and Portugal;
- c) in addition, 6.1 million people held a technical degree (ISCED 5b), which represents 23.5% of the 26 million people with tertiary education at ISCED 5.

Characteristics and background of VET graduates:

- a) men account for around 55% of VET graduates at medium level while women account for a similar proportion of graduates at tertiary level (not differentiating for orientation);
- b) parents' education has a strong influence on the education choices of young Europeans: the higher the parents' level of education, the higher the level of education attained by their children;
- c) parents' education also influences whether young people choose VET or general education.

Education outcomes of VET:

- a) individuals with a general education are more likely to continue their studies at the tertiary level, while VET graduates are more likely to seek employment after completing medium-level education;
- b) three in four 18-24 year-olds complete upper secondary or post-secondary non-tertiary general education and then continue their

formal education. Three in ten individuals who choose a VET orientation continue with formal education and 73% leave formal education to seek entry into the labour market;

- c) the stronger the workplace content of VET, the higher the propensity to move directly into the labour market and the lower the propensity to continue studying.

Labour market outcomes of VET:

- a) VET is relatively successfully at getting individuals into work in the short or medium terms. Regardless of gender, medium-level VET graduates from the youngest age groups are more likely to be employed or to be actively seeking work than medium-level general education graduates;
- b) labour market outcomes are different for men and women, with men enjoying higher employment rates and women lower unemployment rates; controls for gender confirm that VET leads to better labour market outcomes than general education;
- c) graduates of VET programmes with workplace content have higher employment rates;
- d) work experience matters, and its absence has a particularly negative impact on the ability of medium-level graduates to find work;
- e) apprenticeships appear to be effective for young age groups when combined with previous experience;
- f) tertiary education carries a clear employability premium over upper secondary and post-secondary education.

Education-to-work transition:

- a) VET is more successful than general education at supporting the transition from education to work;
- b) the speed of transition is generally faster for VET graduates, who find an occupation more quickly than general education graduates;
- c) the transition is smoother for VET graduates in that:
- d) the cumulative spells in work are longer, just as periods of time without work are shorter;
- e) the first job lasts longer;

- f) the current job lasts longer;
- g) the speed of transition appears similar across types of VET, but graduates of work-oriented programmes spend less time without work;
- h) VET graduates are more likely to use previous experience when job-seeking.

Occupations, sectors and job quality:

- a) compared with general education graduates, VET graduates tend to be more concentrated in medium-skill manual occupations (mainly craft and related trades) and in technical occupations;
- b) while most workers are employed in the service sector regardless of age group, educational level and orientation, VET graduates are predominant in the manufacturing sector, particularly in sectors where manual abilities are important (mechanical, wood, metal);
- c) VET graduates are more likely to be employed in occupations experiencing medium-term decline in demand due to technological change. The effect of offshoring and outsourcing as a source of polarisation seems to be less relevant;
- d) VET does not appear to foster entrepreneurship either among the self-employed or the self-employed with employees;
- e) generally the share of permanent contracts and the share of full-time contracts increase with age for graduates of both VET and general education;
- f) VET is more likely than general education to provide both men and women with access to permanent jobs, in particular early in their careers;
- g) VET is more likely to provide access to full-time jobs at the beginning of a career. This pattern is inverted for women in the later stages of their careers;
- h) VET systems can be tailored to changing workplace needs more easily than general education.

Wages:

- a) the wage distribution for employees indicates that VET carries a wage premium over general education, even after controlling for age, gender and work experience;

- b) the same is generally true at country level. Only Greece, Latvia, Hungary, Romania and Slovakia report an 'income premium' for general education over VET for the individuals surveyed;
- c) the wage premium for VET appears to decline over time as wages for VET and medium-level general graduates tend to converge later in careers;
- d) as with employment opportunities, a direct link with the workplace is desirable because higher incomes seem to be associated with VET that is more workplace-based;
- e) tertiary education graduates earn markedly more than graduates of secondary and post-secondary education;
- f) graduates from ISCED 5a earn more than 5b graduates, which reflects the fact that a higher share of ISCED 5a graduates work as professionals.

List of abbreviations

AHM	Ad hoc module
EU	European Union
EU-27+	27 Member States of the European Union plus Iceland and Switzerland
ILO	International Labour Organisation
LFS	Labour force survey
VET	Vocational education and training

References

- Acemoglu, D.; Autor, A. (2011). Skills, tasks and technologies: implications for employment and earnings. In: Ashenfelter, O.; Card, D.E. (eds). *Handbook of labour economics*. Amsterdam: Elsevier, Vol. 4B, pp. 1043-1171.
- Autor, D.; Dorn, D. (2010). *Inequality and specialisation: the growth of low-skill service jobs in the United States*. January 2010, mimeo MIT.
- Autor, D.; Katz, L.; Kearney, M. (2006). The polarisation of the US labour market. *American economic review*, Vol. 96, No 2, pp.189-194.
- Autor, D.; Katz, L.; Kearney, M. (2008). Trends in US wage inequality: revising the revisionists. *Review of economics and statistics*, Vol. 90, pp. 300-323.
- Autor, D., Levy, F.; Murnane, R. (2003). The skill content of recent technical change: an empirical exploration. *Quarterly journal of economics*, Vol. 118, Issue 4, pp. 1279-1334.
- Beicht, U.; Walden, G. (2005). *Individuelle Kosten und individueller Nutzen beruflicher Weiterbildung in technischen Berufen sowie in Maßnahmen mit technischen Inhalten. Gutachten im Rahmen der Berichterstattung zur technologischen Leistungsfähigkeit Deutschlands [Individual costs and benefits of vocational training in technical occupations and in schemes with a technical content. Expert opinion in the context of reporting on technological performance of Germany]*. BIBB Studien zum deutschen Innovationssystem, No 1.
- Bentolila, S.; Michelacci, C.; Suarez, J. (2010). Social contacts and occupational choice. *Economica*, Vol. 77, Issue 305, pp. 20-45.
- Blundell, R.; Dearden, L.; Sianesi, B. (2005). Evaluating the impact of education on earnings in the UK: models, methods and results from the NCDS. *Journal of the Royal statistical society, Series A*, Vol. 168, pp. 473-512.
- Cedefop (2008). *Terminology of European education and training policy*. Luxembourg: Publications Office. <http://www.cedefop.europa.eu/EN/publications/13125.aspx> [accessed 2.5.2012].
- Cedefop (2010). *Employer-provided vocational training in Europe: evaluation and interpretation of the third continuing vocational training survey*. Luxembourg: Publications Office. Cedefop research paper; No 2. <http://www.cedefop.europa.eu/EN/publications/15390.aspx> [accessed 2.5.2012].

- Cedefop (2011a). *Labour market polarisation and elementary occupations in Europe: blip or long-term trend?* Luxembourg: Publications Office. Cedefop research paper; No 9. <http://www.cedefop.europa.eu/EN/publications/17560.aspx> [accessed 2.5.2012].
- Cedefop (2011b). *Vocational education and training at higher qualification levels*. Luxembourg: Publications Office. Cedefop research paper; No 15.
- Cedefop (2011c). *Vocational education and training is good for you: the social benefits of VET for individuals*. Luxembourg: Publications Office. Cedefop research paper; No 13.
- Cedefop (2011d). *Guidance supporting Europe's aspiring entrepreneurs*. Luxembourg: Publications Office. Cedefop research paper; No 14.
- Cedefop (2011e). *The economic benefits of VET for individuals*. Luxembourg: Publications Office. Cedefop research paper; No 11.
- Cedefop (2011f). *The anatomy of the wider benefits of VET in the workplace*. Luxembourg: Publications Office. Cedefop research paper; No 12.
- Cedefop (2011g). *The benefits of vocational education and training*. Luxembourg: Publications Office. Cedefop research paper; No 10.
- Cedefop (2012). *Skills supply and demand in Europe: medium-term forecasts up to 2020*. Luxembourg: Publications Office.
- Checchi, D.; Ichino, A.; Rustichini, A. (1999). More equal but less mobile? Education financing and intergenerational mobility in Italy and in the US. *Journal of public economics*, Vol. 74, No 3, pp. 351-393.
- Council of the European Union; European Commission (2010). *The Bruges communiqué*. <http://libserver.cedefop.europa.eu/vetelib/2010/75928.pdf> [accessed 24.4.2012].
- Dearden, L. (1999). *Qualifications and earnings in Britain: how reliable are conventional OLS estimates of the returns to education*. London: Institute for Fiscal Studies. Working paper; No 99/7.
- Dearden, L.; McIntosh, S.; Myck, M., Vignoles, A. (2002). The returns to academic and vocational qualifications in Britain. *Bulletin of economic research*, Vol. 54, No 3, pp. 249-274.
- European Commission (2006). *Implementing the Community Lisbon programme: fostering entrepreneurial mindsets through education and learning*. COM(2006) 33 final. http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006_0033en01.pdf [accessed 5.3.2012].
- European Commission (2008). Commission Regulation (EC) No 207/2008 of 5 March 2008 adopting the specifications of the 2009 ad hoc module on the entry of young people into the labour market provided for by Council Regulation (EC) No 577/98. *Official Journal of the European Union*, L

- 62, 6.3.2008, pp. 4-8. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:062:0004:0008:EN:PDF> [accessed 5.3.2012].
- European Commission (2009). *Entrepreneurship in vocational education and training. Final report of the expert group*. http://ec.europa.eu/enterprise/policies/sme/files/smes/vocational/entr_voca_en.pdf [accessed 24.4.2012].
- European Commission (2010a). *An agenda for new skills and jobs: a European contribution towards full employment*. COM(2010) 682 final. <http://ec.europa.eu/social/BlobServlet?docId=6328&langId=en> [accessed 5.3.2012].
- European Commission (2010b). *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy*. COM(2010) 296 final. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0296:FIN:EN:PDF> [accessed 24.4.2012].
- European Commission; Norwegian Government (2006). The Oslo agenda for entrepreneurship education in Europe. Outcome of the conference on *Entrepreneurship education in Europe: fostering entrepreneurial mindsets through education and learning, Oslo, 26 and 27 October 2006*. http://ec.europa.eu/enterprise/policies/sme/files/support_measures/training_education/doc/oslo_agenda_final_en.pdf [accessed 5.3.2012].
- European Parliament (2009). *Indicators of job quality in the European Union*. Directorate general for internal policies. <http://www.europarl.europa.eu/document/activities/cont/201107/20110718ATT24284/20110718ATT24284EN.pdf> [accessed 24.4.2012].
- Field, S.; Hoeckel, K.; Kis, V.; Kuczera, M. (2010). *Learning for jobs – OECD reviews of vocational education and training*. Paris: OECD, Initial report.
- Flabbi, L. (2011). *Gender differentials in education, career choices and labour market outcomes on a sample of OECD countries*. Background paper for the World Development Report 2012. The World Bank.
- Goos, M.; Manning, A. (2007). Lousy and lovely jobs: the rising polarisation of work in Britain. *Review of economics and statistics*, Vol. 89 (February), pp. 118-133.
- Goos, M.; Manning, A. Salomons, A. (2009). The polarisation of the European labour market. *American economic review papers and proceedings*, May 2009, pp. 58-63.
- Goos, M.; Manning, A.; Salomons, A. (2010). *Explaining job polarisation in Europe: the roles of technology*. CEP discussion paper; No 1026.
- Hall, P.; Soskice, D. (eds) (2001). *Varieties of capitalism: the institutional foundations of comparative advantage*. Oxford: Oxford University Press.

- Hanusheck, E.; Woessmann, L.; Zhang, L. (2011). *General education, vocational education and labour market outcomes over the life cycle*. IZA discussion paper; 6083.
- Harmon, C.; Walker, I. (1999). The marginal and average returns to schooling in the UK. *European economic review*, Vol. 43, pp. 879-887.
- Iannelli C. (2002). *Parental education and young people's educational and labour market outcomes: a comparison across Europe*. Mannheimer Zentrum für Europäische Sozialforschung. WP; No 45.
- ILO (2011). *Global employment trends*. Geneva: ILO.
- Mcintosh, S. (2006). Further analysis of the returns to academic and vocational qualifications. *Oxford bulletin of economics and statistics*, Vol. 68, Issue 2, pp. 225-251.
- Meer, J. (2007). Evidence on the returns to secondary vocational education. *Economics of education review*, Vol. 26, pp. 559-573.
- Miller, P. (1998). Youth unemployment: does the family matter? *Journal of industrial relations*, Vol. 40, No 2, pp. 247-276.
- OECD (2009). *Education at a glance*. Paris: OECD.
- OECD (2011). *OECD employment outlook 2011*. Paris: OECD.
- Oosterbeek, H.; van Praag, M.; Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European economic review*, Vol. 54, Issue 3, pp. 442-454.
- Pellizzari, M. (2010). Do friends and relatives really help in getting a good job? *Industrial and labor relations review*, Vol. 63, No 3, pp. 494-510.
- Pistaferri, L. (1999). Informal networks in the Italian labour market. *Giornale degli economisti ed annali di economia*, Vol. 58, Issue 3-4, pp. 355-375.
- Powell, J.; Solga, H. (2008). *Internationalisation of vocational and higher education systems: a comparative-institutional approach*. Berlin: Social Science Research Centre Berlin (WZB). Discussion papers.
- Unesco (1997). *The international standard classification of education, ISCED 1997*. Paris: Unesco.

Shift-share analysis on occupation growth

Taking x as the variable of interest (i.e. employment), $n = 1 \dots N$ the number of occupations and $s = 1 \dots S$ the number of sectors, and $g = \Delta x/x$ be the growth rate of x .

The growth rate of x in occupation n and sector s can be broken down as follows:

$$g_s^n = \bar{g} + (\bar{g}_s - \bar{g}) + (g_s^n - \bar{g}_s)$$

Where \bar{g} is the overall growth rate and \bar{g}_s is the sectoral growth rate. Defining $w_s^n = x_s^n/x^n$ as the initial share of sector s in occupation n enables the above equation to be rewritten as follows:

$$\bar{g}^n = \bar{g} + \sum_{s=1}^S (\bar{g}_s - \bar{g}) w_s^n + \sum_{s=1}^S (g_s^n - \bar{g}_s) w_s^n$$

That means that the employment growth rate of occupation n (\bar{g}^n) can be broken down into three components:

- a) a general component \bar{g} , which defines the element of the occupation growth rate shared with overall employment growth;
- b) two shift factors given by:
 - i) a structural component $\sum_{s=1}^S (\bar{g}_s - \bar{g}) w_s^n$, which defines the relative contribution of sectoral growth where x grows more or less than the average;
 - ii) an occupation-specific component $\sum_{s=1}^S (g_s^n - \bar{g}_s) w_s^n$, which defines the growth rate of occupation n that occurs within sector.



| CEDEFOP

| European Centre for the Development
of Vocational Training

From education to working life

The labour market outcomes
of vocational education and training

Luxembourg:
Publications Office of the European Union

2012 – VI, 88 p. – 17 x 24 cm

ISBN 978-92-896-1125-1

ISSN 1608-7089

doi: 10.2801/92129

Cat. no: TI-RF-12-004-EN-C

Free of charge - On request from Cedefop

No of publication: 3063 EN

From education to working life

The labour market outcomes of vocational education and training

While considerable empirical evidence exists concerning the effectiveness of education in general, there has been less emphasis on understanding, from a comparative European perspective, the effect of the type of education on labour market outcomes for young people. Using data from the EU labour force survey 2009 ad hoc module, this report focuses on the labour market outcomes of VET. Comparing levels and orientations of education, it considers employment, occupation or sector differences, the education-to-work transition process, job quality and the effect on wages. The report underlines that initially VET results in positive labour market outcomes, which should be placed in a longer-term context, given the effect that structural changes in European Union labour markets will have on the demand for occupations in different sectors.

TI-RF-12-004-EN-C

**CEDEFOP**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
E-mail: info@cedefop.europa.eu
www.cedefop.europa.eu

3063 EN

Free of charge – On request from Cedefop



Publications Office

ISBN 978-92-896-1125-1



9 789289 611251