WP8 – The Funding of VET in Austria, Norway and England

Skills2Capabilities Report

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ABSTRACT

The study delivers a broad overview of vocational education and training (VET) funding across Europe and provides detailed case study insights into the situation in Austria, Norway, and UK-England. The paper addresses how VET funding has changed over the past 25 years with respect to what and who is eligible for funding and how that has been determined. It also looks at the responsiveness of VET funding mechanisms to changing skill demands. The focus on Austria, Norway, and UK-England provides an opportunity to assess the funding of VET in differing types of policy regimes: co-ordinated market economies (CMEs) versus liberal market economies (LMEs). The results reveal that in CMEs there are long-standing settlements or social contracts regarding entitlements to IVET and CVET that reduce the need for policy reform to tackle changes in the external market and improve skills matching. In contrast, LMEs lack the long-term settlement with the result that they are subject to constant renewal of the institutions and structures which comprise initial and continuing VET systems.

ACKNOWLEDGEMENTS

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Skills2Capabilities, a Horizon Europe study, is about understanding how skills systems need to develop if they are to assist people to make labour market transitions – i.e. between jobs, employers or sectors – and thereby reduce the level of skill mismatch which might otherwise arise.

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The study

Who pays for skills, and to what extent, is an important determinant of the volume and quality of provision and potentiality. Funding of vocational education and training (VET) is likely to reflect the relative value an economy places on this form of education. The focus of this report is upon understanding how countries have funded VET, the rationales which have guided that funding, and how these have changed over time.

Much of the current policy discourse is about, first, persuading an increasing share of young people to choose the VET education track, and secondly, reorienting VET towards more demand-led provision. Public funding of VET can be instrumental in bringing about these ends. Based on detailed case study in in Austria, Norway, and UK-England, the study addresses the following questions.

1. How has the overall funding of VET changed over the past 25 years, with respect to what and who is eligible for funding, how public funding is determined and delivered, and what have been the determinants of those changes?
2. How responsive are funding mechanisms to the changing demands of the labour market vis-à-vis directing funding towards areas where demand is highest but not necessarily met, and providing training to those who are at risk of labour market marginalisation?

Addressing to the two questions above provides the groundwork for addressing the third question which is posed as a hypothesis in relation to the varieties of capitalism exhibited by each country.

3. Public funding of skills in co-ordinated market economies (CMEs) proves more adaptable to meeting the changing demand for skills than in liberal market economies (LMEs) because it does so in a policy stable policy environment which is better able to anticipate and accommodate change. Is there any evidence of this in practice?

A comparison of Austria, Norway, and UK-England provides an opportunity to assess the funding of VET in differing types of policy regimes: the co-ordinated, social partnership driven approaches in Austria and Norway versus the market driven approach favoured in the UK-England.

Theoretical perspectives

The theoretical framework employed by the study was designed to reveal the way in which the market will determine the types of training and skills development which employers and individuals are likely to invest in themselves. At its simplest level employers and individuals will invest in training from which they can appropriate a return that is at least equal to the costs each of them bears. In practice, the issue is much more complex not least because of the uncertainties which affect the rate of return that, say, an employer is able to obtain from investing in either initial VET (IVET) or continuing VET (CVET). The state has tended to intervene to reduce the degree of uncertainty through measures designed to correct for market failures of one kind or another that, in aggregate, result in economically damaging under-investment in skills and the capabilities of the workforce.

Institutions are also important in determining who pays for skills. Collective wage agreements reduce, other things being equal, the likelihood that workers will quit the training firm for higher wages in a non-training one at the end of their training. The result is employers will be less risk averse with respect to their investments in worker skills than in cases where there is little or no wage regulation. It should also incentivise training investments by companies which are dependent upon a skilled workforce. The examples of Austria, Norway, and UK-England allow comparisons to be made between different kinds of labour market regulatory regimes.

Funding Stability Over Time

In Austria and Norway the evidence points to a relative degree of stability compared with UK-England in relation to IVET. In both the former countries, there is both policy consistency and funding stability for the main part of IVET provision – apprenticeships in Austria and the 2+2 programme in Norway. There is innovation in the systems insofar as there are programmes available in Austria designed to assist young people who may have problems securing an apprenticeship. This can be contrasted with the case of UK-England where there is substantial experimentation attached to the provision of IVET, especially the apprenticeship system, and the funding of IVET. In some respects, the UK-England case study provides an example of a country still trying to find a means of delivering high quality IVET but with fewer financial resources to deliver it with the result that it has sought to pass on an increased share of the costs of training on to the employer at least in the case of apprenticeships with the introduction of the Apprenticeship Levy. It might be assumed that the ongoing reconfiguration of the IVET system in UK-England imposes substantial transaction costs of a kind not found in either Austria or Norway.

Across all three countries it is apparent that there has been a degree of experimentation taking place with respect to how investments in CVET can be optimised. The following are evident:

- increases in the provision of programmes designed, respectively, to stimulate employer investment in training and employee participation in training through funding initiatives;
- concerns about the extent of deadweight looms large (especially in Norway and England where there have also been concerns about public funds being used inappropriately);
- a strong local labour market dimension – i.e. local labour market agencies and authorities are responsible for its administration - as evidenced in the role the Lander play in Austria, and the role of devolution of the Adult Education Budget to regional authorities in England; and

- the use of public funding to accredit CVET and, in the case of England, increase the portability of the skills provided.

While all countries reveal a degree of experimentation with respect to how public funding can best support CVET which, at least in the case of Norway and England, is yet to be fully resolved.

Responsiveness of Funding

A high degree of path dependence in relation to IVET and to a slightly less degree, CVET. Both Austria and Norway reveal examples of relatively stable funding for IVET. This is because each country achieved a degree of settlement several decades ago about the purpose of the VET system, its organisation, and funding. This contrasts with UK-England where the creation of a market-based approach to meeting skills demand commenced in 1980s but has undergone a succession of reforms as it has sought to improve the overall performance of the VET system (this continues today).

Countries such as Austria and Norway require VET systems that can lower employers' adaptation costs in the face of technological and organisational changes. This is because employment regulation results in the costs of hiring and firing that are relatively high. Accordingly, their VET systems need to deliver skills which will allow adaptation to take place at cost which does not impose a competitive disadvantage on employers. In contrast, labour market regulation in UK-England allows employers more flexibility with respect to hiring and firing, but at the expense of employers being more sensitive to the costs of training. Each approach has implications for the funding of VET. In the former, it suggests that relatively less pressure is placed on the state to provide a remedy for skill gaps (because these should be, other things being equal, lower), whereas in the latter, it suggests that the state will need to take a more active role in ensuring that workers acquire skills which allow them to adapt.

Varieties of Capitalism

The reliance upon market mechanisms to match the supply of, and the demand for, skills place a relatively heavy emphasis on tackling market failures often directed at stimulating the demand for skills. In UK-England there has been much innovation to persuade employers and individuals to increase their investments in skills. This continues today, though it appears that government is increasingly targeting sectors where skill demand is relatively high. While this is not absent in Austria or Norway it is not evident to the same degree.

Countries across Europe have adopted a variety of means to ensure that state funding supports the development of skills which would otherwise not take place. It is not a case of one system being better than another. It is more a case that the balance between public and private funding of skills is appropriate to the prevailing labour market environment. Creating a labour market where workers are encouraged to move between sectors and employers is likely to place relatively more pressure on the state to ensure that skill supply is sufficient. As noted in the evidence provided here, those pressures can be substantial and are not always easily addressed, especially where there are constraints on government expenditure. In contrast, in those countries where the costs of adaptation are internalised by firms, this requires institutions to ensure that the costs of adaptation do not adversely affect competitiveness. This also poses substantial challenges on the VET system to provide skills which facilitates change, though arguably less so on VET funding.

A final word

The policy employment policy discourse in Europe references the need for a more mobile Europe where workers can move between jobs, sectors and locales in response to the changing demand for labour and skills. This should have a beneficial impact on skills matching, though there are perhaps substantial social costs attached to contemplate especially where people move between regions and countries. At the same time there is an emphasis on skills supply being tied more directly to skills demand (cf. demand led systems). What constitutes a demand-led system is not fully articulated. The evidence provided here provides two different types of demand led systems. One, UK-England, which relies very much on skills supply responding, through funding incentives, to market signals about demand. Change is of the essence here. The other, Austria and Norway, relies more upon a social partnership approach that is based more on providing the range of skills which will workers to adapt to change. Both countries reveal relatively stable skills policy and funding environments. The key point, already made above, is that depending upon the road which policy makers wish to travel with respect to employment regulation and the creation of demand-led VET systems, there needs to be a skills funding system in place that is capable of supporting those policies to avoid the potential for skill mismatches to increase with all the costs they impose on economy and society.

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1. Introduction

Who pays for skills, and to what extent, is an important determinant of the volume and quality of provision and potentiality, as will be shown, its content. Funding of vocational education and training (VET) is likely to reflect the relative value an economy places on this form of education. How the value of VET – or any form of education for that matter – is defined and measured is a long-standing contentious issue (cf. Blaug, 1971; Becker, 1964). This is not the primary interest here. Rather the interest is that of understanding how countries have funded VET, the rationales which have guided that funding and how these have changed over time. Implicit, of course, within the policy discourse are views about how VET should be valued and estimated.

Much of the current policy discourse is about, first, persuading an increasing share of young people to choose the VET education track, and secondly, reorienting VET towards more demand-led provision. This is evident in a range of policy documents from the European Commission (EC), such as its successive Skill Agendas (EC, 2016; 2020), the Draghi Report on the European Union's competitiveness (2025), and the Union of Skills (EC, 2025). The concept of a demand-led VET system is never fully articulated other than reference to skills which have economic value in the labour market the production of which is likely to reduce the incidence of competitiveness inhibiting skill shortages and gaps.[1] What constitutes a demand-led VET provision, and how it should be funded, is far from the consensual one in the European policy discourse (Hogarth et al., 2024). In practice, there tends to be a mixed bag of policy provision – recognition of the need to deliver skills which confer economic value on the learner but also recognition of the wider, sometimes less tangible benefits of VET (Breines, et al., 2024; Cedefop, 2011).

The study delivers a broad overview of participation and funding of VET across Europe and provides detailed case study insights into the situation in Austria, Norway, and UK-England. It addresses the following questions.

1. How has the overall funding of VET changed over the past 25 years, with respect to what and who is eligible for funding, how public funding is determined and delivered, and what have been the determinants of those changes?
2. How responsive are funding mechanisms to the changing demands of the labour market vis-à-vis directing funding towards areas where demand is highest but not necessarily met, and providing training to those who are risk of labour market marginalisation?

Addressing to the two questions above provides the groundwork for addressing the third question which is posed as a hypothesis.

3. Public funding of skills in co-ordinated market economies (CMEs) proves more adaptable to meeting the changing demand for skills than in liberal market economies (LMEs) because it does so in a policy stable policy environment which is better able to anticipate and accommodate change. Is there any evidence of this in practice?

[1] As an aside, the incidence of skill shortages and gaps across Europe and their capacity to inhibit performance would appear to be modest in many instances (McGuinness and Staffa, 2025).

A comparison of Austria, Norway, and UK-England provides an opportunity to assess the funding of VET in differing types of policy regimes. According to the varieties of capitalism approach Austria and Norway provide examples of CMEs whereas UK-England provides an LME (Hall and Soskice, 2001; Thelen, 2004). Both Austria and Norway provide examples of where funding for initial VET, over many years, has largely been met by the state within a stable policy environment. By way of contrast, England provides an example of where policy change has been more dynamic with policy makers introducing successive reforms to make the skills system, according to their definition, more demand led.

In the sections that follow, the conceptual framework used to shape the research is described. This is followed by an analysis of the funding of both initial (IVET) and continuing vocational education and training (CVET), respectively, in each of the three countries. Based on evidence drawn from the Continuing Vocational Education and Training Survey (CVTS), analysis is then provided of how funding for CVET has changed, over time, across European Union (EU) member states. The final section of the paper delivers, by way of conclusion, a comparative cross-country assessment of VET funding.

2. Conceptual Framework: The role of VET funding in meeting skill demand

2.1 Who Should Pay for What?

Typically funding, or more specifically public funding of VET is used to deliver training that benefits economy and society (however that might be defined), which might not otherwise be provided for a variety of reasons (this is returned to below). Benefits can be narrowly defined with respect to securing employment, increasing productivity, and reducing skill shortages (at a micro-level) or stimulating economic growth (from a macroeconomic perspective). There is also an interest in the wider benefits skills can confer on economy and society linked to debates about good jobs, health, and happiness amongst other things.

In relation to IVET at upper secondary level, the state has tended to assume a substantial share, if not all its delivery costs where it is predominantly classroom based. This largely derives from society's wish for compulsory education to continue, in one form or another, to age 17 or 18 years, and the uncertainties attached to who else might fund it. Matters become fuzzy when programmes with a workplace training element are considered such as apprenticeships. Apprentices will produce output of value to the employer which it can then use to fund, in full or in part, apprentices' wage and on-the-job training costs. The state will meet the costs which the employer is unwilling or unable to meet (i.e. where the employer cannot be sure of appropriating the full return of its training investment). Typically, this results in the state funding the vocational school element.

The provision of CVET might be regarded as a private matter to be self-financed by employers where its purpose is to improve the performance of their businesses. In practice, public funding has been used extensively to support CVET provision to employees.[2] Public policy's desire to externally accredit CVET in all its forms (to increase both the portability of skills and improve the quality of provision), coupled with concerns that employer provision of training is too low, and a more general need to improve the skills of those in employment to avoid skills obsolescence in the face of technological change, has led the state to fund the training of adult employees.

2.2 Theoretical Considerations

Who and what the state should fund has been shaped, at least in part, by human capital theory associated with Becker (1964), Mincer (1964; 1974) and Shultz (1963). Human capital theory makes a distinction between general and specific skills. At its simplest level the theory states that employers will be willing to fund training that is unique to their specific needs (company specific training). In other words, employers will fund training where they can appropriate the return. General training, in contrast, is that which is applicable across employers. In which case, the social returns will exceed the private ones, in a perfectly competitive market, such that employers will be unwilling to invest in general skills. Lazear (2009), however, notes that nearly all

[2] As opposed to the training element which is found in some active labour market policies to designed to assist those out of work to find jobs which is outside the remit of the study reported on here.

training is general, but employers extract a rent from it where it is packaged in such a way that it becomes specific the needs of the employer paying it. This further increases the monopsony power of employers in relation to the training they provide. It needs to be borne in mind that training employers already possess a degree of monopsony over their skilled workers power because of information asymmetries. They will, for example, have knowledge of their skilled employees' capabilities and marginal product which is not available to the would-be non-training employer looking to recruit workers from the external labour market.

The human capital model is predicated on perfectly competitive labour markets. In practice there are a range of labour market imperfections (externalities) which have implications for the provision of skills development and who pays for it. This is the key to understanding how the variety of capitalism practised in a country explains its funding of skills. The varieties of capitalism literature suggests that employers situated in labour markets which are subject to regulation through tri-partite arrangements of one kind or another face lower training investment risks than in those where this kind of labour market regulation is less in evidence (Hall and Soskice, 2001; Thelen, 2004). This is the key distinction between CMEs and LMEs. In the former case, collective agreements establish wage rates at various levels which reduces the free-rider problem (Acemoglu and Pischke, 1999). Non-training employers will be unable to 'poach' fully trained employees from another company by offering a higher wage, because collective agreements prevent or reduce the propensity for this to take place to the same extent as in LMEs. In other words, the employer investments in skills and training in CMEs face less risk than in LMEs because in the former there is less risk that the workers it has trained will be 'poached' by non-training employees. And where collective bargaining / wage regulation results in a degree of wage compression between unskilled and skilled workers, this should incentivise employers to train because the return (or marginal product) of a skilled worker will be higher than that of the unskilled one.

The LME versus CME comparison is sometime used to explain participation rates in apprenticeships, though the same arguments are potentially applicable to other kinds of training including CVET. In countries with relatively high levels of employment regulation, the costs attached to hiring and firing workers can be substantial (Muehlemann, et al., 2010). Employment regulations in CMEs impose relatively high adaptation costs on firms (i.e. the costs attached to laying off workers and/or recruiting new ones). These, however, can be offset by training apprentices in a wide range of skills so that they are able to adapt to future change, presuming that apprenticeship training in CMEs is relatively broad based because its content is determined collectively by the social partners. Because apprentices (or former apprentices) will exhibit relatively low quit rates in CMEs, recruitment costs are reduced. This stands in contrast to LMEs where training content may be relatively narrow where it is largely determined by employers, and thereby less adaptable to future change (Breines, et al. 2024). Quit rates may also be relatively high because LMEs tend to place relatively more weight on labour market mobility (movement between employers) as a means of ensuring that skills supply meets demand.

2.3 Market Failures and Public Funding of VET

The human capital model assumes that the market will allocate training / skills development. Market failures will arise for various reasons including, but not limited to, lack of access to capital to fund training, a lack of information about the benefits of investing in training, and where the social returns to training exceed the private ones (Brunello and De Paola, 2004). The response is for the state to act by providing access to funding and information. It is apparent that the state uses a variety of mechanisms to fund training that would otherwise not take place because of market failures.

There are variety of mechanisms that have been introduced to counteract market failures. These mechanisms include direct public funding, subsidies, training loans, vouchers, and information provision. Each is designed to address specific barriers to training—such as lack of capital, poor information about returns to training, or the presence of externalities where the social benefits of training exceed private ones. In practice they can be addressed by flooding the labour market with information about the returns obtained from investing in skills of various kinds. This information can be processed by various public and private sector agencies to provide guidance to students / learners, adult workers and employers. Where capital access is a problem, a variety of mechanisms have been introduced to counteract market failures: training levies, training funds, tax relief on training expenditure, individual entitlements to training or lifelong learning, and training loans (Müller and Behringer, 2012). There are, for example, various (social partner) training funds which, in theory at least, are designed to fund training that would otherwise not take place by collectivising the risk associated with funding particular kinds of skills development. Some of these funds are long-standing and have been subject to various reforms to ensure that levels of deadweight are tempered.[3] It is also notable, that there is an increasing appetite amongst policy makers to incentivise individuals to train through granting them training entitlements such as Individual Learning Accounts.

An inherent problem attached to interventions to overcome market failures is that of training for training's sake. If, for example, employer training provision is eligible for a tax deduction, employers might be tempted to provide training, without recourse to any training needs analysis, to reduce their tax bill. Similarly, where individuals have a training entitlement they may be tempted to use it without consideration of how it might be used to improve their job prospects. In both cases, it might result in training which would not otherwise have taken place, but it has, respectively, limited impact on organisational performance or an individual's career progression.

2.4 Low and high skill equilibria

There are situations where skill demand and supply might be matched but at a level policy makers find undesirable. Public funding of both IVET and CVET is predicated on the assumption that the prevailing skills equilibrium is too low. There are attendant concerns about the skills trajectories of countries, regions, and /or sectors. The low-skill equilibrium hypothesis, developed in relation to the UK at the end of the 1980s, speculatively suggested that low levels of skill

[3] Cedefop has developed a database of various training funds in operation across Europe.

demand and supply fed off one another (Finegold and Soskice, 1988; Green and Ashton, 1992). The result was a vicious spiral of dwindling demand for, and supply of, skills. There is a substantial literature on skill ecosystems and how various institutions collaborate to bring about higher skill equilibria at local/regional or sectoral levels (Finegold, 1999; Buchanan, et al., 2017). As will be revealed, some countries have increasing ceded the allocation of public funding for both IVET and CVET – especially the latter - to the support of the development of regional or local business clusters with a view to raising skill equilibria. The ecosystem approach essentially becomes the mechanism through which both private and public investments in skills are optimised.

2.5 Conclusion

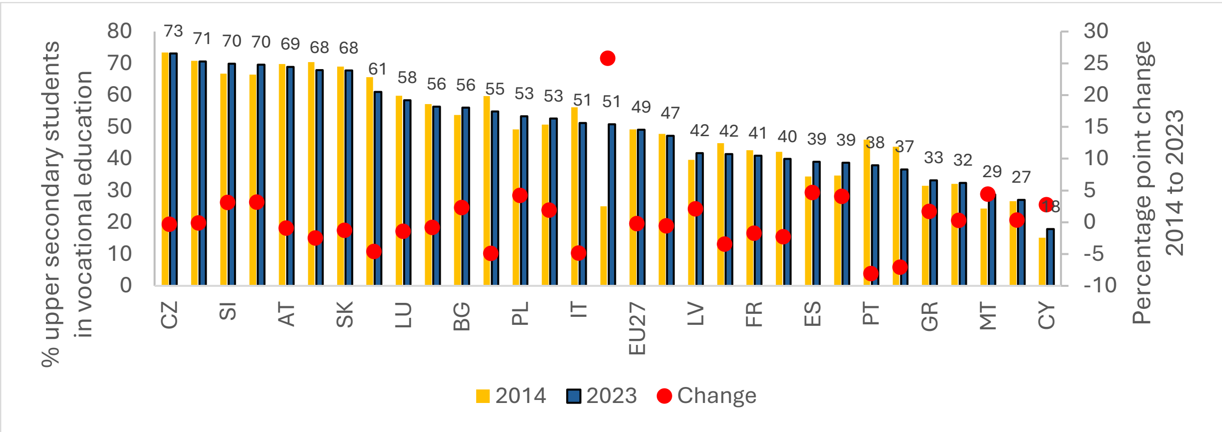
The theoretical framework outlined above is designed to reveal the way in which the market will determine the types of training and skills development which employers and individuals are likely to investment in themselves. At its simplest level employers and individuals will invest in training from which they can appropriate a return that is at least equal to the costs each of them bears. In practice, the issue is much more complex not least because of the uncertainties which affect the rate of return that, say, an employer is able to obtain from investing in either IVET or CVET. The state has tended to intervene to reduce the degree of uncertainty through measures designed to correct for market failures of one kind or another that, in aggregate, result in economically damaging under-investment in skills and the capabilities of the workforce. Institutions are also important in determining who pays for skills. Collective wage agreements reduce, other things being equal, the likelihood that workers will quit the training firm for higher wages in a non-training one at the end of their training. The result is employers will be less risk averse with respect to their investments in worker skills than in cases where there is little or no wage regulation. It should also incentivise training investments by companies which are dependent upon a skilled workforce. How all this works out in practice is explored in the chapters that follow.

3. The Funding of Initial Vocational Education and Training

3.1 The landscape across Europe

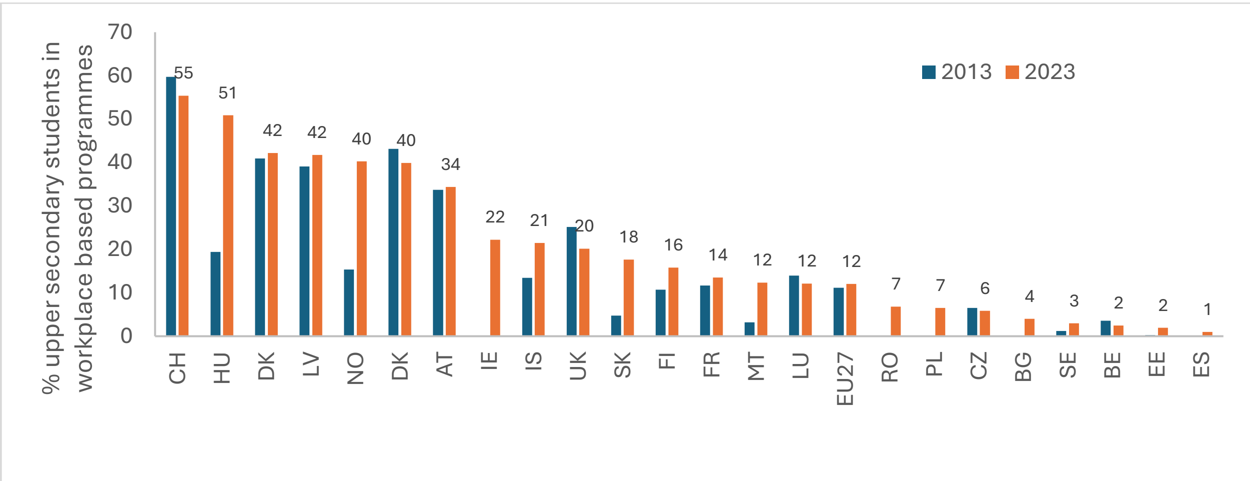
Over time the share of students in upper secondary education and post-secondary non-tertiary education who select the vocational track has remained stable. Over the 2013 to 2023 period the EU27 average share has been around 50 per cent. If one concentrates on upper secondary vocational education (for which there are more complete data across countries) the data show substantial variability by member state: from 74 per cent in Czechia to 18 per cent in Cyprus (see Figure 1). If one looks at the share of students in workplace-based programmes such as apprenticeship the data reveal, again, that there has been relatively little change in the shares at the EU27 level where around 12 per cent of upper secondary school students have been enrolled on this kind of programme. Again, there is substantial variation by country, but most countries, with a few exceptions, show little change in the shares over time (see Figure 2).

Figure 1: Share of students in upper secondary students in vocational education



Source: Eurostat Pupils enrolled in upper-secondary education by programme orientation [educ_uoe_enrs05]; Note – data for UK from 2021

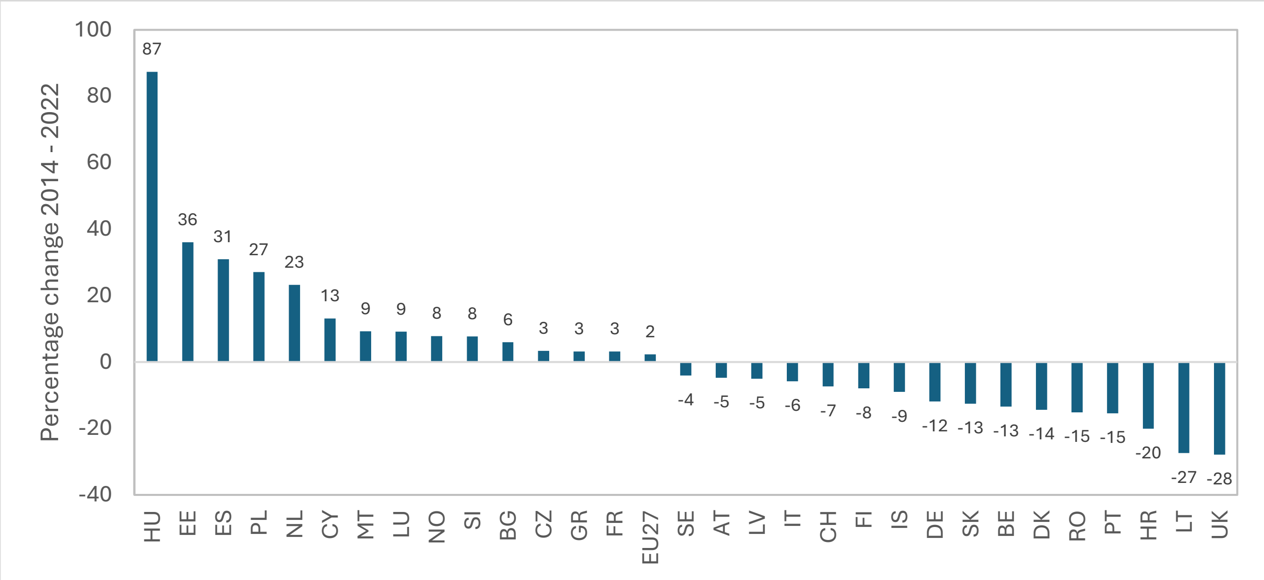
Figure 2: Share of upper secondary students enrolled on workplace based vocational programmes



Source: Eurostat Pupils enrolled in upper-secondary education by programme orientation [educ_uoe_enrs05]; Note data for UK from 2021

As well as looking at shares, there is also a need to look at volumes / number of students since this is a determinant of overall funding levels. The changes in the number of upper secondary vocational students over time is shown in Figure 3. Given that the shares between vocational and general have not changed much over time, it stands to reason that where change is observed this is likely to be driven by demographic change.

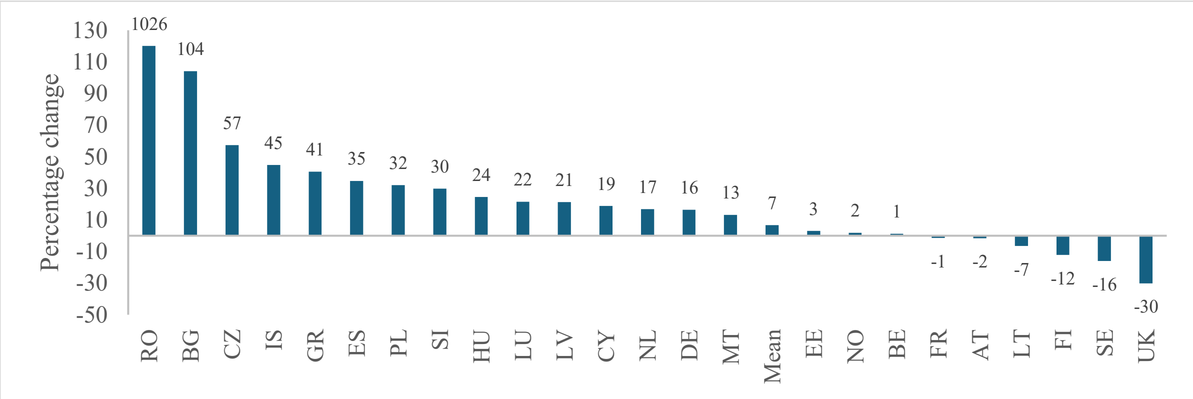
Figure 3: Change in the number of students in upper secondary vocational education, 2014 to 2023



Source: Eurostat Pupils enrolled in upper-secondary education by programme orientation [educ_uoe_enrs05]; Note: data for UK for 2021

Expenditure on IVET provides a proxy measure of public funding, given that most initial VET is delivered by public rather than private institutions (exempting the costs met by employers in delivering apprenticeship style training which is not included in the estimates provided below). The evidence points to expenditure on vocational education increasing over time in real terms (see Figure 4).

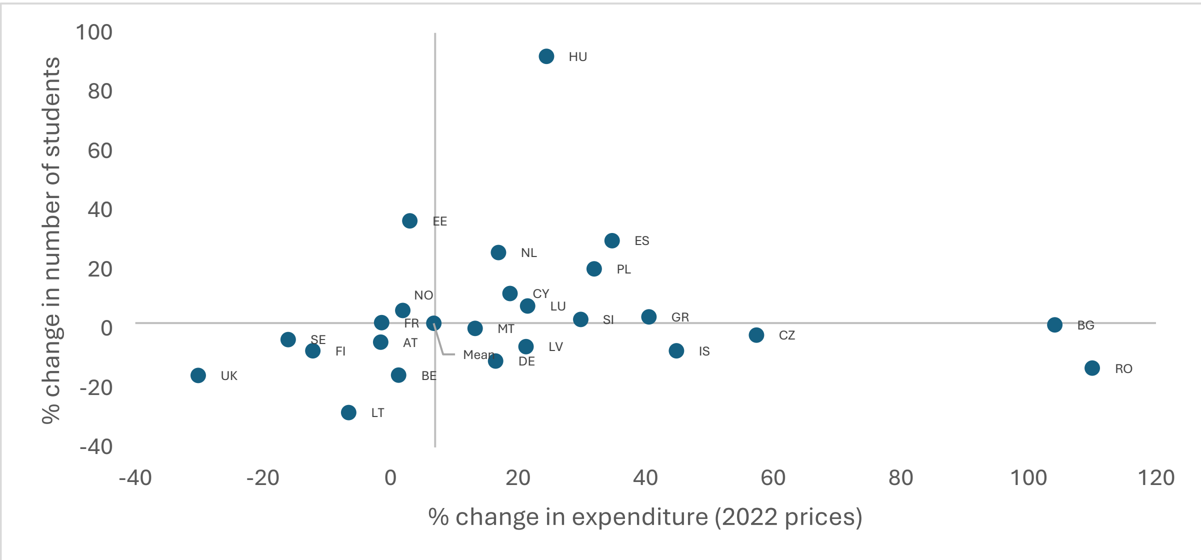
Figure 4: Percentage change in expenditure on vocational education and training at upper secondary and post-secondary non-tertiary education, 2014 to 2022 (2022 prices)



Source: Eurostat expenditure of the educational institutions on vocational education by education level, programme orientation [educ_uoe_fini02]; own calculations. Note growth in Romania was over 1000 per cent.

A comparison of the change in the number of students and expenditure is provided in Figure 5. It reveals a cluster of countries where student numbers and real expenditure has declined (notably the UK), countries which have experienced relatively high growth in expenditure but not student numbers (Bulgaria and Romania), and countries where both expenditure and student numbers have risen (most notably Hungary). The comparative statistical data at country level potentially disguises more detailed changes which have taken place within countries. The next sections consider in more detail the changes in funding which have occurred across the case study countries: Austria, Norway, and England-UK.

Figure 5: Percentage change in student numbers and expenditure on vocational education, 2014 to 2022



Sources: Eurostat expenditure of the educational institutions on vocational education by education level, programme orientation [educ_uoe_fini02]; Eurostat Pupils enrolled in upper-secondary education by programme orientation [educ_uoe_enrs05]; own calculations

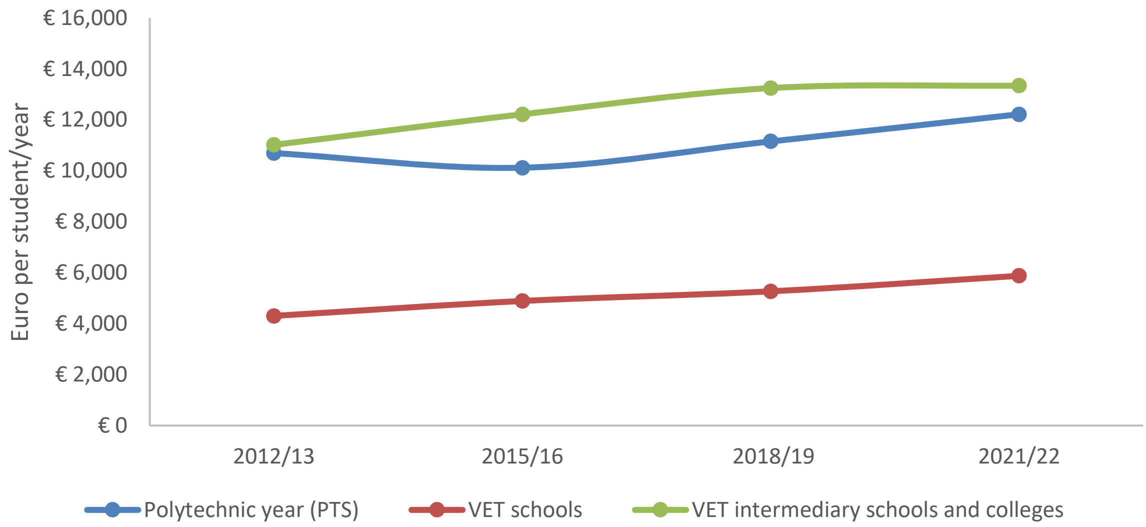
3.2 IVET Funding in Austria

In Austria, public funding for initial vocational education and training (IVET) for young people comprises three distinct components:

1. public expenditure associated with operating vocational schools (with the vast majority of VET schools integrated into the public system);
2. the costs of ensuring access to alternative pathways for those unable to secure a place in vocational schools or apprenticeships, and
3. the financial support provided to enterprises for offering apprenticeship training.

Per-student costs in VET are primarily shaped by teacher wage levels, as teachers are public employees and fall under various pay schemes that have developed over time. In addition, the extent to which schools utilise their full capacity directly affects the average cost per student, though schools are only partially incentivised to enrol more learners. Overall, public expenditure per VET student has remained relatively stable between 2012 and 2021**,** increasing by 24 per cent over this period, compared with a 21 per cent rise in consumer prices. In the 2021/22 academic year estimated spending per VET student amounted to Euro 14,161 (see Figure 6). With approximately 314,000 students enrolled, this results in a total of Euro 4.447 billion in public expenditure for public VET schools (excluding the health care sector which is treated separately). This figure includes both young learners (up to age 19 years) in the main programmes and a comparatively small number of adults attending part-time programmes (*Schulen für Berufstätige*).

Figure 6: Estimated expenditure per student, 2012 to 2021 (current prices)

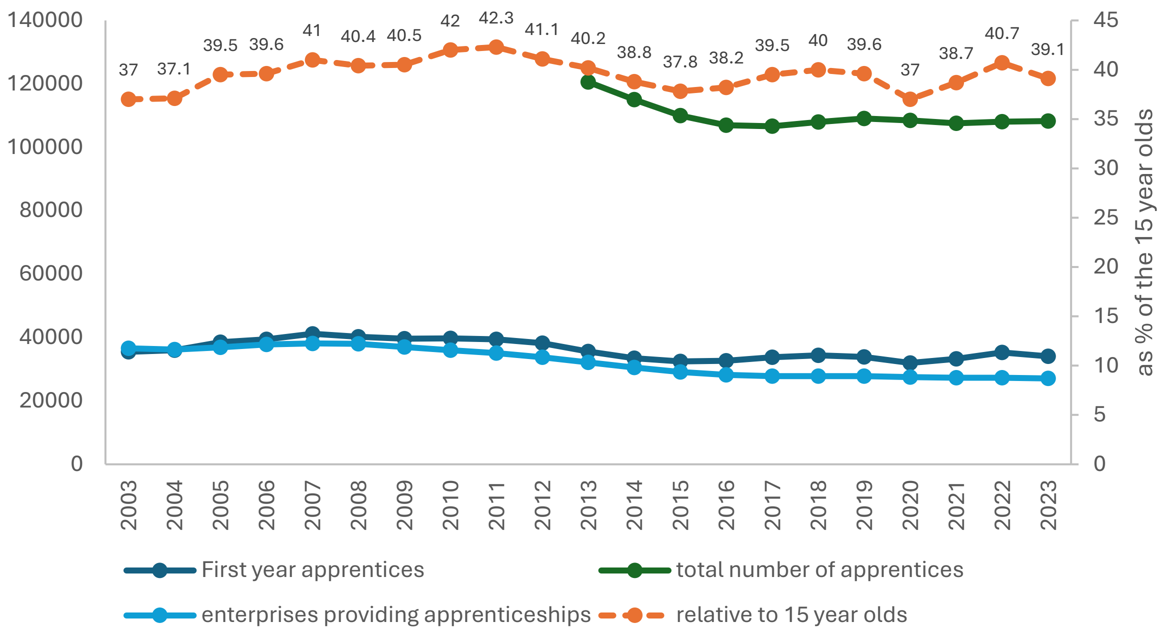


Sources: Own estimates based on (Breit et al., 2019; Bruneforth et al., 2016; Bundesministerium für Bildung, 2024; Bundesministerium für Bildung, 2021)

Dual education or apprenticeship (*Duale Ausbildung/Lehrausbildung*) is a key component of Austria's upper secondary education system. Given that the apprenticeship contract creates a specific employment relationship, apprentices are also part of the employment system, with (most of) the duties and most of (or even extended) rights of the regular employment contract. For example, they can be laid off only under specific circumstances during their apprenticeship.

By 2023, 34,082 people entered the first year of a regular apprenticeship. Overall, there were 108,266 in an apprenticeship. The first-year apprenticeship numbers have declined slightly (by 4 per cent) since 2003 and were 17 per cent higher in 2007 than in 2023. Note, the figures include the alternative route available with the supra-company apprenticeship scheme (see below). In 2023, 27,083 enterprises provided at least one apprenticeship place, a quarter less than 20 years earlier (see Figure 7).

Figure 7: Number of first year apprentices, apprentices in total, and enterprises providing apprenticeship places in Austria – 2003 to 2023



Source: Authors' estimates based on Dornmayr and Löffler, 2024

Funding for apprenticeship is split between the state and employers. The state funds the school-based part (including the preparatory year), contributes to employers' costs of apprenticeships, supports families of apprentices and provides – mainly via the public employment service (PES) – resources for alternative arrangements for young people unable to find an apprenticeship. Employers bear the net costs of apprenticeships, that is the gap between the apprenticeship wages and the costs for on-the-job training (minus the public subsidy provided), and the productive contributions of apprentices. Collective agreements establish agreed wage levels for apprentices.

The school-based part of the apprenticeship system has two components. The smaller one concerns the preparatory year (*Polytechnische Schule*) for 15-year-olds preparing for apprenticeship. In the school year 2021/2022, approximately Euro 180 million were spent on 12,200 participants, with roughly 1 in 8 young adults entering this programme. For public VET schools, around Euro 632 million were spent in 2021/2022, serving about 108 000 regular apprentices (the large majority of them aged between 15 and 19 years).

For young people, who cannot find a regular apprenticeship place, the supra-company training centres were introduced. These include both non-profit and for-profit training providers, mainly from the field of active labour market policy related training provision, which provide on-the-job training in workshops instead of in the workplace. They are funded by the PES for these services (with the PES typically receiving special donations from the general government budget to fund this type of provision). In 2023, support was provided in 14,485 instances (up from 9,823 in 2013). The proportion of apprentices within the supra-company system increased from 8.1 per cent in 2013 to 13.4 per cent in 2023. The PES spent Euro 56 million in 2023, up from Euro 27 million in 2013, representing an increase of about 50 per cent when taking inflation into consideration (about 33 per cent between 2013 and 2023). The need to provide alternatives to regular apprenticeship places has been declining.

The state contributes to the employers' cost of apprenticeship training. In 2022, via the co-funding mechanism (*Basisföderung*), Euro 199.1 million were allocated. Employers receive payments equalling the gross monthly wage of the apprentice: three in the first year of the apprenticeship, two in the second, and one the third or fourth year. Various other costs are refunded by the state related to, for example, board and lodging, and examination costs.

There are various other public schemes available equivalent to the apprenticeship qualification, all funded by the PES. These include Intensive Training to Qualify as Skilled Workers (*Fachkräfte-Intensivausbildung – FIA*) (Federal Ministry of Labour and Economy (BMAW), 2024). Unemployed individuals can prepare for the apprenticeship examination, regardless of their previous work experience. Training is delivered by non-profit and for-profit providers that have secured contracts. During participation, individuals receive a subsidy—either a minimum amount or an amount equivalent to their unemployment benefits, supplemented by an additional payment. In 2023, a total of 7,308 individuals received support under this scheme, with overall expenditure amounting to Euro 77.1 million, or approximately Euro 10,550 per participant. The FIA framework is one of the most flexible instruments available, enabling the PES to steer unemployed individuals into sectors facing a significant shortage of skilled workers. A related programme, Women in Crafts and Engineering (Frauen in Handwerk und Technik – FIT), aims to attract women to occupations traditionally dominated by men. In 2023, this programme had a dedicated budget of Euro 29.7 million (Federal Ministry of Labour and Economy (BMAW), 2024).

Turning to the net costs of apprenticeship for employers, there are regular studies that attempt to estimate both the costs incurred and the benefits gained (Löffler; et al., , 2024; Schlögl and Mayerl, 2016). These studies have consistently shown that, on average, employers face net costs. These are primarily driven by apprenticeship wages, which are set by collective agreements and have risen significantly above the rate of inflation over the past decade, reflecting efforts by the social partners to raise minimum wages across all categories of staff. The (potential) benefits mainly derive from the productive contributions of apprentices. In order, however, for employers to realise any benefit, it is essential that they have a sufficient volume of tasks for apprentices to independently carry out – an arrangement found in some traditional apprenticeship occupations, but not in others.

Based on a relatively small sample, the average net costs of apprenticeship in 2024 were estimated to be Euro 9,338 in the first year, Euro 9,575 in the second year, and Euro 14,047 in the third year (Löffler; et al., 2024). It is important to note that among employers surveyed, 24 per cent reported a net benefit in the first year of apprenticeship, 14 per cent in the second, and 8 per cent in the third – highlighting that the cost-benefit balance varies significantly between firms.

Overall, the decision to offer apprenticeship places is largely shaped by an employer's broader approaches to work organisation and human resource strategy. An employer must be able to provide an environment in which apprentices can both contribute productively and acquire the necessary skills. The number of apprentices an employer can take on therefore depends on how many can be effectively integrated into such an environment. Even where full reimbursement of costs are offered, this does not necessarily lead to an increase in apprenticeship places.

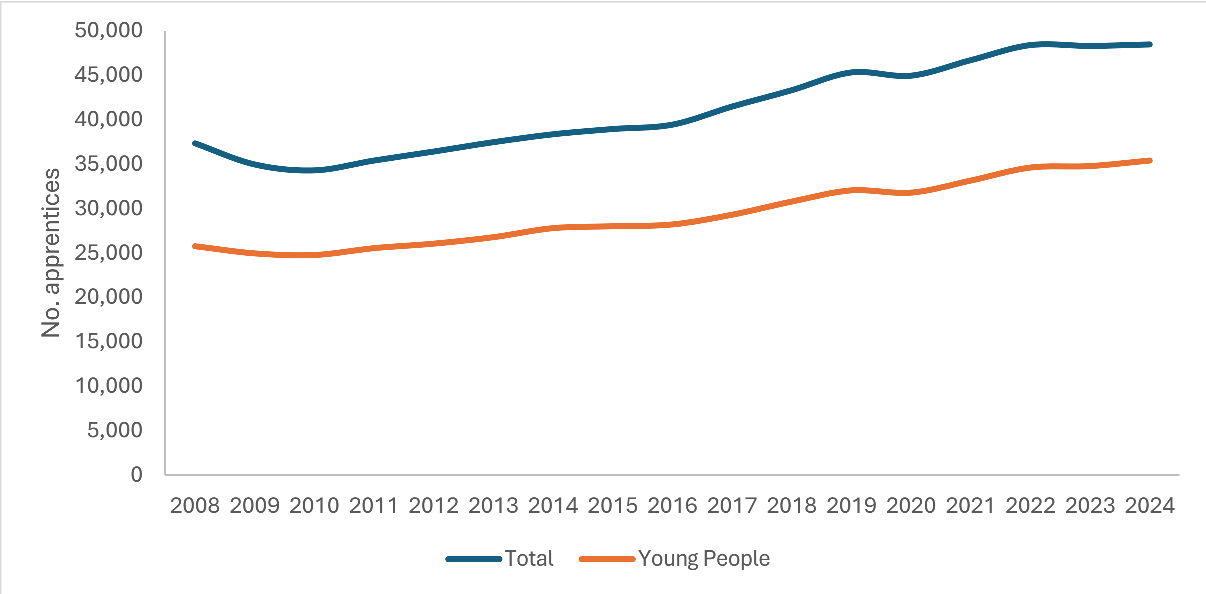
3.3 Initial VET funding in Norway

The current IVET system has its roots in the fundamental 1994 reform. This gave all students who had completed primary and lower secondary education the right to three years of upper secondary education. Over 90 per cent of all students enter upper secondary education. The reforms also introduced the 2+2 model of vocational education whereby the first two years are school-based, followed by two years of apprenticeship training based in a company. The in-company element of training follows a national curriculum. After the first two years in a vocational programme, students may switch from that programme to a third year of supplementary studies in school (Persson Thunqvist et al., 2019). The school-based education is funded through public budgets while apprenticeships are funded by firms but subsidised through public apprenticeship grants/levies. While there have been reforms of upper secondary education since 1994, both in 2008 and 2020, the fundamental elements of initial VET have remained with the result the funding system for young people in upper secondary VET has been stable over the past 30 years. That said, public funding for apprenticeships has increased considerably over the past twenty years. While the grant to companies for training young people in 2006 was NOK 88,100 for a two-year apprenticeship, the level in 2025 was NOK 183,093. This is an increase in real terms of 46 per cent. For adults, the rise (from NOK 50,350 to 143,000) is even higher, by 75 per cent in real terms. It seems likely that public funding now accounts for a higher share of the costs than before.

Increased public funding reflects an increased attention to VET in the public debate over the past 20 years. While public debate on VET in the early 2000s focused on its relative low esteem compared with general education, the debate has shifted more to the high need for skilled workers and the importance of VET for the economy. The availability of apprenticeships is crucial for young people (and adults) to complete upper secondary education. An education policy goal for successive governments in alliance with the social partners has been to increase the number of apprenticeship places. Three successive so-called "societal contracts" for more apprenticeship places were signed by all major employer and employee federations and the ministries of education and of local government (2011-2015, 2016-2020, 2022-2026). These "contracts" are strategic plans with defined follow-up tasks for each partner. The aim of the first was to increase the number of apprenticeship places by 20 per cent, while the aim of the second and third has been for all qualified applicants to have access to an apprenticeship.

The share of qualified applicants who obtain a place has increased from around 70 to over 80 per cent over the past ten years (84 per cent in 2024), indicating that the strategy has had a degree of success, though it is difficult to know how much can be attributed to it, and what the relative importance of increased funding has been. The number of apprenticeship places has also increased considerably, from around 37,000 in 2008 to 48,500 in 2024, with most of the increase taking place after 2015. The cohort of 18 year-olds is presently around 60,000 people (see Figure 8).

Figure 8: Apprenticeship contracts in Norway



Source: Utdanningsdirektoratet

There is no evidence of targeted funding being used to meet emergent skills needs. The funding level per training year does not differ between apprenticeships (with the minor exception of traditional crafts but that has a different rationale). In that respect, the funding system is neutral across vocational fields, including new VET programmes. The funding system, however, has been used to strengthen VET aimed at particular target groups. Examples of this is the new scheme *Fagbrev på job,* which was incorporated into the existing apprenticeship funding system without debate. The counties (and providers) have in recent years also received extra state funding for providing vocational education to learners with weak basic skills or weak Norwegian language skills. In this way funding is used selectively to develop training and courses better adapted to these target groups. A few counties have also provided extra funding to companies who take on disadvantaged young people as apprentices to help these youths gain apprenticeships. New provision has also been developed to assist with the integration of recent migrants into Norway (see box below).

Vocational education and training for recent migrants in Norway

Government funding for vocational programmes tailored to migrants is designed to promote integration, skill development, and workforce participation. Migrants have access to various vocational education opportunities at the secondary school level, offered through both the standard secondary education system and specially tailored programmes. For young migrants between the ages of 16 and 24 with short residency, classes in secondary schools integrate Norwegian language instruction, academic subjects, and vocational training. They provide opportunities to trade certification or faster transitions into standard secondary education tracks. For adult migrants over the age of 25 who have not completed secondary education, tailored vocational training programmes are available. They lead to the award of the same vocational qualifications as other VET students. These often include modular courses in fields with high demand, such as healthcare, construction, or transportation. Other options, such as integrated Norwegian and vocational training programmes, provide job-specific Norwegian language skills alongside technical training in areas such as healthcare and construction. In some cases, practice-based qualification programmes are offered, which combine work placements with shorter courses or theoretical training. These are often organised through collaborations between the Norwegian Labour and Welfare Administration and county authorities. Vocational training for migrants is financed through a combination of public and private funding sources. The government plays a significant role by providing grants to public vocational schools, apprenticeship grants and project funding for training initiatives focused on integrating immigrants into the workforce. The funding for these vocational education opportunities comes, however, primarily from county authorities, which are responsible for secondary education and adult education.

The public apprenticeship grants can be used to cover all types of costs the company have related to apprentice training; they are not tied to specific cost components. Many training companies (around 90 percent) use the services of training agencies, which are independent entities, usually owned by groups of employers, and take care of a range of tasks related to having apprentices, such as training, contract administration, reporting and curriculum guidance. Often much, or all, of the training grant is transferred to the training agency as payment for these services.

Overall, funding is to some degree used to adapt VET to target groups but not to direct resources towards specific vocational fields or skills needs rather than others. Newly established formal VET qualifications will however trigger the same level of funding as the old, so funding is in that way responsive to emerging needs.

There is agreement among social partners and successive governments about the key elements of the system, including the funding mechanisms. For apprenticeships, the public funding system is largely neutral, but a grant per apprentice obviously directs more funds overall to in-demand apprenticeships. There is no evidence for funding being used to make the vocational system more responsive to labour market demands over time. Responsiveness is meant to be achieved through tripartite coordination rather than through market incentives. Social partners at the national level are involved in defining the content of national curricula and in establishing apprenticeships in new fields, and also have some, though limited, influence on what education is offered at the county level. As shown above, a tripartite cooperation has also been mobilised to increase the number of apprenticeship places.

Collective bargaining sets wage levels for apprenticeships in collective agreements in various industries. Not all training companies are covered by the collective bargaining system, in private services coverage is, for instance, lower than in manufacturing, but such agreements nevertheless help lay the foundation for the apprenticeship system. Apprentices indirectly cover some of the training cost by accepting lower wages than that of unskilled workers over the training period. No recent cost estimates of apprenticeship training exist which show how costs are shared between training firms, the state/counties, and apprentices.

The changes in funding over the past 20 years have been on the fringes of the IVET system, often focused on making training more accessible to target groups such as, for instance, those with weak Norwegian language skills. The VET system presents considerable barriers to such groups as Norwegian language skills are required to pass examinations and undertake practical-theoretical tests.

3.4 UK-England

As will be revealed, the provision of public funding in the UK-England has been central to government efforts to make the skills system responsive to labour market demand however that might be defined. While the main interest is initial vocational education and training (IVET), because its boundary with continuing VET (CVET) has become increasingly blurred, the distinction between the two proves difficult to maintain in practice. This focus of this analysis is funding used to directly support learners acquire vocational qualifications and skills. It is not concerned with the overall funding of the skills system which includes the operational budgets of the Department for Education (DfE) - the ministry responsible for the skills system - and its various agencies. Instead, the intention is to show how public funding has been used to support and influence the skill investments made by individual leaners and employers.

Eligibility for receipt of public funding is largely determined by age (except for apprenticeship training). All those aged 16-19 years are fully funded by the state for study towards a qualification approved for funding by the DfE (up to EQF level 3). Funding is provided directly to the education and training provider to cover the costs of tuition. For those aged between 19 and 24 years, funding eligibility is more restricted and is usually limited to: first full achievement of a qualification at EQF level 3; study towards a qualification which provides skills in relatively high demand; and those who are unemployed or whose earnings are below a certain threshold (£25,000 a year).

For those aged 24 years and over the expectation is that, except in a few specific instances, funding to cover tuition fees is not available. Where a learner is not eligible for funding, they can take out a training loan to cover the costs. There are also some limitations on those aged 19+ where they have already obtained a full qualification at a given level. These are provided through advanced learner loans. The funding is paid directly the education institution. Learners begin to pay back the loan when their average salary reaches £27,295 a year at which point they will repay 9 per cent of their annual salary in repayments. The interest on the loan is the retail price index (the inflation rate) plus 3 per cent (at the time of writing this equates to 6.9 per cent a year compared with an interest base rate of 4.5 per cent). Loans are provided through the Student

Loans Company (a UK quango) and underwritten by government. Any loan remaining 30 years after the start of the repayment period will be written off. The planned introduction of the Lifelong Learning Entitlement, which will replace advanced study loans for level 4+qualifications from September 2026. Advanced Learner Loans will provide funding for level 3 qualifications.

As noted above, apprenticeships fall outside the funding arrangements just described. The apprenticeship levy is used to fund apprenticeship training. For those employers which are out of scope of the levy, they are required to meet a share of the tuition costs associated with the formal training element, where apprentices are aged 18 years and over at the commencement of their training.

England's demand-led skills system relies upon a funding regime designed to guide would-be learners towards the acquisition of competences which have value in the labour market. Many courses and programmes eligible for public funding within the skills system are ones where employers have a central role in the determination of their content (e.g. T-levels and Apprenticeships). Employer involvement in the design of courses and programmes is to ensure that skills supply meets demand because employers will, it is reasoned, have a focus on ensuring that skills conferred on their trainees will provide value in the workplace. In other words, they deliver skills from which employers can obtain an economic rent. In return for granting employers more control over the skills system, employers (and learners) are expected to meet a share of training costs. This is because the skills system should be 'fair' whereby beneficiaries of training should pay a share of the overall costs (BIS, 2010). The direction of travel, as will be explained below, is that of reducing the costs of the skills budget to the state.

Funding has proved to be a central part of the policy discourse over the past 20 years. It has sought to reconcile a number of factors:

- funding should support training that would not otherwise take place without government support but is considered to have value in the labour market;
- increasing the volume of training and its labour market relevance;
- reducing government expenditure on further education and skills.

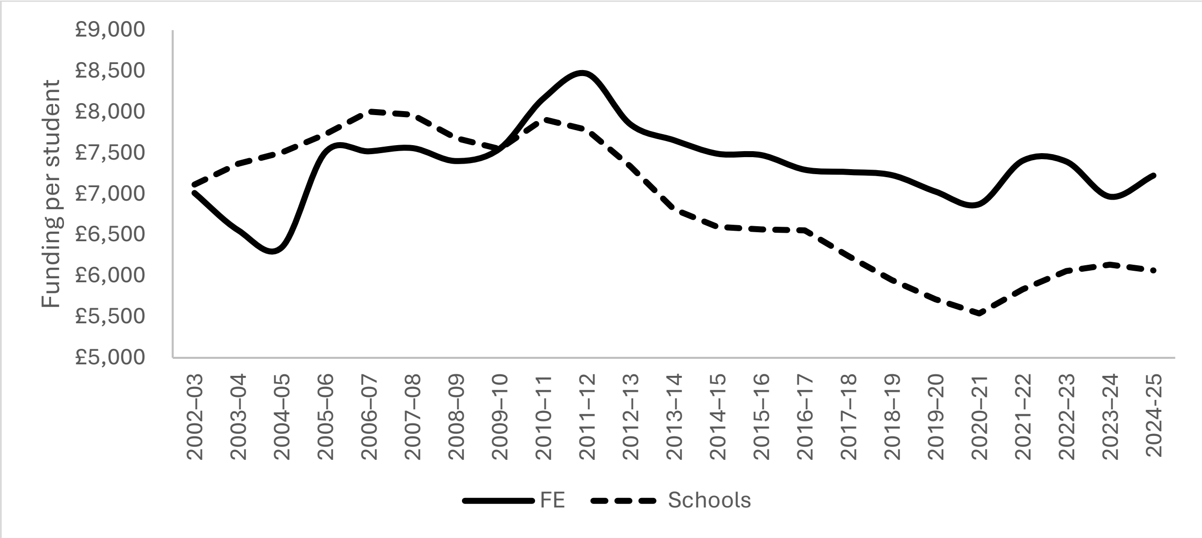
Achieving these aims has involved a degree of innovation and experimentation. In the absence of a counterfactual, it is difficult to assess the success of the policy mix. There are certainly parts of the system which are beginning to buckle under the financial pressures with which they are currently faced. In 2022/23, for example, DfE reported that 37 per cent of all further education colleges (FECs) were in operating deficit. It is difficult to avoid the conclusion that many of the problems which funding policy has sought to redress 20 years ago are still evident today (2025), such as the long-tail of low skilled adults which the Leitch Review (2006) sought to address, the comparatively modest levels of participation in intermediate skills development which the establishment of publicly funded apprenticeships was meant to resolve, or the Cinderella status vocational education and training.

Policy makers have attempted to create a market-based skills system. Training providers compete with one another to supply the skills employers and learners demand, and qualification awarding bodies compete with one another to develop qualifications which prove attractive to providers and learners (subject to meeting regulatory requirements). This provides an external training market in which learners and employers can select the courses and programmes that best meet their needs (Cedefop, 2018; Gambin and Hogarth, 2017). Funding follows the learner and employer (the demand-side) to ensure that the supply-side (training providers and awarding bodies) is responsive to labour market demand. The role of public funding is to correct for any market failures. In effect, the state only wants to fund training which is otherwise unlikely to take place because of market failures of one kind or another. The principal market failures are information and capital ones. Accordingly, government has invested in information, advice and guidance to assist individuals of all ages and employers identify the skills in which they need to invest. Additionally, as noted above, training loans have been introduced, underwritten by government, to assist those not eligible to receive public funding participate in upskilling and reskilling.

In general, courses are allocated to a funding band which takes into consideration the amount of teaching time and the costs of equipment which can be particularly pertinent to vocational courses. Extra funding is provided to reflect retention rates, the characteritics of students, plus an area cost adjusment which reflects the wage costs of teaching and non-teaching staff. Funding per student aged 16–18 has consistently been higher in further education colleges than in school sixth forms and sixth-form colleges (Drayton, et al., 2025). This is because FEC students are more likely to pursue vocational qualifications and often come from more disadvantaged backgrounds, both of which attract increased funding levels. In the 2024–25 academic year, projected funding per student in FECs is approximately £7,350, compared with £5,900 in secondary school sixth forms, and £5,500 in sixth-form colleges.

There have been substantial cuts to 16-18 education since 2010 (following the financial crisis) (see Figure 9). The real terms reduction in funding between 2013/14 and 2023/24 to schools has been around 16-18 per cent compared with around 8 per cent in FECs (Drayton et al., 2025). FECs have experienced a slightly lower real terms reduction because they have been in receipt of targeted funding initiatives and have experienced a reduction in the number of part-time students.

Figure 9: Estimated expenditure per student, 2002/4 to 2024/25 (2024/25 prices)



Source: Drayton et al. (2025) Table 4.1, p.56; HM Treasury (2024)

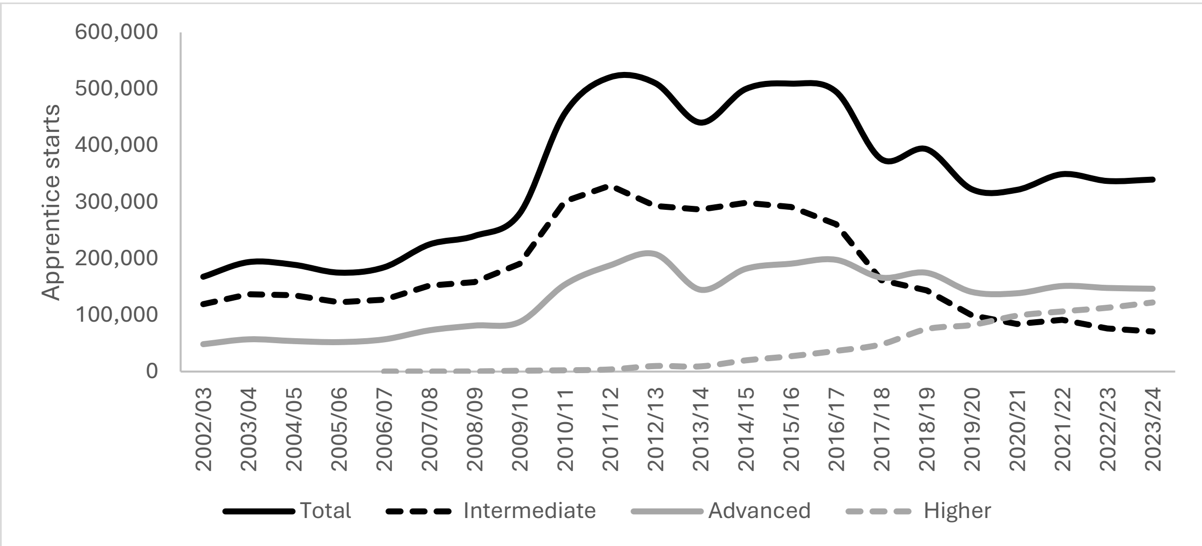
Post-16 education is subject to the introduction of new types of qualification from time to time. T-levels were introduced in 2020. They are designed to provide a two-year programme at a level equivalent to EQF level 2 which includes both classroom-based education and work placements. T-levels were designed to offer a vocational alternative to A-level qualifications provided the general stream. T-levels have their own funding bands which range from £11,082 to £15,330 per student (over two years) – depending upon the number of learning hours - and include an allowance for schools and FECs to establish the infrastructure to deliver them.

At the end of the 2010s, the Banks Review (2010) drew attention to what it described as sub-optimal levels of investment in apprenticeships and the need to leverage more investment from employers (Banks, 2010). This was echoed in policy documents which mentioned that the costs of apprenticeships needed to be shared between their beneficiaries and that employers should meet a certain share of the overall cost of training which had previously been met by government (under the rubric of employer routed funding). If funding could be routed through employers so that they were negotiating the cost of training with providers, and if in addition, they had to bear a certain share of that cost (which amounted to 10 per cent in the end), then they would be incentivised to obtain value for money from providers and ensure that training met their needs. Thereby funding could be used to leverage increased quality of training provision from providers. Before this policy had much chance to gain a footing, it was superseded by the announcement, in 2015, to introduce an Apprenticeship Levy in 2017. This would be levied on employers with a payroll over £3m at a rate of 0.5 per cent. Employers could then reclaim their levy payment to pay for apprenticeship training – that is, that part delivered by training providers and which was previously met in full by the government. Each apprenticeship standard has a cost attached to it which the provider charges the employer for delivering and which is met out of the employer's levy pot. If the employer is not in scope of the levy, then the cost of training is met by the government with the employer expected to pay 10 per cent of the total cost though there seem to be a number of exclusions here.

There were some doubts as to whether the Levy could increase the number of apprentices, especially in those apprenticeships which require the employer to make an investment in the future skill need of the workplace because the returns or break-even point arise some years after the completion of the formal training period. For example, the net costs to the employer of training an electrical engineer to level 3 will be around £35,000 (Gambin and Hogarth, 2017). In the past, the training required to complete the apprenticeship would have been met by the state. Now the employer will be pay for the training by reclaiming the £21,000 available for training an electrical fitter to level 3, but will still be faced with the £35,000 cost which accrues from the costs of employing the apprentice over the formal training period. So now the cost to the employer is £51,000. With the introduction of employer designed apprenticeship standards, it may be that the net costs to the employer will reduce, but the point still stands that the employer will face a significant costs. As such, it is difficult to see how the Levy would increase training volumes especially at higher levels which the Richard Review (2012) suggested should be the direction of travel (Gambin and Hogarth, 2020).

In 2023/24, the overall amount of funding raised by the levy was £2.5bn (FE Week, 2025). Of this, 70 per cent was spent on training by levy payers (£1.76bn), and 28 per cent by non-levy payers (£695m). The £2.5bn essentially sets the cap of what government, through the levy, will spend on apprenticeships. In 2023/4, 99 per cent of the apprenticeship budget was spent. Since the levy was introduced, along with other changes - such as the requirement that 20 per cent of the apprentice's time is spent in off-the-job training – the number of apprentices has fallen (see Figure 10). From 2025, the Apprenticeship Levy will be called the Growth and Skills Levy and will no longer be used to exclusively fund apprenticeships. Employers will be able to recoup their levy payments to fund a variety of alternatives including bootcamps. Level 7 apprenticeships will no longer be eligible for funding.

Figure 10: Apprenticeship starts by level of apprenticeship

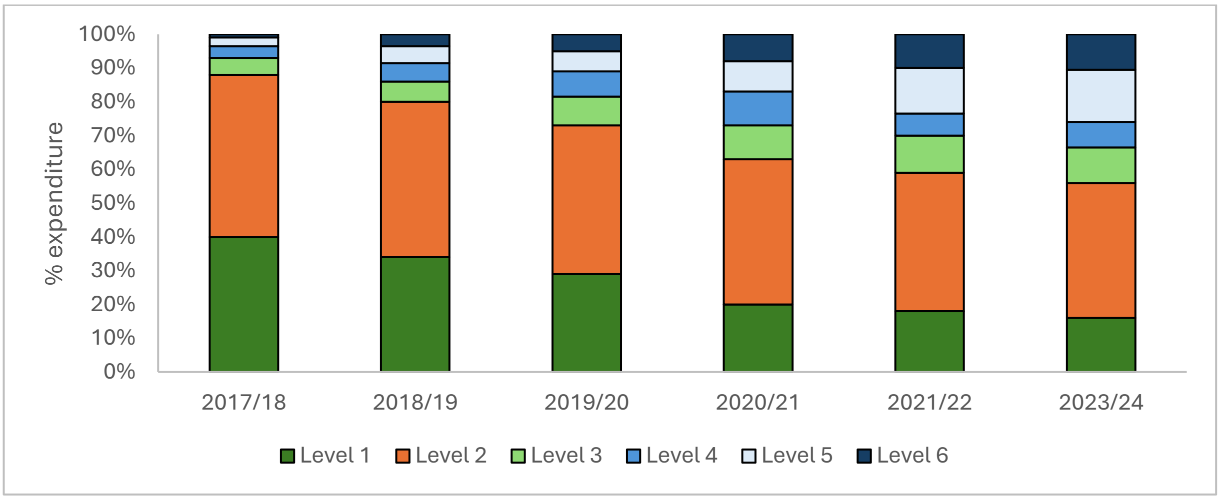


Source: DfE

In practice, the Levy seems to have dampened the demand for apprenticeships. In 2016/17, before the Levy was introduced, there were 484,000 apprenticeship starts with around 12 per cent of employers reporting at least one apprentice on their books (Shury et al., 2017). Around a third of apprenticeships delivered by companies were their existing employees. Following the introduction of the Apprenticeship Levy in 2017, the number of apprenticeship starts fell to 375,000 (i.e. three quarters of what they were prior to Levy's introduction) with 11 per cent of employers reporting that they had an apprentice (12 per cent before the Levy's introduction, suggesting that the response has largely been that of reducing the number of apprentices taken on by employers but not necessarily reducing the number of employers taking on apprentices. There appears to have been a shift towards employers investing more in higher level apprenticeships which are more costly – i.e. the amount to be paid to the provider is relatively high compared with apprenticeships at lower levels. For example, a level 6 apprenticeship in Building Services Site Management will cost the employer a maximum of £18,000 compared with a level 2 in bricklaying which will cost a maximum of £9,000. Although there is room for the employer to negotiate a price lower than the maximum available, the evidence seems to suggest that providers charge the maximum allowed which employers are reconciled to paying.

The evidence points towards apprenticeships, since the levy's introduction, being increasingly oriented towards higher level apprenticeships (i.e. at EQF level 5 and above), often delivered to existing employees of a company. If employers are expected to 'spend their own money' on apprenticeships, then their preferences are for higher level training delivered to the existing workforce. Increasingly, apprenticeship funding is being used to fund higher level apprenticeships (see Figure 10). Because the the element paid for via the levy (and previously paid for by the state) covers around 50 per cent of the overall net costs of training an apprentice, employers want to minimise the risk around their training investment. Accordingly their preference is for the delivery of training which looks a lot like CVET rather than IVET (Gambin and Hogarth, 2020; Dickinson and Hogarth, 2025). And because higher level apprenticeships (i.e. those at EQF level 5 and above) are attached to relatively high funding bands, the available levy budget funds fewer apprentices (see Figure 11).

Figure 11: Share of apprenticeship budget spent on each apprenticeship level

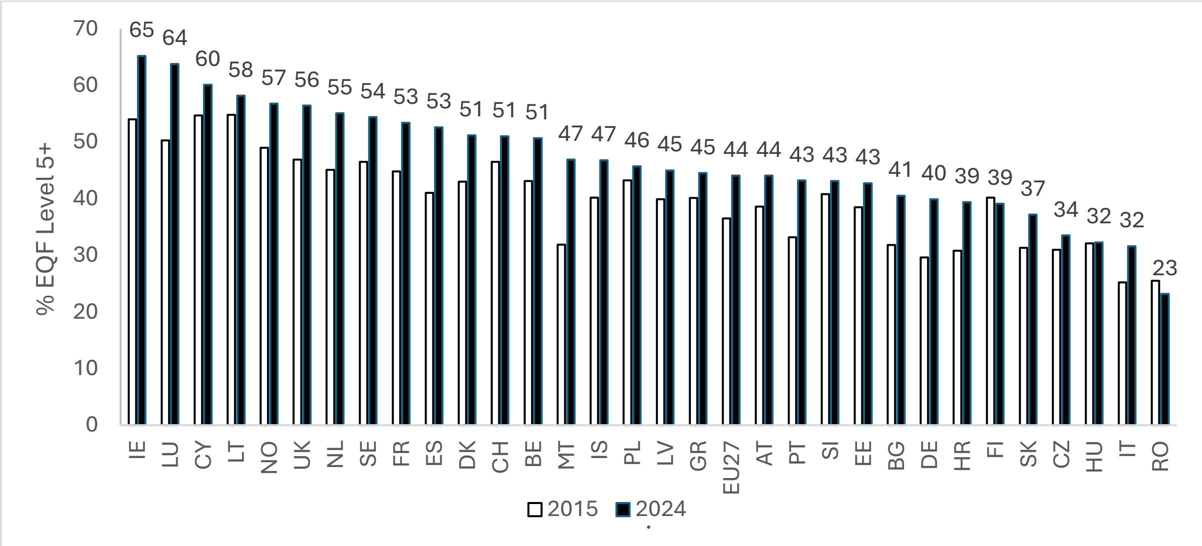


Source: Drayton et al. (2025) Table 4.9, p. 69

3.5 Initial VET at Higher Levels

While IVET has traditionally been associated with upper secondary and post-secondary education which delivers programmes at EQF levels 3 and 4, changes in the external labour market and the increasing share of people employed in managerial, professional, and associate professional jobs, has altered the demand for skills. The demand for, and the supply of, skills has shifted upwards. The share of 25-34 year olds who have an EQF 5+ qualification has increased substantially over a short period of time from 36 per cent in 2015 to 44 per cent in 2024 across Europe (see Figure 12). There is, of course, substantial variation by country.

Figure 12: Share of 25-34 year olds with a tertiary level qualification, 2015 and 2024



Source: Eurostat – Labour Force Survey Population by educational attainment level [edat_lfse_03

In **Austria** higher vocational education has been established since 1994, delivered through Universities of Applied Sciences (*Fachhochschulen)*. However, it is important to note that the long-standing) upper secondary VET colleges (Berufsbildende Höhere Schulen), dating back to the 19th century, had always been considered as Higher VET and had become classified as "higher education" under the ISCED 11 mapping. Higher education – with the exception of the highly specific private university sector (Schmid et al., 2017) which mainly specialises in medicine and the performing arts (Schmid et al., 2017) – is accessible free of charge or at comparatively low fees (Euro 363 per semester in 2025, unchanged since the introduction of tuition fees in 2000). This makes the higher education sector – and notably the universities of applied sciences (*Fachhochschulen*, introduced in 1996) – an attractive option for formal IVET and CVET at the tertiary level. Although different funding arrangements apply to universities and *Fachhochschulen*, both types are almost entirely financed through public sources.

In Norway and the UK-England, more substantial changes in funding have had to be introduced. In **Norway**, there has been a long-standing discussion about how to fund higher vocational education. There has been general agreement that public funds should be the central source of funding rather than tuition fees or company payment. Debate has centred around how to set funding rates across a sector with large variations in programmes (Deloitte 2022). Funding depends upon several factors, such as the public/private status of the school and the county in

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which it is located. In 2020, the total funding for higher vocational education amounted to over NOK 1.9 billion (Euro 158 million). There has been significant growth in the total public funding of the higher vocational education sector in line with the government's efforts to provide new study places and increase the number of students at both public and private higher vocational schools. In the current funding system, 80 per cent of the state operating funds are fixed, whereas the remaining 20 percent are more flexible and can be allocated related to performance, which is measured by student completion rates.

Norway's funding system for higher vocational schools has undergone significant changes over the recent past, highlighting their growing importance as well as recognition of their vital part of the national education framework. From 2000 to 2010, major reforms led to the establishment of higher vocational education as an independent pathway with the introduction of the Higher Vocational School Act in 2003 (Fagskoleloven 2003).

In the **UK-England**, polytechnics, which were the responsibility of municipalities, served a function similar to the *Fachhochschulen* in Austria: to deliver higher level vocational skills suited to the needs of the local economy. These were abolished in 1992 when polytechnics became universities (*new universities*) and gradually began to offer a range of courses and programmes similar to those of established universities (i.e. their orientation became more academically focussed). The transformation of polytechnics into universities was part of the process to establish a mass higher education system (Hogarth and Baxter, 2017). With the creation of the new universities in 1992, arguably the provision of VET at higher levels was diluted. This has been replaced to some degree by the extension of apprenticeships to EQF levels 5, 6, and 7. This has allowed employers to use their Apprenticeship Levy contributions to fund higher level apprenticeships. Because the direct training costs for these courses is relatively high (i.e. the amount the employer can drawn down from the levy pot to cover the costs of training) this has reduced funding available for apprenticeships at lower levels. From 2025, the levy can no longer be used to fund apprenticeships at EQF level 7.

3.6 Conclusion

Table 1 summarises the key differences between the three countries. In the case of Austria and Norway the evidence points to a relative degree of stability compared with UK-England. In both the former countries there is both policy consistency and funding stability for the main part of IVET provision – apprenticeships in Austria and the 2+2 programme in Norway. There is innovation in the systems insofar as there are programmes available in Austria designed to assist young people who may have problems securing an apprenticeship. This can be contrasted with the case of UK-England where there is substantial experimentation attached to the provision of IVET, especially the apprenticeship system, and the funding of IVET. In some respects, the UK-England case study provides an example of a country still trying to find a means of delivering high quality IVET but with fewer financial resources to deliver it with the result that it has sought to pass on an increased share of the costs of training on to the employer at least in the case of apprenticeships with the introduction of the Apprenticeship Levy. It might be assumed that the ongoing reconfiguration of the IVET system in UK-England imposes substantial transaction costs of a kind not found in either Austria or Norway.

Table 1: Comparative Summary of IVET Funding: Austria, Norway, UK–England

Dimension	Austria	Norway	UK–England
Core IVET Model	Dual system (school + apprenticeship)	2+2 model (school + apprenticeship)	Mixed system with strong emphasis on demand-led provision
Funding Stability	High; long-standing consensus and stable public funding	High; stable funding with incremental increases	Low; frequent reforms and funding changes
State Role	Covers vocational school costs; subsidizes employers; supports alternative pathways	Covers school-based education; subsidizes apprenticeships; supports integration and disadvantaged groups	Funds 16–19 fully; partial funding for 19–24; loans for 24+; employer levy for apprenticeships
Employer Role	Bears net costs of apprenticeships; receives subsidies	Bears costs but receives substantial grants; training agencies play key role	Pays levy (if large); co-funds training; influences curriculum
Apprenticeship Trends	Stable participation; supra-company schemes for those without placements	Increasing apprenticeship places; societal contracts to expand access	Declining starts post-levy; shift toward higher-level apprenticeships for existing employees
Targeted Funding	Supra-company training, women in non-traditional trades, unemployed adults	Migrants, low-skilled adults, disadvantaged youth, vocational college expansion	Bootcamps, adult skills fund, lifelong learning entitlement, advanced learner loans
Challenges	Employer capacity to integrate apprentices; rising wage costs	Access for migrants and low-skilled adults; lack of cost estimates	Financial pressure on providers; complexity of funding system; equity concerns

Source: Authors

A key question is whether a demand-led system needs to have the characteristics of the one in UK-England. Perhaps the key finding is how policy and funding follows path dependencies over time. Both Austria and Norway would appear to have achieved a settlement on this some time ago with agreement about funding provided by the state and that provided by the employer (and possibly the apprentice / trainee). Shifting the system towards being more responsive to labour market demand has not necessitated the substantial reforms of either funding or curriculum content. This stands in stark contrast to UK-England where the degree of settlement or consensus has not been achieved to the same degree and has, arguably, been made all the more difficult to achieve during the prolonged period of austerity which followed the financial crash in

2008. Hence the need for on-going changes to the system so that it better meets the demand for skills in a way that ensure the beneficiaries meet what was termed in one policy document as a ‘fair share’ of the costs to reduce the dependence on public funding. In some respects, this may mean the debate is less about the varieties of capitalism on offer across Europe, and more to do with government finances.

4. Expenditure, funding and delivery of Continuing Vocational Education and Training (CVET)

4.1 Introduction

There is recognition that individuals will need to re- and up-skill if they are to avoid skills obsolescence which might arise from changes taking place in external and internal labour markets. Granting access to training – both formal and non-formal, but which is accredited – so that individuals can up- and re-skill in response to technological change - and the other mega-trends - affecting products and production processes, is a policy priority at both EU and country levels. The first principle of the European Pillar of Social Rights states: "Everyone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market." In addition, various recommendations and action plans at the EU level to stimulate individuals and enterprises to engage in continuing skills development (e.g., Upskilling Pathway, 2016; and the Action Plan to address labour and skill shortages, 2024). Some of the measures which have been introduced under the Upskilling Pathway at the country level are often active labour market policies designed to assist those who are out of work or in danger of losing their jobs (European Commission, 2022). In practice, they are often less concerned with improving the skills of those already in work. This is because public policy has, at least to some extent, regarded the training of those already in employment as a private rather than public policy issue. There is a free-rider problem to overcome (which also affects IVET) where the social returns to training exceed the private ones such that employers are disincentivised from making human capital investments beyond those which are company specific and which allow them to appropriate the return. This can be easily over-stated given that even where transferable skills are delivered to employees, employers still have a degree of monopsony power over those employees (Acemoglu and Pischke, 1998).

There are, however, other concerns which have resulted in public policy interventions to stimulate training of those already in employment. Not least of which is that employers under-invest in training because they the face capital constraints or are unsure about the need to invest and the returns they might obtain. There is also the problem of how to raise the skills of those with relatively low skills who are often difficult to engage in CVET and where the returns to training will be relatively low. This has led to public policy providing schemes designed to deliver skills for which there is a current or expected future demand, but which is unlikely to be satisfied by employer investments. Funding is then channelled to employers to deliver a specific set of skills, or to employees so that they are able to pursue what they consider to be their particular skill needs. Across Europe there are now a mix of public policy measures designed to increase participation in CVET (Cedefop, 2024). These include the following.

1. **Training funds**. These are described as "a dedicated stock or flow of financing outside normal government budgetary channels for the purpose of developing productive skills for work.' (Johanson, 2009, p. 3) on Cedefop's database. They consist of funds controlled by the state, social partners, and / or sectoral organisations to support training in enterprises.

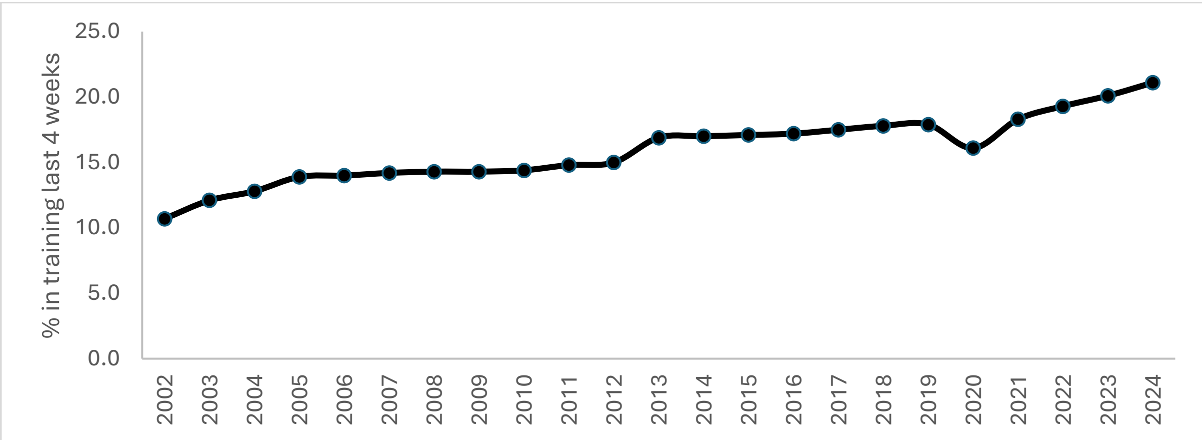
2. **Grants and vouchers** designed to support employer provided funding. These typically fund direct training costs and sometimes wage costs.
3. **Training leave** that can be paid or unpaid**.**
4. **Training loans** typically where individuals face capital constraints to investing in their skills.
5. **Opening access to IVET provision and funding to adult workers.** In the UK, employers can use their apprenticeship levy payments to train, via apprenticeships, existing employees**;**
6. **Tax incentives** usually in the form of tax deductions where employers invest in training.

Particularly in vogue in policy circles are training vouchers, notably in the form of Individual Learning Accounts, which have been seen to increase, other things being equal, participation in training (Messer and Wolter, 2009; Schwerdt et al., 2012; European Commission, 2022).

4.2 CVET Participation and Expenditure

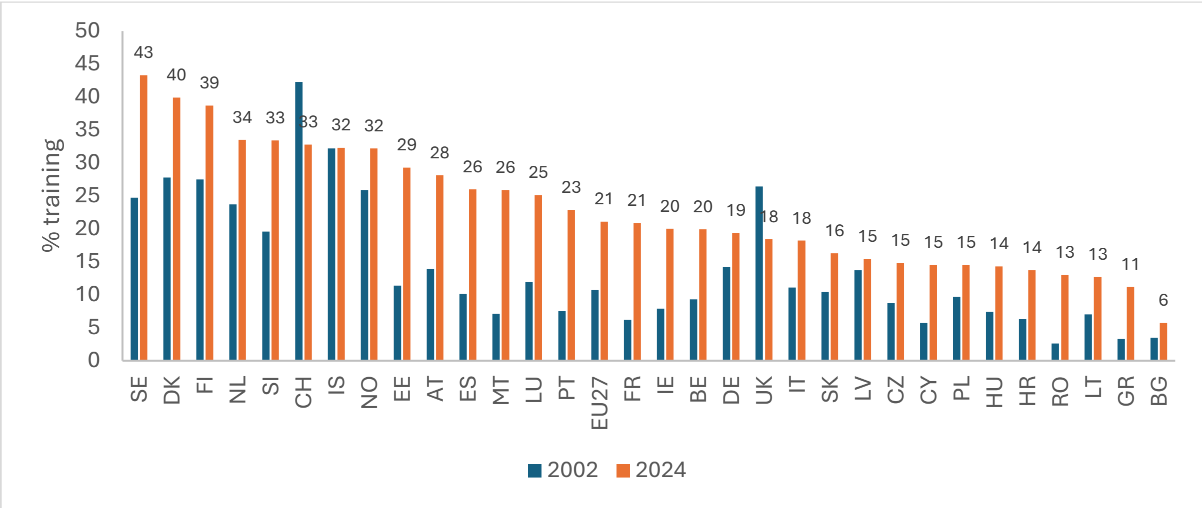
The EU-Labour Force Survey reports on the share of the population which has received training over the past four weeks (see Figure 13). This reveals an upward trend over time in the share of the working age population who have participated in training. Underlying the EU level trend is substantial variation by country: from 43 per cent of those of working age participated in training compared with 6 per cent in Bulgaria (see Figure 14).

Figure 13: Participation in training in the European Union, 2002 to 2024



Source: Eurostat EU-LFS participation rate in education and training (last 4 weeks) [trng_lfse_01]

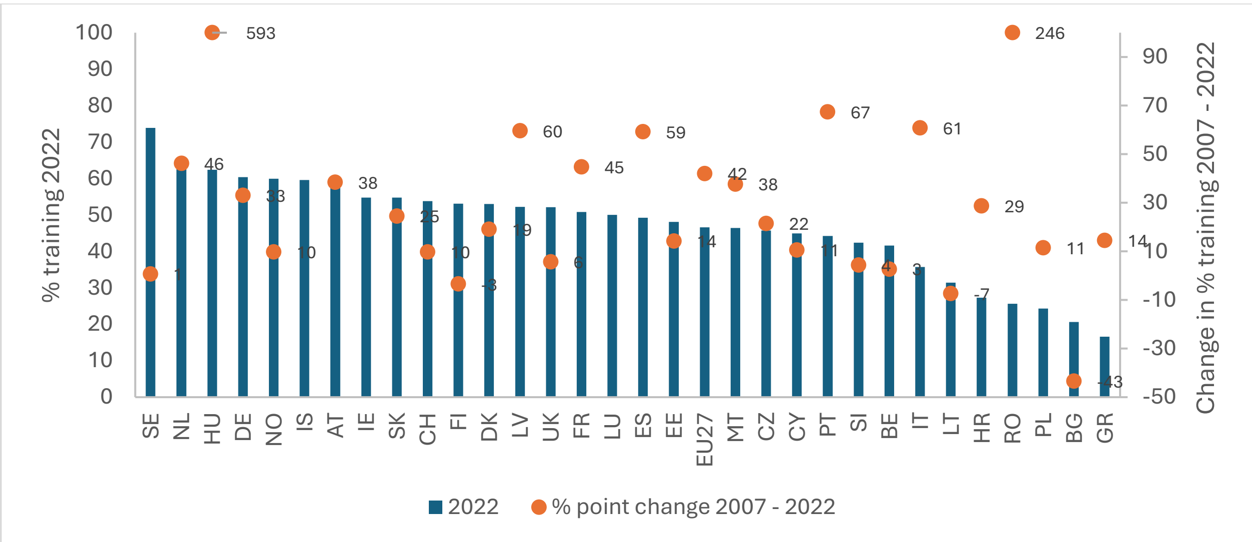
Figure 14: Participation in training by country, 2002 and 2024



Source: Eurostat EU-LFS participation rate in education and training (last 4 weeks) [trng_lfse_01]

The Adult Education Survey uses a broader measure of training, including both formal and non-formal types, in which individuals have participated over the past 12 months. This is an indicator which reveals substantial variation by country and over time. On average, 46 per cent of those aged between 25 and 64 years had participated in training over the past 12 months (see Figure 15). This has increased by around a third between 2007 and 2022. There is also stark variation by country: from 74 per cent in Sweden to 6 per cent in Greece. Where individuals reported why they had not participated in training 28.7 per cent reported cost as a main reason across the EU-27 in 2022. This masks substantial variation from 52.6 per cent in the Netherlands to 5.1 per cent in Czechia.

Figure 15: Individual reports of participating in formal or non-formal learning

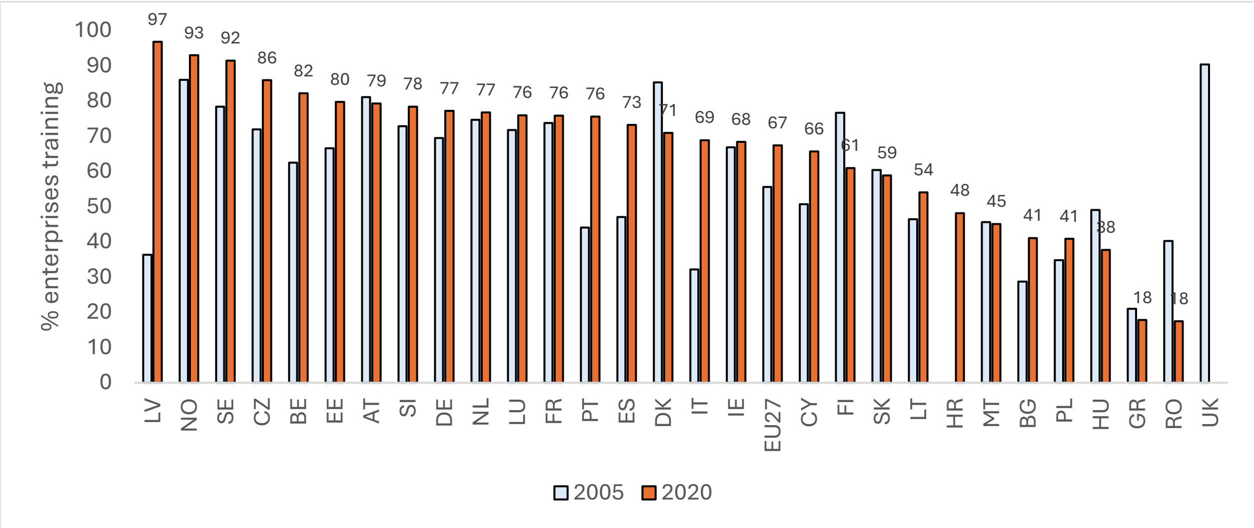


Source: Eurostat Adult Education Survey participation rates in education and training [trng_aes_100]

For many individuals their access to training will be provided via their employer. Figure 16 shows the share of employers who had provided training to their employees over the past 12 months. In the EU, just over two thirds of employers with 10 or more employees had provided training in

2020, up from 56 per cent in 2005. This varies from nearly all employers with 10 or more employees in Latvia, to 18 per cent in Romania. In nearly all countries the share of employers providing training has increased Where employers do not provide training, cost is reported as major constraint. According to the CVTS (2020), 40.6 per cent of enterprises which did not provide training said cost was one of the reasons for not doing so. This compares to 45.9 in 2015, and 40.8 per cent in 2010.

Figure 16: Employer provision of training to their employees (% of employers)



Source: CVTS enterprises providing training [trng_cvt_01s]

The amount employers spend on CVET varies substantially across Europe (see Table 2). The data reveal substantial variation by country – from around 2.5 to 2.0 per cent in the Netherlands, France, Norway, and Ireland to 0.3 per cent in Greece.

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Table 2: CVET training expenditure as a percentage of labour costs

	2005	2010	2015	2020	Percentage point change 2010 to 2020
EU27	1.6	1.7	1.7	1.5	-0.2
Belgium	1.6	2.4	2.4	1.2	-1.2
Bulgaria	1.1	1.1	1.4	0.7	-0.4
Czechia	1.9	1.2	1.5	0.9	-0.3
Denmark	2.3	1.8	2.7	1.0	-0.8
Germany	1.4	1.5	1.4	1.6	0.1
Estonia	1.6	1.1	1.8	1.6	0.5
Ireland	2.2	:	2.2	1.9	
Greece	0.6	0.7	1.1	0.3	-0.4
Spain	1.2	1.6	1.8	0.7	-0.9
France	2.3	2.5	2.5	2.1	-0.4
Croatia	:	0.7	1.3	0.9	0.2
Italy	1.2	1.1	1.3	1.7	0.6
Cyprus	1.3	1.5	1.2	0.7	-0.8
Latvia	:	0.8	0.8	0.6	-0.2
Lithuania	1.2	1.1	1.1	0.7	-0.4
Luxembourg	2.0	1.9	2.1	1.5	-0.4
Hungary	1.9	1.9	1.8	1.2	-0.7
Malta	1.8	2.3	2.1	1.0	-1.3
Netherlands	2.0	2.2	2.3	2.4	0.2
Austria	1.4	1.5	1.3	0.9	-0.6
Poland	1.3	1.1	1.2	0.6	-0.5
Portugal	1.1	1.9	1.5	1.0	-0.9
Romania	1.1	:	1.0	0.6	
Slovenia	2.0	1.5	2.5	1.4	-0.1
Slovakia	1.8	1.9	1.6	1.3	-0.6
Finland	1.5	1.4	1.1	0.7	-0.7
Sweden	2.1	1.7	1.6	1.3	-0.4
Norway	1.3	1.7	1.8	2.1	0.4
UK	1.3	1.1	1.8	:	

Source: Eurostat – Continuing Vocational Education and Training Surveys [trng_cvt_16s]

A detailed insight into the funding of CVET is provided by the in-depth country case studies which are described below.

4.3 CVET in Austria

Where formal CVET (leading to a qualification) is delivered (with the exception of evening schools for the employed *(Abend-) Schulen für Berufstätige* funded by the Ministry of Education), a significant portion of provision is funded through active labour market policy measures, primarily via the PES. In addition, there is a wide range of fee-based provision offered by both for-profit and non-profit organisations, with course fees typically paid by individuals, but sometimes with financial support from their employers. Employees with taxable earned income may also recover part of their training costs through tax deductions. Within non-formal CVET, the picture differs markedly once again (Cedefop, 2024). Provision is predominantly fee-based and delivered by both for-profit and non-profit providers. Employers finance the lion's share of CVET activities. The nine Länder are formally responsible for providing public contributions to the cost of CVET for dependent employees – covered under the legal framework of *Arbeitnehmerförderung* (promotion of employees). The PES plays a crucial role in funding it. The most significant of the measures to promote CVET has been *Bildungskarenz* (paid training leave). It was abolished in March 2025 (effective by end of May 2025) as part of austerity measures following a protracted political debate over documented misuse of the scheme.

According to Vogtenhuber et al. (2021), in 2018, about a quarter of adult learning costs were publicly funded. Individuals bore around 40 per cent, slightly more than employers (one-third). Direct costs for adult learning were estimated to be Euro 2.26 billion (0.6 per cent of GDP) in 2018, while the inclusion of indirect costs brought the total to Euro 5.37 billion (1.4 per cent of GDP). The PES is the major funder of adult learning. In 2018, it provided Euro 325 million for training costs of adults (25+). It also funded Euros 825 million for living expenses during training, including support through schemes such as paid education leave. It has expanded its role significantly since 1995, financed through unemployment insurance contributions and tax-based funding. Despite annual fluctuations, its overall investment in adult learning has grown steadily, making it the most influential player in the field.

The Austrian Länder are responsible for supporting adult learning for employed people and offer general adult education such as cultural and leisure courses. Collectively, they spend more than the national education ministry. Larger Länder, especially Vienna, play a strong role. At the national level, the Ministry of Education plays a supporting role, though its discretionary budget for adult learning is limited (Euro 54.5 million in 2023, or 0.01 per cent of GDP). It oversees schools and universities, which now include increasing numbers of adult learners.

In Austria, the European Union Continuing Vocational Training Survey (CVTS) is the only representative survey among enterprises with ten or more employees. Data since 2005 show a declining total investment by employers in training courses, with fewer training hours provided despite a growing share of employees participating. The 2020 data were significantly affected by COVID-19 and the related lockdowns, which paused further education activities, especially during the first lockdown in spring 2020.

In current prices, for the enterprises covered, investment fell from Euro 730 million in 2005 to Euro 606 million in 2015 and to Euro 434 million in 2020. Taking into account cumulative inflation (31.2 per cent between 2005 and 2020), this reflects a loss of more than half in terms of spending on course provision. Estimated wage costs declined more gradually, but still—adjusted for inflation—were 17 per cent lower in 2020 than in 2010 (see Table 3). The decline in employer investment had already begun before the pandemic-affected year 2020, and there is ongoing debate about the reasons behind the drop in training investment. No in-depth study has yet been conducted. Changes in the composition of the economy – particularly the reduction in employment in the banking sector, which had extraordinarily high training investments – are among the assumed causes. Another factor often cited is the ongoing expansion of public CVET funding, which may have progressively displaced employer contributions. (Vogtenhuber et al., 2021)

Table 3: Employer Investment in Training in Austria

	2005	2010	2015	2020
Enterprises with course provision (%)	67.3	72.4	81.6	69.5
Enterprises with other forms of provision (%)	71.0	76.9	79.5	68.6
Participation rate in courses – total (%)	33.3	33.2	45.4	34.9
Proportion of course hours provided internally (%)	48.7	45.5	50.4	54.8
Hours per employed	8.9	10.0	10.3	6.7
Hours per participant	26.7	30.0	22.7	19.1
Training costs as proportion of wage costs (%)	1.4	1.5	1.3	0.9
Training costs per employee (Euro)	555.0	677.0	619.0	481.0
Training costs per participant total (Euro)	1669.0	2037.0	1365.0	1378.0
Direct costs per employed (Euro)	322.0	384.0	272.0	197.0
Direct costs per participant (Euro)	968.0	1157.0	600.0	564.0

Source: CVTS 2005/2010/2015/2020 -Statistik Austria, Statcube; Production and Services, excluding public administration, eduation and health; with 10 and more employees

The nine Länder are responsible for promoting CVET for employees. This falls under the legal framework of employee support (*Arbeitnehmerförderung*), which also encompasses other forms of assistance, such as contributions towards commuting costs or additional support for individual childcare expenses. Notable among these co-funding schemes of the Länder, there are those considered forms of 'Individual Learning Accounts', such as the *Weiterbildungskonto* in Upper Austria (since 1994), in Vienna (since 1995), or a related scheme in Salzburg (since 1998) (Hefler et al., 2013). The overall range of schemes has remained largely stable over the past 15 years; however, their specific design features tend to change on an almost yearly basis, or even more frequently.

Another key example is the Austrian Chambers of Labour, which operate as public-law corporations with compulsory membership (*öffentlich-rechtliche Körperschaften mit gesetzlich verankerter Pflichtmitgliedschaft*) (Pernicka and Hefler, 2015). Every employee is, by law, a member of the regional chamber corresponding to the employer's place of business. These nine regional Chambers differ in their approaches to supporting CVET, including whether they offer their own training voucher schemes. In summary, each Land is able to shape its own policy mix for supporting adult learning. This includes drawing upon diverse policy streams and influencing how it allocates its share of European Social Fund (ESF) resources is applied, with CVET being among the top priorities for using ESF means.

While some countries had increased their investment in their past decade (e.g. Vienna, Lower Austria), others had decreased it (e.g. Upper Austria). Overall, data on the spending for the schemes are difficult to attain. For 2023, Hefler and Steinheimer (2024) had estimated it at Euro 35 million.

The ILA-type schemes implemented by the Länder differ in many important respects and typically consist of various sub-schemes offering more generous support for specific target groups or for CVET activities considered essential from an employment policy perspective. This will be illustrated in the following sections using three examples: Upper Austria, Salzburg, and Vienna.

In 1994, the province of Upper Austria was the first of the Austrian Länder to introduce a demand-side grant for individual adult learning for employees. Against the backdrop of Austria's EU accession, the Chamber of Labour advocated for a new subsidy to support employees who had received little preparation assistance. Referring to the international concept of the 'Individual Learning Account' (ILA) (Schuetze, 2007), the Chamber proposed the term 'Education Account' (*Bildungskonto*), aligning the initiative with global discourse—though its structure differed significantly from ILAs as defined internationally.

The individual learning account in Upper Austria provides a co-funding grant for job-related further training and re-training. It is available to employees, marginal part-time workers (*Geringfügig Beschäftigte*), freelancers, the self-employed, the unemployed, and entrepreneurs with up to five employees. The current funding directive covers 2023 to 2026. The basic grant covers 30 per cent of training costs, up to Euro 2,200. Targeted groups (e.g. adults without a vocational qualification) may receive 60 per cent co-funding, up to Euro 2,700 or Euro 4,000 for digital courses.

Eligible target groups include individuals with no more than ISCED level 2 qualifications, those preparing for an apprenticeship certificate, participants in training for childcare or healthcare, persons on or returning from parental leave, those aged over 50 years with a monthly gross income below Euro 2,400, and individuals in integration courses (providing German as a second language, with up to Euro 1,000 support). General eligibility requires a main residence in Upper Austria at the start of the course, at least 75 per cent attendance, and participation at a certified or formal education provider. Higher education graduates qualify only if their monthly gross income is below Euro 3,000—or Euro 4,000 for digital skills training.

Over time, the *Bildungskonto* has seen both minor adjustments and major reforms. Eligibility criteria have been revised repeatedly, and the maximum public co-funding share for targeted groups has decreased from 80 per cent (1994) to 70 per cent (2015) and 60 per cent (2023); for non-targeted groups, it fell from 50 per cent to 30 per cent over the same period. The original distinction between a general strand with minimal restrictions and a targeted strand has been abandoned, with the entire scheme becoming more restrictive. Regulations also grew increasingly complex—one of the main criticisms raised in a 2009 public audit by the Regional Court of Audit.

In 1998, Salzburg introduced a voucher scheme (*Salzubrger Bildungsscheck*) which later becamce an individual learning account while the title was kept (Hefler and Steinheimer, 2024). The design of the instrument offers relatively generous support—Euro 1,100 or 50 per cent co-funding over a four-year period—without imposing an income threshold, and is available to all adults who have not attained a higher education degree. This helps to reduce financial barriers to participation, but by design, it also carries the risk of a relatively high deadweight effect.

More generous support is available for specific target groups and for particular types of programmes leading to recognised qualifications. For these groups and activities, funding can reach up to Euro 2,200 and cover as much as 80 per cent of eligible costs, including course and examination fees. The scheme places particular emphasis on formally low-qualified adults and training programmes that lead to recognised qualifications, thereby aligning Salzburg's approach with those of other Austrian Länder. This targeted focus also serves as a steering mechanism, encouraging participants to pursue more substantial and structured learning pathways.

The waff (Vienna Employment Promotion Fund) is a semi-autonomous agency founded in 1995 to mitigate the negative effects of Austria's EU accession on selected occupational sectors. In 1996, it introduced a CVET grant for individuals – modelled after Upper Austria – and a lifelong guidance service. The organisation grew rapidly, expanding from 11 staff and a Euro 5 million budget, to 236 employees and Euro 71.3 million by 2021. Today, waff is a central actor in Vienna's lifelong learning system, offering career guidance and co-funding CVET costs for individuals. In 2021, 9,728 people used its guidance services, while 11 980 received financial support amounting to Euro 15.2 million. Grants cover 30–100 per cent of course fees, with ceilings of up to Euro 5,000, depending on the scheme. The waff operates a variety of demand-side co-funding instruments, integrated under the principle of best-possible benefit (*Günstigkeitsprinzip*), ensuring clients receive the highest eligible support regardless of which programme they apply under. Since 1995, these instruments have evolved to address different target groups and training needs.

As of 2025, the general Training Account offers up to Euro 500 (50 per cent co-funding) without income or education restrictions to employed or unemployed residents of Vienna. More generous support—up to EUR 5,000—is available for employed residents earning below Euro 2,500/month (raised from Euro 1,850 in 2023). In addition to course fees, costs for recognition of foreign qualifications and translations can also be reimbursed. Tailored instruments exist for priority groups, offering up to 100 per cent co-funding. These include women seeking career change, parents during or after parental leave, adults without upper secondary education, and those working below their qualification level. A digital skills strand, co-financed with the Vienna Chamber of Labour, also offers income-tested support.

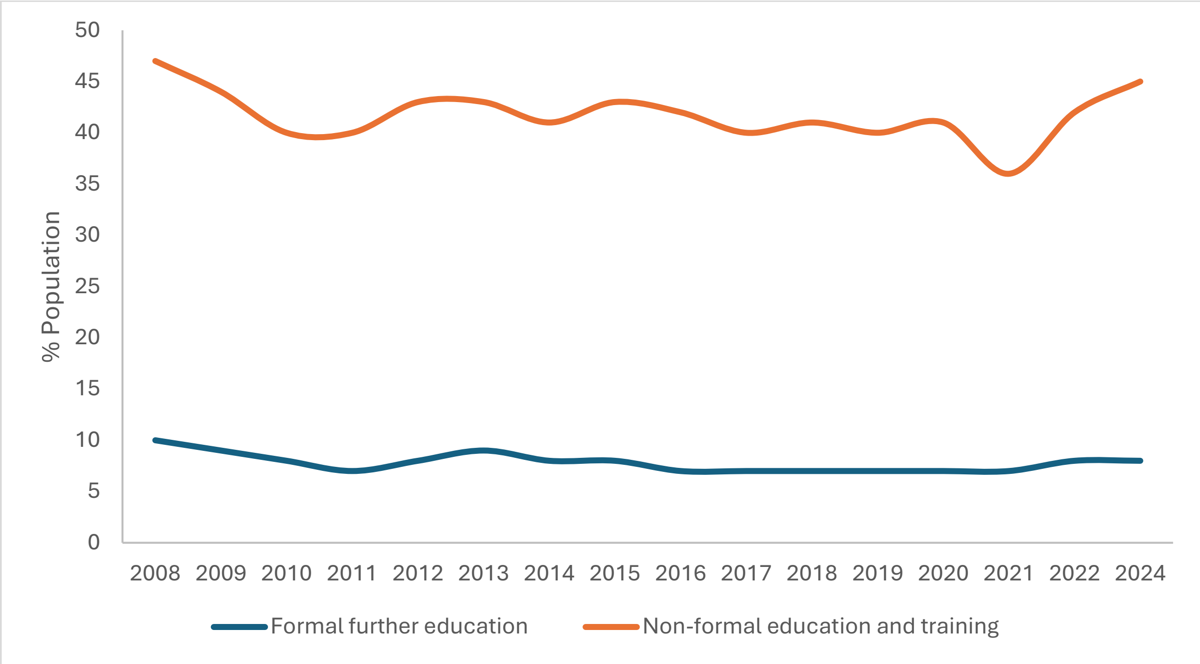
Though the waff's framework is not a legal entitlement, it aligns more closely than any other Austrian model with the ILA Recommendation. Most residents can access some support, albeit limited to once every four years with a minimum 50 per cent self-contribution—while targeted groups benefit from far more generous conditions. The waff combines financial support with robust enabling services: career counselling, validation support, quality assurance of providers, and educational outreach. Counselling is offered in multiple languages by a dedicated, full-time team. While funding is limited, it has generally met demand due to careful budget planning. Overall, the waff provides a strong example of how demand-side co-funding, when paired with an enabling framework, can support inclusive adult learning. It also illustrates the complexity and administrative effort such systems require.

4.4 Funding of CVET in Norway

Skills policy for the adult population, or *Kompetansepolitikk,* has been high on the political agenda over the past thirty years, but has gone through waves with varying levels of attention as policy makers and stakeholders have struggled to find ways to influence the decisions of companies and individuals. While the actors were able to agree on a Skills Policy Strategy (Kunnskapsdepartementet 2017) and a number of specific policy measures derived from it, the issue of funding of adult's skills development has been the most difficult to address. A relatively low level of participation among people with little education has, however, been a cause of persistent concern by all actors. Low willingness to take economic risks by this group has been seen as a casus belli for public funding for training also of those employed as society is believed to have a greater benefit of investment in skills than only those reaped by the individual and the company (NOU, 2018:13).

As a backdrop to the funding discussion, the two figures below shows that participation rates in training have been fairly stable over the past 15 years, with a slightly downward trend until 2021 when rates went up again (see Figure 17), and that training costs per employed person have increased over time (see Figure 18).

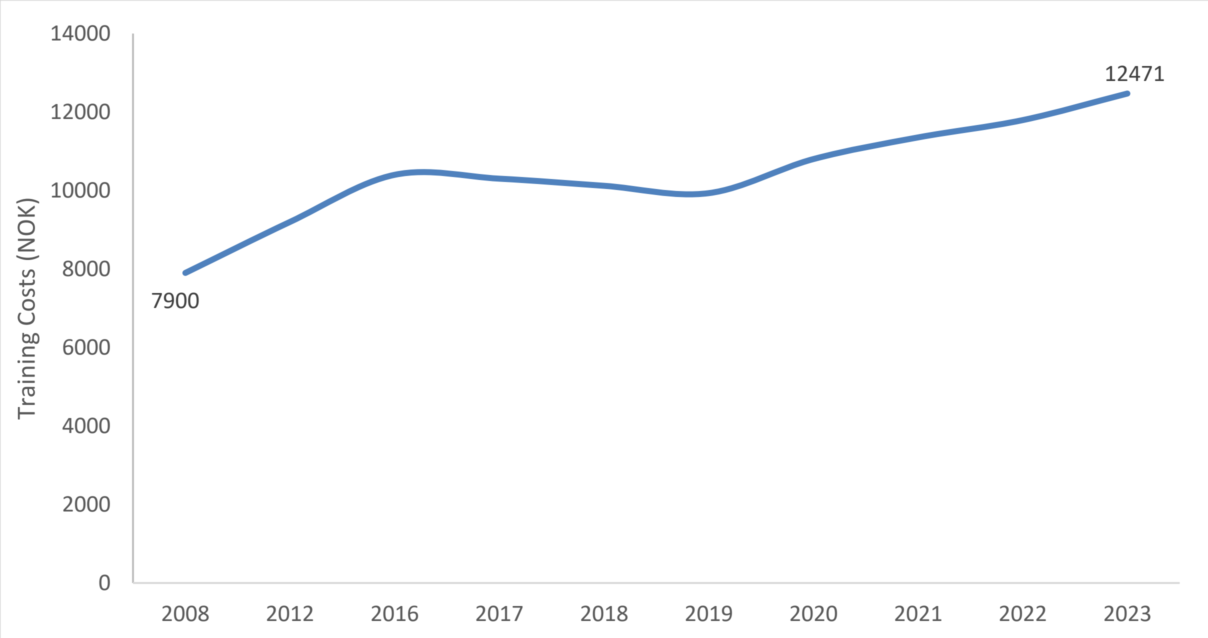
Figure 17: Share of adult population (22-66 years) who participated in formal further education or non-formal education and training during the last 12 months (%)



Source: Lærevilkårsmonitoren, Statistics Norway, additional national module to LFS. / Variable definitions https://www.ssb.no/utdanning/voksenopplaering/statistikk/livslang-laering

A supplementary source is CVTS data which shows that 99 per cent of Norwegian companies offered some form of training in 2015, while 93 per cent did so in 2020. This reduction was unevenly distributed, with a larger reduction in the most covid-influenced industries, such as construction whose figure fell from 98 to 88 per cent. Statistics Norway has computed estimations of training costs per FTE (full time equivalent) based on CVTS and other data. Average training cost per FTE for 2023 is estimated at 12,471 NOK or around Euro 1,060 (Labour Cost Statistics 2024). There is an increase over time as shown by Figure 18. While the figure shows nominal figures, when discounted (by CPI), there is a substantial real increase by 10.6 per cent in training costs per employed/FTE from 2008 to 2023.

Figure 18: Training costs (in NOK) per full time equivalent (FTE) in Norway, 2008-2023



Source: Labour Cost Statistics, Statistics Norway

Multiplying with the number of FTEs, total training costs for 2023 can be estimated at around 28.5 billion NOK, but this is a tentative figure due to uncertainty in the CVTS and in the number of FTEs.

Direct costs for formal education is mostly publicly funded. Statutory rights exist for adults to complete both primary/lower secondary and upper secondary. The regional county administrations are responsible for delivering such education and covering the costs. Public higher education at university and university college level is also withouth student fees and funded directly by the state. Vocational colleges may charge student fees, but the majority of their funding come from public funding, mostly state grants channelled through the county administrations. The state also partly fund study associations who offer formal education for adults.

For indirect sustainment costs and for non-formal training, the funding is more complex. A key principle underlying funding discussions is that employers pay for work-relevant training of employees. This is formally reflected in the overall collective agreement (*Hovedavtalen*) between the main employer (NHO) and labour (LO) confederations, chapter 18, which states that "The costs of supplementary and further education must be borne by the enterprise. Responsibility for ensuring that any competence gap is covered satisfactorily rests with the enterprise and all its employee". Employers therefore covers most of the costs related to CVET, especially for non-formal CVET.

At the other end, CVET which clearly do not meet employer's needs, for instance re-skilling efforts to qualify for other parts of the labour market, is the individual's responsibility to fund. Although formal public education is free, subsistence costs would fall on the individual. The key public policy instrument to help fund such individual investments in formal education has been *Lånekassen*, which is a public bank/welfare institution established in 1947 which offer loans and grants for students at favourable terms. (For non-formal education and private formal education, the individual may also need to pay student fees to cover direct delivery costs.)

Much skills development fall in a “grey area” between these two, however, and have benefits that go beyond what falls on the employer but is not irrelevant for work. This is not restricted to basic or very general skills, but may include vocational skills in adjacent areas or work-related skills not prioritised by the employer. Employers may be reluctant to bear the full costs of such skills development. Furthermore, ordinary student loans through Lånekassen are not considered sufficient to cover the individuals’ costs for skills development because adults will often have higher expenses than youths.

The resuling under-investment in these kinds of skills has led to policy debates about changes in the funding system. The key questions has been how to finance subsistence costs for adults who want to update or expand their skills either through formal education or through non-formal courses/training. Two distinct phases in this debate can be identified. The question first arose with the skills policy drive in the 1990s, which was initiated by LO, the largest national labour confederation, and which led to statutory rights to primary and secondary education and study leave and measures on the supply side. Stakeholders proved, however, unable to resolve the issue of funding of subsistence cost, or one may say the employer side were able to preserve the status quo (NOU, 2014:25). The inabilty of stakeholders to reach a consensus/compromise left the discussion dead for many years. From 2001 to around 2015 skills policy was lower on the agenda and focused more on targeted funding schemes, giving companies funding for training to develop basic skills for employees with weak such skills (*Basiskompetanse i arbeidslivet,* later *KompetansePluss,* incl. a sub-scheme for combing VET and basic skills).

From 2015, however, the then conservative-led government initated a new strategy for skills policy agreed to by all major employer and employee organisations (Kunnskapsdepartementet, 2017) which led to new policy measures. This also brought the question of funding back on the agenda. A plethora of public committees were established in this period, which developed a knowledge basis and specific policy ideas, some of which related to funding, and some which was actually executed (Haakestad & Huseby, 2023). First, there has been a significant growth in public direct funding of vocational colleges, the prime institution for higher VET at EQF 5 (see Section 3.5 above). Second, the state, through the Directorate for Higher Education and Skills policy, has channelled significant means, around NOK 490 billion from 2019 to mid 2023, to tripartite industrial programmes for competence development (HKK-Dir, 2023). These programmes offer funding for competence development measures agreed upon by the major employer and employee organisations within each industry, primarily courses targeted for workers with a vocational education. Most of this consist of shorter non-formal courses, but the vocational colleges have still been important providers of these, which have expanded their role within the overall skills policy. An evaluation show positive results in terms of increased participation by target groups who generally participate little in skills development (Aspøy et al., 2022). Third, additional training loan arrangements for adults through Lånekassen have been established.

Persons above 30 years who participate in higher education is entitled to additional grants and loans, up to NOK 119,240 extra per year, which is a significant increase. Persons with children below 16 years are entitled to extra loans of up to NOK 59,620. Fourth, the government recently initiated a new skills loan ('kompetanselån') in the spring of 2025 (NOU: 1 2025). This loan targets individuals who wish to combine work with short-term education at vocational schools, colleges and universities. It applies to courses shorter than one semester but is also available for part-time students in longer programs. The loan offers a higher borrowing limit than other Lånekassen loans but, does not include a grant element, and accrues interest from the time of disbursement. Fifth, an experiment was conducted in 2022 with extra grants/loans for skilled workers where a randomly selected group of people with a completed upper secondary vocational education was offered a loan of NOK 50,000 a year through Lånekassen to participate in formal higher CVET or other higher education. Another group was given information only. The study showed that the extra subsidy increased participation in the treatment group considerably, by so much as 20 percent, of which 12 percent can be attributed to the subsidy itself and the rest to information effects (Drange et al. 2024).

The renewed emphasis on skills policy also fuelled demands for better funding arrangements through collective agreements for sustainment costs and direct costs associated with training in the grey zone between the company and the invidual worker responsbility. A training fund existed already in the electricians/electricity field set up by collective agreeement (from 2004), and in 2024, agreement was reached on a sectoral skills fund in the manufacturing industry which would allow two weeks skills development in "approved" courses (incl. vocational colleges) with 100 per cent wage compensation a year. Both employers, employees and the state contribute to this fund. Some from the labour union side hoped this would trigger similar agreements in other industries, which could form the basis of a large-scale funding reform, but this has yet failed to materialise.

The debate on public funding of skills policy continues. A governmentally appointed committee Kompetansereformutvalget (Skills Reform Committee) with representatives of all major employer and labour federations presented their report in early 2025 (NOU, 2025). They recommended establishing a public bank for lifelong learning with affordable loans in addition to Lånekassen. They also recommended more funding to existing policy measures, primarily the tripartite industrial programmes and Kompetanse pluss, the scheme where participants could gain both basic skills and VET skills. The employee federations LO and YS proposed more radical funding changes, including similar mechanism as the Swedish Omställningsstudiestød and also a wage compensation funding mechanism for shorter courses but the employer organisations and the employee organisations for university and university college educated did not agree to these proposals. The committee report is currently (June 2025) subject to formal public consultation, and the government is yet to present any policy proposals to parliament.

Overall, the Norwegian state has been reluctant to pursue expansive funding policies for adult learning, partly because the social partners have not been able to agree on the issue, and partly because of uncertainty of what constitute the right policy and fear of simply replacing private with public funding. The latter is also reflected in a reluctance of letting the public employment service fund formal education as a part of active labour market policies, although that was temporarily allowed for a period during the covid pandemic. That said, a number of policy initiatives have been taken in the past decade to improve funding.

4.4 CVET in England

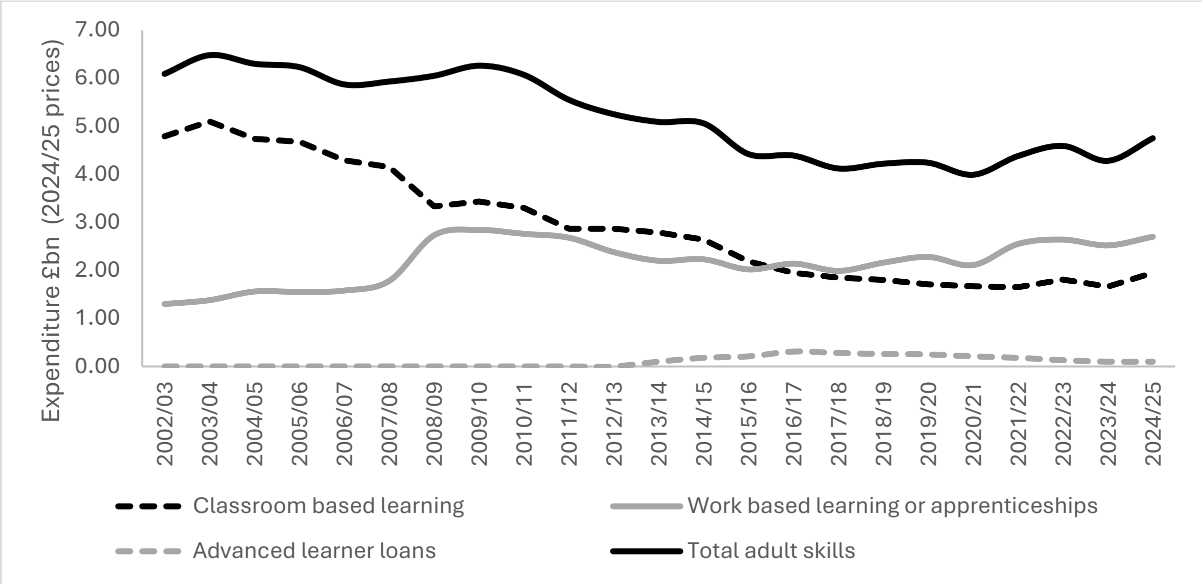
Government funding of CVET

Post-19 vocational skills are principally funded through the Adult Skills Fund (ASF). This was introduced in November 2024 and replaced the Adult Education Budget (AEB). This change was introduced as a result of the government's consultation Skills for jobs: implementing a new further education funding and accountability system (2023). Previously the AEB was funded through the Education and Skills Funding Agency (ESFA) an executive agency of the DfE. The EFSA was abolished in March 2025 with its functions moved into the DfE. The purpose of the ASF is to support adult learners to gain skills which will lead them to meaningful, sustained and relevant employment, or enable them to progress to further learning which will deliver this outcome. Within the ASF there is provision for tailored learning that supports wider outcomes such as to improve health and wellbeing, equip parents/carers to support their child's learning, and develop stronger communities. The ASF also provides funding for skills which are considered important to a particular local area.

It is sanguine to note the Institute for Fiscal Studies' commentary on adult skills provision: "Few areas of public policy have seen as much change as adult education and skills. Since the early 2000s, a series of major reforms has shaped a post-18 education system that can often be challenging for both individuals and employers to navigate. The pace of change shows no signs of slowing under the new government, with the creation of Skills England, major reforms to the apprenticeship levy, and the introduction of the Lifelong Learning Entitlement (LLE) all on the agenda. Underpinning these policy reforms is a funding environment characterised by substantial real-terms reductions since the early 2000s and significant shifts in the allocation of public funds across different areas of adult education." (Drayton et al., 2025, p.62).

Although funding has been in real terms decline (see Figure 19), the number of learners has more or less remained stable. In 2019/20, for instance, 1,042,030 leaners participated in training funded through the Adult Skills Budget and this stood at 1,062,960 in 2023/24. Most training is provided at a level equivalent to or below EQF level 2.

Figure 19: Public spending on adult education and skills (actual and projected for 2024–25)



Source: Drayton et al. (2025) Figure 4.6, p.64

Skills Bootcamps were introduced in 2020. They are designed to equip existing employees with the skills employers require, notably in areas related to skills related to the digital and green transitions and in jobs for which there is unmet demand (such as HGV driving, early years education). Skills Bootcamps take up to 16 weeks to complete and are flexibly delivered allowing to participants to fit training around family and work commitments. Participants need to be 19 years and over. Not all courses lead to a qualification, but it is anticipated that it will be a step towards obtaining a qualification at a later date. Skill Bootcamps are administered by local labour market authorities. In 2022/23, there were 27,730 completed Skills Bootcamps. Of these completions, 15,570 reported positive outcomes (such as progression within an existing job, finding a new job, starting an apprenticeship, etc.). In 2025/26, government has provided local labour market authorities with a maximum budget of £233.2m.

Employer investments in CVET

The percentage of those in employment in receipt of job related training has remained more or less stable over the past 20 years at around 12 to 15 per cent. Over time the percentage of employers providing training has fallen from 66 per cent in 2011, to 61 per cent in 2019, to 60 per cent in 2022. Data from the Continuing Vocational Education and Training Survey (CVTS) for the UK – when it was still in the European Union – used to demonstrate that a relatively high percentage of employers in the UK provided training but it was often of relatively short duration (Hogarth et al., 2009).

By looking at employer investments in training over time – assuming that the cost of training says something about its quality and value to businesses – one obtains a unique insight into human captial development (see Table 4). Over time the number of trainees has inceased but the overall amount spent on funding has fallen by £4,467m (by 8 per cent). Training costs per employee have fallen by £1,124 (by 27 per cent). The conclusion is that less funding is being spread across more trainees.

Table 4: Employer Investment in Training in England (2022 prices)

	2011	2013	2015	2017	2019	2022	Change 2011 to 2022
Number of employees (000s)	22,700	22,75	23,480	24,452	25,481	25,649	2,947
Number of trainees (000s)	12,288	14,149	14,708	15,233	15,238	15,429	3,140
Total investment through all training (£m)	£50,316	£46,824	£48,422	£49,379	£44,878	£45,849	-4,467
Total investment through off-the-job training (£m)	£23,809	£23,022	£24,073	£24,418	£22,096	£21,917	-1,892
Total investment through on-the-job training (£m)	£26,507	£23,802	£24,349	£24,961	£22,783	£23,932	-2,575
Investment in training per employee (£)	£2,217	£2,058	£2,062	£2,019	£1,761	£1,788	-429
Investment in training per trainee (£)	£4,095	£3,309	£3,292	£3,242	£2,945	£2,971	-1,124

Source: Employers Skills Surveys 2011, 2015, 2017, 2019, 2022

Policy development over time

Looking back, it is possible to identify a number of strands attached to public policy in relation to CVET. At various times, policy has sought to do four things, often innovatively, but with varying degree of success:

1. working with employers to upskill their workforces to meet their product market strategies (i.e. the Train to Gain initiative);
2. encourage individuals to engage in training through provision of career advice and guidance linked to funded training (e.g. Individual Learning Accounts and Skill Bootcamps);

3. address capital market failures which prevent individuals engaging in training (e.g. Training Loans);
4. the use of tax policy to increase employer investment in skills (e.g. the Apprenticeship Levy / Skills and Growth Levy).

Train to Gain (T2G) was designed to improve the skills of those already in employment. It used a brokerage model whereby an independent skills adviser would work with employers to identify the skills they needed to meet their business goals. Once these had been identified, the broker would find courses eligible for funding through T2G and link the employer with a training provider. The appeal to the employer was essentially that of free advice and guidance linked to training which would meet their business goals. For employees to be eligible for training, they needed to: have a qualification attainment at EQF level 2 or less; be aged less than 25 years old; and be in employment.

T2G ran from 2006 to 2010. By 2009, it had cost 1.47bn, delivered training to 1.25 million individuals, and provided a brokerage service with which most employers were satisfied. It was closed because of concerns over value for money and concerns that the training provision element was not sufficiently demand led (NAO, 2009). T2G was seen as innovative because of its use of a brokerage services designed to provide training which supported business development.

If T2G was targeted at employers, an earlier innovative initiative was that of Individual Learning Accounts (ILAs). ILAs were introduced in September 2000 following extensive piloting between 1998 and 2000. ILAs were designed to increase participation in learning, remove the financial barrier to participating in training, and make people take more responsibility for their own training. Although ILAs were available to everyone, the main target groups were young people without qualifications in low skilled jobs, workers in small and medium sized enterprises, and those looking to return to work. On policy advice, on 23 November 2001, following allegations of fraud, government closed the scheme. The DfE estimated that if the scheme had not been closed immediately, the value of fraudulent claims could run into tens of millions.

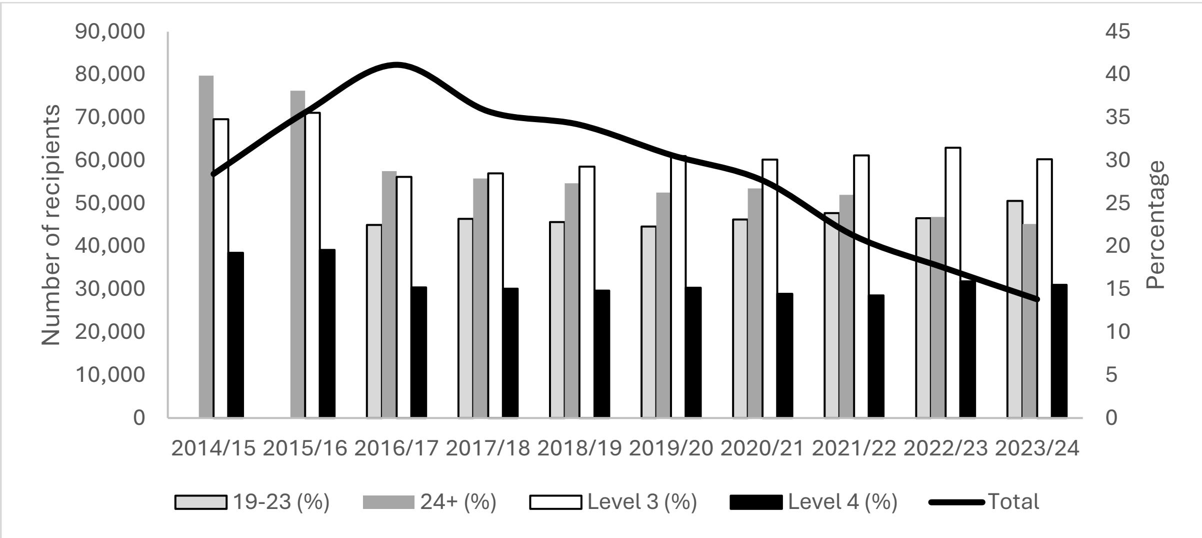
Three financial incentives were available to individuals from September 2000:

1. an initial incentive of £150 towards the cost of eligible learning with a small contribution of at least £25 from the account holder;
2. a discount of 20 per cent on the cost of a broad range of learning capped at £100; and
3. a discount of 80 per cent on the cost of a limited list of basic IT and mathematics courses limited to a total of £200 discount per account.

Total expenditure (as of June 2002) amounted to £273.4 million compared to a budget of £199m. The evaluation undertaken by the National Audit Office (NAO) reported that the ILAs were an innovative policy-making which succeeded in attracting considerable new interest in learning (NAO, 2002). The NAO commented that the scheme had to be withdrawn not because of its innovative nature but because of problems arising from a variety of factors related to its implementation. These were: pressure to implement the scheme quickly and inadequate planning and inadequate monitoring. The evaluation of ILAs demonstrated that they had positive impacts on participants attracting a wide range of learners, and oriented towards IT learning (Owens, 2022). As noted above, there are currently plans to re-introduce something which looks similar to an ILA with the Lifelong Learning Entitlement (see below).

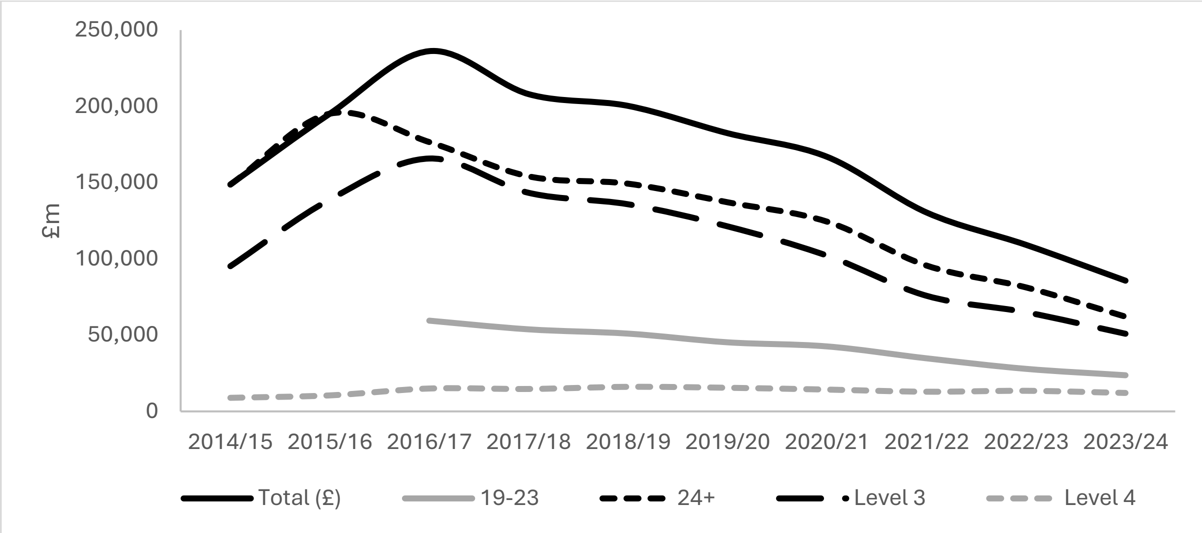
A more specific measure designed to reduce the capital constraint on participating in training is that of tuition fees. These were first introduced into higher education in 1998 (with the passing of the Teaching and Higher Education Act). In 2012/13 advanced learner loans were introduced for those aged 24 and over not eligible for government funding. In other words, it provides loans to those enrolling on course below university level. In 2016/17 these were extended to those aged 19-23 years. In many respects, the loans were introduced to reduce government spending on further education and skills (as mandated in successive comprehensive spending reviews). As eligibility criteria for government funding was tightened in the post-2010 period, adults were increasingly required to fund their own training. Figure 20 shows the number of recipients of training loans over time, and Figure 21 shows the amount loaned.

Figure 20: Recipients of advanced training loans



Source: DfE

Figure 21: Amount of training loans (£m)



Source: DfE

Although the value of advanced training loans has fallen over time, as has the number of recipients, loans are at the core of government's latest attempt to stimulate upskilling and reskilling. From 2026, individuals will receive a Lifelong Learning Entitlement (LLE). The DfE says this will: "…will transform the post-18 student finance system to create a single funding system. It will replace: higher education student finance loans; and Advanced Learner Loans" (DfE Lifelong Learning Entitlement, March 2025). The LLE will be used to fund training at EQF levels 4 to 6 and modules of modules of high-value technical courses at levels 4 and 5. In effect, Level 3 courses and below will be fully funded where they are on the list of qualifications considered to be of high value by DfE, or not eligible for state support at all.

Apprenticeships have increasingly been used as a form of CVET. Apprenticeship training is open to people of all ages and at all levels (though the government has recently withdrawn public funding for courses at EQF level 7+). Apprenticeships are also open to existing employees of an employer. It is estimated that around a third of employers (38 per cent) providing apprenticeships deliver them to existing employees (IFF Research, 2024). This suggests that employers have been increasingly using apprenticeships as a source of CVET. As shown in Figure 10 above, an increasingly large share of all apprenticeship starts have been accounted for by those at EQF level 5+. These receive a relatively large amount of public funding to cover the training costs typically delivered by a training provider / vocational school, with the result that the funds generated by the Apprenticeship Levy support fewer apprenticeship starts. This is not necessarily seen as a problem if this is where employers consider their Levy payment to be best spent. But it does reduce the funding available to support young people make the education to work transition.

4.5 Conclusions

It is apparent that there has been a degree of experimentation taking place with respect to how investments in the continuing training can be optimised. From a review of the European wide literature and the case studies of Austria, Norway, and UK-England, the following are evident:

- increases in the provision of programmes designed, respectively, to stimulate employer investment in training and employee participation in training through funding initiatives;
- concerns about the extent of deadweight looms large (especially in Norway and England where there have also been concerns about public funds being used inappropriately);
- a strong local labour market dimension – i.e. local labour market agencies and authorities are responsible for its administration - as evidenced in the role the Lander play in Austria, and the role of devolution of the Adult Education Budget to regional authorities in England; and
- the use of public funding to accredit CVET and, in the case of England, increase the portability of the skills provided.

While all countries reveal a degree of experimentation with respect to how public funding can best support CVET which, at least in the case of Norway and England, is yet to be fully resolved, a few other features are evident:

- first, provision is more generous in Norway, and perhaps Austria too, with respect to the types of support the state is willing to fund. In England there appears to be more emphasis on reducing entitlements and levels of funding;
- second, the scale of experimentation appears to be greater in the case of England with almost a constant process of reform with initiatives being launched and then discontinued.

Just as in the case of IVET, the policy environment appears more stable in the CME cases than in the LME one, even if the stability of funding arrangements in all three countries shows less signs of stability than in the case of IVET.

5. The Determinants of Employer Expenditure on CVET: Evidence from the Continuing Vocational Training Survey

5.1 Introduction

The analysis to date has provided an insight into the situation across three countries albeit ones with differing approaches to the provision and funding of both IVET and CVET. Using data from the Continuing Vocational Education and Training Survey (CVTS) it is possible to obtain a cross-country comparison of company expenditure on training and its determinants. It is possible to draw on three waves of the Continuing Vocational Training Survey (2010, 2015, 2020) to reveal the determinants of training intensity.

Two complementary measures of training intensity - hours of training and costs per employee – are used in the analysis.

1. **Training hours**. This measure captures the actual time employees spend in training activities during paid working hours, offering a direct indicator of the extensiveness of training exposure.
2. **Training costs** per employee represents the financial investment in human capital development, encompassing direct expenditures such as trainer fees, materials, facility costs and indirect costs including trainee absence.

Training hours and costs have been calculated using per-employee metrics. This approach controls for firm size variations, eliminating the confounding effect whereby larger firms naturally report higher absolute training volumes, whilst also addressing potential skewness in distributions.

Using the two complementary training intensity variables it is possible to gauge the extent to which various factors account for observed variations.

5.2 The Continuing Vocational Training Survey

The analysis is based on analysis of the Continuing Vocational Training Survey (CVTS). The CVTS is a repeated cross-sectional survey, collecting comparable statistical information on both formal and informal continuing vocational training activities within enterprises across Europe. The survey examines critical dimensions, such as training participation rates, hours dedicated to training, associated costs, organisational training policies, management practices and the types of skills being developed. It specifically targets enterprises with 10 or more employees across various economic sectors, whilst deliberately excluding certain sectors including agriculture and public administration (Eurostat, 2021). Although the CVTS has been conducted for reference years 1993, 1999, 2005, 2010, 2015 and 2020, this study analyses the three most recent waves: 2010, 2015 and 2020. The most recent wave, CVTS6 in 2020, encompasses 30 European countries, including 27 EU member states plus Norway, North Macedonia and Serbia. Only 21 countries were consistently included across the 2010, 2015 and 2020 surveys, and these constitute the target countries in the analyses.

For the analysis reported on below, firm firm-level data from CVTS data have been supplemented with country-level indicators from OECD and Eurostat databases to provide contextual factors that may influence training provision and intensity. These include GDP per capita percentage change (OECD), over-qualification rates as a proxy for skill mismatch (Eurostat), gross fixed capital formation: ICT equipment (Eurostat), serving as an indicator of technological investment and digital formation at the national level, union density (OECD/ICTWSS), and classifications of Varieties of Capitalism (VoC). The CVTS data, enriched with these supplementary indicators, provide a comprehensive basis for understanding and comparing vocational training systems across Europe, thereby informing evidence-based policies for skills development and lifelong learning initiatives.

5.3 Empirical Approach

A three-level random intercept linear regression models has been used to examine the factors shaping training intensity, measured through both training hours and costs per employee (see Figure 22). The multilevel structure captures the hierarchical nature of the data, with firms (level 1) nested within country-years (level 2), which are in turn nested within countries (level 3). This three-level architecture is particularly advantageous as it effectively captures both cross-sectional differences between countries and temporal variations within countries, enabling the distinction between stable country characteristics and time-varying effects in the intensity of continuing vocational training.

The utilisation of dual measures is theoretically justified as training hours and costs capture distinct yet complementary dimensions of organisational investment in human capital development. Training hours quantify the temporal commitment to skill enhancement, reflecting the duration and scope of learning opportunities afforded to employees. Conversely, training costs represent the financial investment in human capital, encompassing direct expenditures such as trainer remuneration, materials and facility costs, alongside indirect costs including employee compensation during training periods. This dual approach enables a more comprehensive assessment of training intensity by capturing both resource allocation patterns and organisational commitment to employee development.

Figure 22: Presentation of the three-level model

<u>3. Country level:</u>

Cross-sectional or structural effects
(The average over three periods, grand-mean centred)

- Mean GDP growth rate
- Mean Overqualification rate
- Mean Gross fixed capital formation (ICT equipment)
- Union density
- Varieties of capitalism

↑

<u>2. Period level:</u> Period (2010, 2015, 2020) x Country

Longitudinal or change effects (Group-mean centred)

- Period variable
- Change in real GDP growth rate
- Change in overqualification rate
- Change in gross fixed capital formation (ICT equipment)

↑

<u>1. Firm level:</u>

- Firm size
- Male proportion
- Labour cost per hour
- Presence of training plans
- Sector

Note: For the three-level linear regression models analysing the determinants of firms' training intensity, the above level information has been adopted.

Level 1 Firm-level Characteristics: At the firm level, five key variables are incorporated: firm size, the proportion of male employees, labour costs per hour, the presence of training plans, and sector. Firm size is categorised into three groups: small (10-49 employees), medium (50-249 employees) and large (>250 employees). Standardised deflated labour costs per hour are utilised to account for wage-price variations and economic fluctuations across time periods. Information on the presence of formal training plans is also incorporated as a binary variable. Sector classification follows the European NACE (Nomenclature of Economic Activities in the European Community) system, which systematically groups businesses by their economic activities. Five sector categories are defined: Industry (Category 1, NACE codes B-E, encompassing mining and quarrying; manufacturing; electricity, gas and steam supply; and water supply, sewerage and waste management); Construction (Category 2, NACE code F); Wholesale and Retail Trade, Transport, Accommodation and Food Service Activities (Category 3, NACE codes G-I); Information and Communication, Financial and Insurance Activities (Category 4, NACE codes J, K); and a fifth category encompassing Real Estate Activities; Professional, Scientific and

Technical Activities; Administrative and Support Service Activities; Arts, Entertainment and Recreation; and Other Service Activities (Category 5, NACE codes L-N, R, S).

Level 2 Country-Year Characteristics: Following Fairbrother's (2014) empirical approach, the longitudinal effects at level 2 are group-mean centred. These variables are measured as deviations from each country's mean across the three waves (2010, 2015 and 2020). This approach incorporates period-level longitudinal effects of country-level indicators, including GDP growth rate, over-qualification rate, and gross fixed capital formation. The group-mean centring is crucial for multilevel modelling as it allows for the separation of within-country changes over time from stable differences between countries.

Level 3 Country-Level Characteristics: The cross-sectional effects at country level are grand-mean centred, with context variables centred on the overall mean. Union density and institutional characteristics, defined within the VoC framework, are included exclusively at country level as time-invariant structural features. This methodological choice for union density, utilising mean values from 2010 to 2019, is necessitated by data limitations, as complete time series information is unavailable across all three waves, particularly for 2020. This approach is theoretically justified, as unionisation rates typically exhibit relative stability over medium-term periods, reflecting deeply embedded institutional arrangements rather than short-term fluctuations.

The model specifications are as follows:

$$TrainHours_{ijk} = \beta_0 + \beta_1 X_{ijk} + \beta_2 Z_{jk} + \beta_3 W_k + v_{0k} + u_{0jk} + \varepsilon_{ijk} \tag{1}$$

$$TrainCosts_{ijk} = \beta_0 + \beta_1 X_{ijk} + \beta_2 Z_{jk} + \beta_3 W_k + v_{0k} + u_{0jk} + \varepsilon_{ijk} \tag{2}$$

Where:

$v_{0k} \sim N(0, \sigma^2{}_v)$ [Country-level random intercepts]

$u_{0jk} \sim N(0, \sigma^2{}_u)$ [Country-year-level random intercepts]

$\varepsilon_{ijk} \sim N(0, \sigma^2{}_\varepsilon)$ [Firm-level residuals]

$TrainHours_{ijk}$ and $TrainCosts_{ijk}$ denote train hours and costs per employee, respectively, i represents firms, j denotes country-years and k indicates countries. X_{ijk} denotes a vector of firm-level variables, Z_{jk} represents country-year level variables and W_k indicates country-level variables. The terms v_k and u_{jk} represent random effects at the country level (level 3) and country-year level (level 2), respectively, with ε_{ijk} denoting the firm-level residual in the linear models.

5.4 Variable selection

The selection of independent variables was guided by organisational capabilities and institutional complementarities frameworks to capture multiple levels of influence on training intensity decisions. Firm-level variables capture key organisational characteristics that theory suggests should influence training approaches. Specifically, firm size reflects resource availability, economies of scale, and internal labour market dynamics (Acemoglu & Pischke, 1999; Bassanini et al., 2007), whilst the presence of training plans indicates systematic workforce development approaches and organisational formalisation in human capital investment.

Workforce composition variables address both economic and demographic influences on training decisions. The proportion of male employees captures potential gender dimensions in training investment patterns, whilst labour costs per hour proxy for skill levels and wage premiums that theory suggests should be complementary to training investments (Milgrom & Roberts, 1995). Sectoral classifications reflect the knowledge intensity and technological dynamism of different industries, capturing varying skill obsolescence rates and continuous learning requirements across economic activities.

Higher-level variables distinguish cyclical from structural influences following established multilevel approaches to contextual analysis. Economic indicators capture temporal fluctuations (GDP growth rates, overqualification rates reflecting labour market conditions) and technological contexts (gross fixed capital formation in ICT equipment), whilst institutional variables reflect coordination mechanisms and workforce development traditions. Union density and varieties of capitalism classifications capture different institutional arrangements that theory suggests influence national training cultures (Amable, 2016). The firm size × ICT investment interaction tests whether technological contexts moderate organisational training relationships, reflecting emerging research on technology-training complementarities (Autor et al., 2003).

5.5 Results

The multilevel regression analyses reveal several robust patterns regarding the determinants of training intensity across European firms. Table 5 presents the results of the base models for training hours and costs per employee.

Table 5: Multilevel Regression Models Predicting Training Intensity

	(1) Training Hours	(2) Training Costs	(3) Training Hours	(4) Training Costs
Intercept	3.73	-896.61***	3.69	-892.49***
	(4.13)	(243.54)	(4.14)	(241.91)
Year [Ref: 2010]				
2015	-1.80	-21.63	-1.81	-21.53
	(1.14)	(33.14)	(1.14)	(33.13)
2020	-2.61**	-122.78***	-2.61**	-123.44***
	(1.19)	(34.51)	(1.20)	(34.50)
Level 1: Firm-level variables				
Firm size [Ref: Small (1-49)]				
Medium (50-249)	-1.33***	-28.63***	-1.12***	-37.49***
	(0.17)	(7.66)	(0.18)	(8.14)
Large (>=250)	-1.64***	-5.29	-1.72***	-36.55**
	(0.35)	(15.60)	(0.37)	(16.77)
Presence of training plans	3.96***	172.54***	3.97***	171.88***
	(0.14)	(6.41)	(0.14)	(6.41)
Male employee (%)	-0.65**	-40.60***	-0.63**	-42.10***
	(0.28)	(12.56)	(0.28)	(12.56)
Labour Cost per Hour (std)	1.89***	445.55***	1.89***	445.73***
	(0.13)	(5.81)	(0.13)	(5.81)
Sector [Ref: Industry]				
Sector: Construction	1.07***	0.09	1.08***	-0.35
	(0.23)	(10.31)	(0.23)	(10.31)
Sector: Wholesale, retail, transport, accommodation	0.76***	66.19***	0.77***	65.25***
	(0.18)	(7.98)	(0.18)	(7.98)
Sector: ICT, financial, insurance	5.68***	424.00***	5.68***	423.51***
	(0.30)	(13.29)	(0.30)	(13.29)
Sector: Professional, scientific, art, other	3.16***	177.73***	3.18***	176.89***
	(0.21)	(9.28)	(0.21)	(9.28)
Level 2: Period variables				
Change in real GDP growth rate[a]	-0.29	-17.93	-0.30	-17.16
	(1.34)	(61.87)	(1.34)	(61.86)
Change in overqualification rate[a]	-1.54	113.01	-1.57	115.86
	(6.17)	(282.71)	(6.17)	(282.67)
Change in gross fixed capital formation (ICT equipment)[a]	-7.81	-4056.18	-8.04	-4073.76
	(97.88)	(4401.66)	(97.88)	(4401.10)

	(1)	(2)	(3)	(4)
	Training Hours	Training Costs	Training Hours	Training Costs
Level 3: Country-level variables				
Mean real GDP growth rate[b]	0.44	37.18	0.43	37.68
	(0.61)	(35.81)	(0.61)	(35.57)
Mean overqualification rate[b]	-0.26	1.31	-0.26	1.34
	(0.17)	(10.38)	(0.17)	(10.31)
Mean gross fixed capital formation (ICT equipment)[b]	4.52	198.99	4.12	230.26
	(2.83)	(168.50)	(2.84)	(167.49)
Union Density	0.30	198.99	0.34	195.91
	(6.75)	(406.66)	(6.77)	(403.88)
Varieties of Capitalism [Ref: CMEs]				
VoC: MMEs	3.83	112.59	3.78	115.03
	(4.49)	(265.71)	(4.50)	(263.93)
VoC: DMEs	-1.95	-93.75	-1.91	-97.46
	(3.74)	(224.53)	(3.75)	(223.01)
VoC: Other	1.41	78.26	1.41	78.02
	(4.57)	(271.71)	(4.58)	(269.89)
Medium (50-249) # Mean GFCF	-	-	1.88***	-83.78***
			(0.56)	(25.34)
Large (>=250) # Mean GFCF	-	-	-0.55	-265.33***
			(1.14)	(51.45)
Variance				
(3) Country	6.37	30796.68	6.40	30350.30
(2) Period	7.52	5497.97	7.54	5496.15
(1) Firm	7713.77	1556042 1.80	7713.16	15556445.70
Observations	126,466	125,913	126,466	125,913

Note: * p<0.1; ** p<0.05; *** p<0.01. Models 1 and 2 show base effects for training hours and costs. Models 3 and 4 show interactions between firm size and gross fixed capital formation (ICT equipment). Outcome units are expressed in hours and Euros(€). Survey weights have been applied to all results. aVariable is group-mean centred (abstraction of mean of the group). bVariable is group-mean centred (abstraction of mean of all countries)

Understanding multi-level regression results

Regression Coefficients: The numbers in Table 5 represent the expected change in the outcome variable (training hours or costs per employee) for a one-unit change in the predictor variable, holding all other variables constant. For example, a coefficient of -1.33 for medium firms means that medium-sized firms provide 1.33 fewer training hours per employee compared to small firms (the reference category).

Standard Errors: The numbers in parentheses below each coefficient are standard errors, which measure the precision of our estimates. Smaller standard errors indicate more precise estimates. The ratio of coefficient to standard error determines statistical significance.

Variance Components: In our multilevel models, variance components represent the portion of variation in training intensity outcomes (hours or costs) that remains unexplained at each hierarchical level after accounting for included predictors. Specifically:

Firm-level variance reflects residual differences between individual firms beyond measured firm characteristics, capturing unobserved firm-specific factors like management practices or organisational capabilities.

Country-year level variance captures residual temporal variations within countries, representing influences of short-term economic dynamics, policy changes, or shocks not explained by our period-level covariates.

Country-level variance represents persistent differences among countries over time that are not accounted for by our country-level predictors, likely reflecting institutional, cultural, or structural factors influencing training intensity.

Understanding Variance Magnitude: The magnitude of these variance components is expressed in squared units of the outcome. Taking the square root gives the standard deviation of residual variation at each level. For example, a country-level variance of € 30,350 corresponds to a standard deviation of approximately €74, meaning about 68 per cent of countries deviate within ±€174 from the predicted mean after adjusting for model covariates.

Firm-level Determinants of Training Intensity

The multilevel regression analyses reveal several robust patterns regarding the determinants of training intensity across European firms. Importantly, firm size demonstrates a significant negative relationship with both training hours and costs per employee. This finding is consistent with other studies (see Hefler and Markowitsch, 2008). Medium-sized firms provide approximately 1.33 fewer training hours per employee compared to small firms, whilst large firms provide 1.64 fewer hours. This pattern is partially mirrored in training costs, with medium firms spending €28.63 less per employee, though large firms show no statistically significant difference in the base model. This finding appears counterintuitive when considered alongside the descriptive analysis of training provision, which indicated that larger firms are more likely to offer training programmes. However, this pattern suggests a more complex relationship. While larger firms may be more likely to establish formal training systems, they deliver less intensive training per employee. This may reflect not only economies of scale in training delivery but also several complementary factors, such as larger firms' ability to implement more standardised and efficient training approaches and their capacity to hire employees with higher initial skill levels, thereby reducing the need for extensive training.

Workforce composition also demonstrates a significant relationship with training intensity. Firms with higher proportions of male employees invest significantly less in training, with a 1% increase in male proportion associated with 0.65 fewer training hours and €40.60 lower training costs per employee. This gender dimension requires further investigation and may reflect differences in occupational distributions within sectors, variations in job roles and hierarchical positions, training differences between micro-sectors not captured in the broader sector categories, or potentially discriminatory practices in training access. Labour costs show a strong positive association with training intensity, with firms paying higher wages also investing more substantially in workforce development. A one standard deviation increase in labour costs corresponds to 1.89 additional training hours and €445.55 higher training costs per employee. This aligns with theories suggesting complementarity between wage levels and human capital investment, where higher-skilled workers receive both higher compensation and more extensive training.

The presence of formal training plans demonstrates a substantial positive association with training intensity, with firms having training plans providing 3.96 additional training hours and €172.54 higher costs per employee. This finding aligns with expectations that systematic planning enhances training investments, indicating that firms with formal training frameworks adopt more comprehensive approaches to workforce development rather than ad hoc training initiatives. This suggests that organisational formalisation in training processes translates into tangible increases in both training volume and financial commitment.

Sectoral Patterns

Sectoral patterns reveal substantial variation in training approaches across different industries. Firms in ICT and financial services sectors demonstrate significantly higher training intensity (5.68 additional hours and €424.00 higher costs per employee) compared to firms in the industry sector. This finding reflects the knowledge-intensive nature of these sectors, where rapid technological change and skill obsolescence necessitate continuous workforce development. The substantial investment in training within these sectors likely reflects both the higher value of human capital and the greater need for continuous upskilling in dynamic technological environments. The wholesale, retail, transport and accommodation sector also exhibits higher training intensity (0.76 additional training hours and €66.19 higher costs) than industry, possibly reflecting regulatory requirements for certifications or safety training in these industries. Similarly, the professional, scientific, arts and other services sector shows elevated training investments (3.16 additional hours and €177.73 higher costs), consistent with the knowledge-intensive nature of professional services.

Period Effects, Context and Change Variables

The analysis distinguishes between change effects (within-country changes over time) and context effects (between-country differences in economic indicators), following the approach used in multilevel studies of contextual influences. Significant period effects were observed in training intensity, with 2020 showing 2.61 fewer training hours and €122.78 lower costs per employee compared to 2010, while 2015 shows no significant difference from 2010 for either measure. These period effects likely reflect the impact of the COVID-19 pandemic in 2020, which disrupted training activities across European firms, suggesting that external shocks significantly influence training investments independently of measured economic indicators.

Examining the change and context variables, within-country changes in GDP growth rate, over-qualification rate and gross fixed capital formation in ICT equipment (level 2) show insignificant impacts on training intensity for both training hours and costs, despite varying directions of effects. These results indicate that short-term economic fluctuations rarely have direct impacts on training intensity. Similarly, between-country differences in economic performance (level 3) show minimal relationships with training intensity. Mean GDP growth rates have small positive but non-significant effects (0.44 hours, €37.18 costs), mean overqualification rates show negligible effects (-0.26 hours, €1.31 costs), and mean gross fixed capital formation in ICT equipment shows positive but non-significant associations (4.52 hours, €198.99 costs). This indicates that neither cyclical economic fluctuations nor structural economic differences appear to be primary drivers of training decisions for intensity. In other words, a country's typical economic performance relative to other countries has similar (limited) impact as deviations from its own typical patterns.

Institutional Context and Interaction Effects

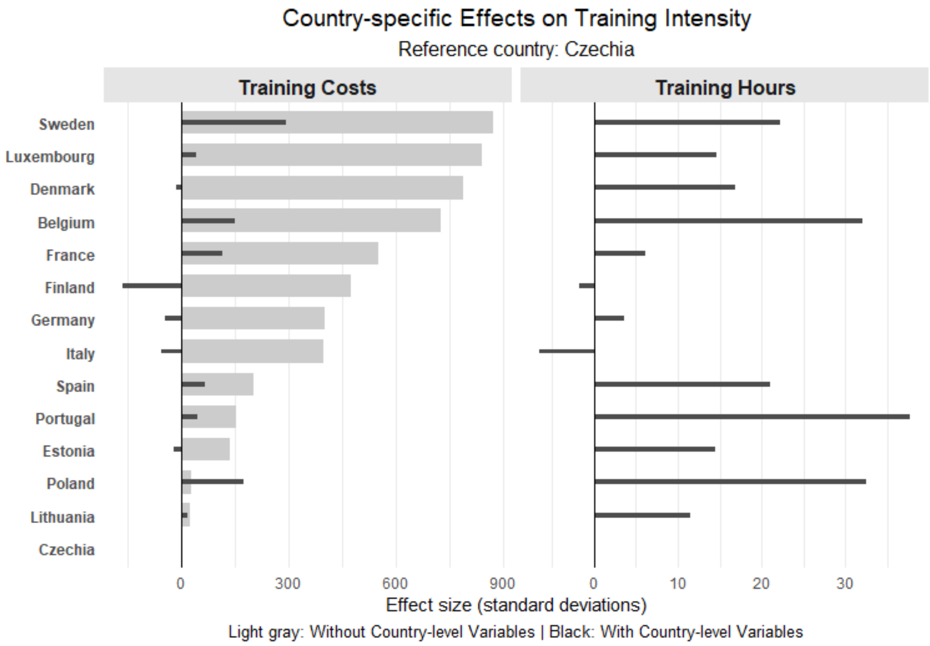
The analysis includes an interaction term between firm size and gross fixed capital formation in ICT equipment to test whether technological investment contexts systematically moderate the relationship between organisational scale and training intensity. The findings demonstrate that firm-level relationships with training intensity are significantly moderated by technological investment contexts. When firm size is interacted with mean gross fixed capital formation in ICT equipment, medium-sized firms in countries with higher ICT investment provide 1.88 additional training hours compared to what would be expected based on size alone, though they incur €83.78 lower costs per employee. Large firms show no significant additional hours effect but demonstrate €265.33 lower costs per employee in high ICT investment contexts.

These interaction effects reveal that technological investment significantly conditions how firm characteristics influence training intensity, particularly regarding cost efficiency. The positive interaction for training hours among medium firms suggests that technological contexts may stimulate additional training needs, while the negative cost interactions across firm sizes indicate that technological investment enables more efficient training delivery. This may reflect the adoption of digital training platforms, e-learning systems, and other technology-enhanced training methods that reduce per-employee costs while maintaining or increasing training hours. These findings align with theories suggesting technological change creates both new skill demands and new opportunities for efficient training delivery.

Country Effects

Country effects are summarised in Figure 23. Southern European nations, including Portugal, Spain and Italy, demonstrate substantial positive effects compared to Czechia (the reference country). Regarding training costs, these countries maintain strong positive effects in raw models, exhibiting robust investment levels. However, in the adjusted models, the magnitude diminishes, and Italy demonstrates negative investment levels compared to Czechia after controlling for structural factors. Concerning training hours, Portugal and Spain exhibit particularly pronounced positive adjusted effects, substantially exceeding most other countries in the sample. Italy similarly demonstrates negative adjusted effects for training hours.

Figure 23: Country-specific Effects on Training Intensity



Note: Training hours are multiplied by 10 to address convergence issues in the raw model. Training hours without country-level variables are not visible due to the low variance at the country level.

Eastern European countries, including Lithuania and Poland, display positive effects compared to Czechia. For training costs, Lithuania demonstrates positive effects in both raw and adjusted models, suggesting robust training investment that exceed structural expectations. Poland shows particularly strong positive effects for training hours, with substantial adjusted effects indicating extensive training duration considering its structural factors. Lithuania also exhibits positive adjusted effects for training hours. Western and Northern European nations present varied but generally positive patterns compared to Czechia. Regarding training costs, Sweden demonstrates the strongest positive effects, maintaining substantial effects in both raw and adjusted models. Luxembourg and Denmark exhibit positive raw effects for training costs with near-zero adjusted effects, suggesting that both countries' higher training costs relative to Czechia derive principally from their structural advantages. Belgium demonstrates particularly strong positive adjusted effects for training hours, indicating extensive training duration that exceeds structural expectations, whilst also exhibiting positive training cost effects. Germany displays moderate positive effects for training costs; however, the negative adjusted effects suggest that German training investment operates slightly below the level commensurate with its structural factors. France exhibits positive effects for training costs in both raw and adjusted models, alongside positive adjusted effects for training hours. Finland demonstrates positive raw training cost effects but displays negative adjusted effects for both training costs and hours.

The substantial country-level variance observed in training cost raw effects, which diminishes considerably in adjusted models, contrasted with the ostensibly converged training hours raw effects that reveal meaningful variation in adjusted models, suggests distinct patterns of national training cultures. Whilst cross-national differences in training costs are likely to be largely attributable to structural economic factors, the emergence of variation in training hours adjusted effects indicates that certain countries may well have developed more robust training cultures regarding time investment that exceed expectations based on their structural endowments alone. While this is speculative, it is something that merits further investigation.

Summary

The multilevel modelling results reveal clear patterns in how variation in training intensity is distributed across organisational, temporal, and national levels.

For training hours, residual variance is overwhelmingly concentrated at the firm level: 99.82% of the total (7,713.16 out of 7,727.85). Variation attributable to differences between countries accounts for just 0.08% (6.40), while country-year variation accounts for 0.10% (7.54). This pattern indicates that once measured predictors are included, training hours are primarily determined by firm-specific characteristics rather than national context or temporal economic conditions.

For training costs, a similar but slightly more complex pattern emerges. Firm-level variance still dominates, accounting for 97.67% of the total (15,556,445.70 out of 15,942,292.15). However, the country-level share is higher, 0.19% (30,350.30), while country-year variance remains minimal at 0.03% (5,496.15). The relatively greater between-country variance for costs suggests that national economic structures, institutional frameworks, and training cultures exert more influence on financial investments in training than on the number of training hours allocated.

It is important to note that these percentages describe residual (unexplained) variance *after* controlling for all measured firm-, period-, and country-level predictors. They do not represent the total clustering present in the raw data, or Intraclass correlation coefficients (ICCs).

5.6 Conclusions

From the analysis provided above a number of conclusions emerge.

1. Training intensity as an organisational phenomenon: The overwhelming firm-level dominance in residual variance supports the organisational capabilities perspective, emphasising that company-specific resources, strategies, and management practices are the primary drivers of training intensity.
2. National context matters more for expenditure than time: The modest but higher country-level variance in training costs compared to training hours implies that national "training cultures" and institutions influence how much firms are willing to invest financially more than how much time they allocate.
3. Stability over time: The negligible country-year variance indicates that, net of macro indicators, training patterns are relatively stable across survey periods. This suggests

resilience to routine economic fluctuations, although major shocks (e.g., the 2020 COVID-19 disruption) can still have visible effects.

The findings indicate that interventions targeting firm-level capabilities and decision-making processes are likely to yield the largest returns. Nonetheless, the persistent country-level component in costs indicates a role for national policy levers in shaping firms' willingness to invest financially in employee development.

6. Conclusion

6.1 Changes in VET Funding

Each of the three countries selected as case studies face the same pressures with respect to funding of both IVET and CVET: namely the need to respond to changes in the labour market's demand for skills and reduce the propensity for skills obsolescence to arise amongst the adult workforce. Responses reveal similarities too. These include the expansion of publicly funded IVET provision to higher levels, and an increasing array of publicly funded CVET programmes which address re- and upskilling amongst those in employment. With respect to the latter, policy makers across the three countries reveal concerns about deadweight and the appropriate use of public funds which tends to constrain publicly funded provision. There are contrasts as well, not least with reference to the institutional architecture in place to manage changing and sometimes increasing demands being made on skills supply. In Austria and Norway, the two examples of CMEs, existing structures and processes are, with some exceptions, able to accommodate change. In contrast, UK-England, the example of an LME, response to change is more likely to be managed through changes to the institutional and policy architecture rather than managing change through existing institutions and structures.

Both Austria and Norway have had settled arrangements in place for the delivery and funding of IVET at least since the early 1990s. This has not only allowed change to take place within existing institutional arrangements but may well have pre-empted the need for change in the first place. This is because settled institutional arrangements allow change to take place on an incremental, piecemeal basis which alleviates the need for more far-reaching change later. The type and frequency of reforms of the IVET system in England which have followed various review from the 1990s onwards are nowhere near as evident in Austria and Norway.

Across all three countries, public funding of CVET reveals slightly more change than IVET. This reflects the need to assist those who are relatively disadvantaged in the labour market with limited access to training opportunities (with a concomitant risk of social exclusion) and who may be particularly vulnerable to skills obsolescence resulting from technological change. It also reflects a need to assist workers in general to avoid technological skills obsolescence. There are contrasts between the CME and LME types, but these are not as marked as in the case of IVET. Austria has developed programmes which have sought to assist existing employees acquire new skills where employer funded training is unlikely to do so. These programmes are relatively long standing and, as such, reveal a degree of stability within which various actors make decisions about the investments they want to make in skills. Norway has experienced substantial change in its funding of CVET in the post-2015 period. The state has increased its funding support for the types of vocational schools which deliver VET at higher levels (EQF level 5+). It has also channelled funding towards the provision of courses (often short ones) designed to develop the competences of the adult workforce. It has also introduced training loans for those who want to improve their skills. The social partners have been heavily involved in policy design and implementation. In the case of England there has been a high degree of innovation and experimentation as the system has sought to develop and fund novel solutions to both meeting and increasing skill demands. This has resulted in a relatively high degree of policy churn. There has been relatively little involvement of the social partners (except employers) in the design and implementation of CVET measures compared with either Austria or Norway.

6.2 Responsiveness of VET Systems

A high degree of path dependence in relation to IVET and to a slightly less degree, CVET. Both Austria and Norway reveal examples of relatively stable funding for IVET. This is because each country achieved a degree of settlement several decades ago about the purpose of the VET system, its organisation, and funding. This contrasts with UK-England where the creation of a market-based approach to meeting skills demand commenced in 1980s but has undergone a succession of reforms as it has sought to improve the overall performance of the VET system (this continues today).

Implicit in the skills systems of CME is the IVET system – and to a lesser extent the CVET one – will provide the skills which allows employers to adapt to changes in their markets. Because employers in CMEs have relatively less scope to hire and fire than in LMEs, they are dependent upon workers being able to adapt to change. Training curricula relating to IVET shows relatively little change over time suggesting that it is sufficiently broad based to provide the skills employers require. In the case of LMEs, the example of UK-England reveals the way in which the content of IVET is constantly being reformed and revised so that it is more targeted on meeting the current demand for skills from employers with some evidence of it having a relatively narrow focus in some occupational areas. The emphasis here seems to be upon a VET system which is oriented towards meeting shorter-term demands for skills which have economic value in the labour market because these are ones which it is possible to detect. In a labour market which provides lower employment security than in the cases of Austria or Norway, employers will be less willing to invest in projected longer-term skill requirements.

Countries across Europe have adopted a variety of means to ensure that state funding supports the development of skills which would otherwise not take place. It is not a case of one system being better than another. It is more a case that the balance between public and private funding of skills is appropriate to the prevailing labour market environment. Creating a labour market where workers are encouraged to move between sectors and employers is likely to place relatively more pressure on the state to ensure that skill supply is sufficient. As noted in the evidence provided here, those pressures can be substantial and are not always easily addressed. In contrast, in those countries where the costs of adaptation are internalised by firms, this requires institutions to ensure that the costs of adaptation do not adversely affect competitiveness. This also poses substantial challenges on the VET system to provide skills which facilitates change, though arguably less so on VET funding.

6.3 Varieties of Capitalism and VET Funding

In some respects, the observed differences between the three countries might be what the varieties of capitalism perspective predicts. A CME implies that a social contract, of sorts, is in place which settles the rules regarding the provision and funding of VET. It also implies that change can be managed through existing institutions and structures. In contrast, an LME relies more on market signals to prompt change. In the case of England, this has resulted in the reform of skills policies (because skills supply is seen to be deficient in meeting market demand) which often goes hand-in-hand with the establishment of new structures to implement skills policy (because existing structures are associated with past policies). One might further speculate that the lack of a settlement or social contract about VET exhibited by LMEs reduces VET's resilience to budget reductions when government is looking to rein in public expenditure. It is notable that funding for CVET in England through the Adult Skills Fund / Adult Education Budget in England, has been subject to real terms cuts to its budget. This contrasts with the situation in both Austria and Norway.

What are the implications of the findings reported above for creating a demand-led system of VET provision across Europe? It depends upon how demand-led is interpreted. In the case of UK-England it reflects an enduring policy belief that the supply side needs to respond to demand side market signals (e.g. differential occupational wage growth or employer reports of skill mismatches). UK-England has invested heavily in providing itself with the information to guide individual and employer investments in skills. Training providers are then funded to respond to that demand. Implicit in the system is an emphasis on efficiency insofar as public funding should be used to fund skills for which there is a demonstrable demand which in turn has implications for the content and duration of training. The system thereby places a relatively strong weight on meeting current rather than future demand. Emerging future demand will be met when it manifests itself as current demand. UK-England is just one example of a demand-led approach. Both Austria and Norway would claim that their VET systems too are responsive to labour market demand albeit in a different manner. The difference is, perhaps, that the concept of demand is differently interpreted. Inherent in both Austria and Norway is the provision of more expansive training, supported by public funding, the content of which is determined through long-standing social partnership arrangements (Cedefop, 2020; 2023). It potentially implies that the system better equips individuals and employers to accommodate change. It thereby reduces the costs of adaptation to, for example, technological and organisational change within the workplace, and reduces the demands eventually made upon CVET (at a given skill equilibrium). It should also reduce the transaction costs because the degree of institutional change is less.

6.4 Key Findings Summarised

In summary, the key findings are as follows.

- The concept of a demand-led system VET system which is responsive to the changing demands of the labour market is interpreted in different ways between countries. In UK-England, the weight attached to the role of state funding to ensure that the external training market responds to labour market signals about the demand for skills, is much greater than in Austria or Norway, where labour market institutions (namely the social partners) play a more substantial role in ensuring that supply meets demand.
- The reliance upon market mechanisms to match the supply of, and the demand for, skills place a relatively heavy emphasis on tackling market failures often directed at stimulating the demand for skills. In UK-England there has been much innovation to persuade

employers and individuals to increase their investments in skills. This continues today, though it appears that government is increasingly targeting sectors where skill demand is relatively high. While this is not absent in Austria or Norway it is not evident to the same degree.

- A high degree of path dependence in relation to IVET and to a slightly less degree, CVET. Both Austria and Norway reveal examples of relatively stable funding for IVET. As noted above, this is because each country achieved a degree of settlement several decades ago about the purpose of the VET system, its organisation, and funding. This contrasts with UK-England where the creation of a market-based approach to meeting skills demand commenced in 1980s but has undergone a succession of reforms as it has sought to improve the overall performance of the VET system (this continues today).
- State funding for CVET oriented towards assisting those already in employment to ensure their skills and capabilities are up-to-date and avoid technology induced skills obsolescence is in evidence across all three countries. All three countries are tackling, more or less, the same increasing external pressures: concerns that new technologies will provide a substitute for a range of existing skills but especially relatively low level ones; and the need to upskill to those who achieved a relatively low level of educational attainment in the compulsory education system and who have limited access to training. These pressures have led to targeted interventions by the state to fund adult training.
- Countries such as Austria and Norway require VET systems that can lower employers' adaptation costs in the face of technological and organisational changes. This is because employment regulation results in the costs of hiring and firing are relatively high. Accordingly, their VET systems need to deliver skills which will allow adaptation to take place at cost which does not impose a competitive disadvantage on employers. In contrast, labour market regulation in UK-England allows employers more flexibility with respect to hiring and firing, but at the expense of employers being more sensitive to the costs of training. Each approach has implications for the funding of VET. In the former, it suggests that relatively less pressure is placed on the state to provide a remedy for skill gaps (because these should be, other things being equal, lower), whereas in the latter, it suggests that the state will need to take a more active role in ensuring that workers acquire skills which allow them to adapt.

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