

## Chapter 1. Can apprenticeships provide a useful contribution in every country?

*This chapter explores the relevance of apprenticeship provision. It explores the universal benefits linked to the distinctive work-based character of apprenticeships, and finds considerable variation between countries in apprenticeship provision. The chapter identifies important elements that allow apprenticeships to work in the context of a given country, sector or occupation: the strength of social partnerships, the character of competition with alternative learning routes, and how entry to occupations is regulated. It also describes how apprenticeship schemes can be adapted to suit these different contexts. Finally, the chapter examines the costs and benefits of apprenticeships and how these can be adjusted to increase attractiveness to both employer and prospective apprentice, and how methodological tools enable such assessments to inform apprenticeship policy.*

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The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Issues and challenges

### *Apprenticeships have distinct advantages as a pathway to skills*

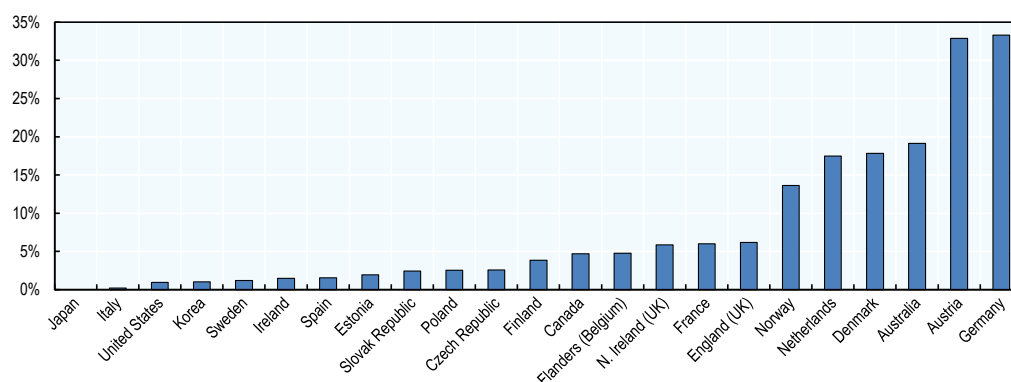
Apprenticeships help connect provision in vocational education and training (VET) to labour market needs, as firms' willingness to offer placements provides an important signal of employer need for a particular occupation. They also make use of the powerful learning environment offered in workplaces. Apprentices can learn from employees who are familiar with the latest working equipment and techniques. Soft skills are an important part of the skillset in many occupations, and these are best learnt in real workplaces rather than in classrooms or simulated work environments (OECD, 2010<sup>[1]</sup>). For learners, apprenticeships are an attractive form of learning as they enhance skills in real life settings and prepare them for jobs and careers.

### *There is wide variation across countries in the use of apprenticeships*

In some countries, apprenticeships are a well-established route to skilled employment, whereas in others, apprenticeships are uncommon, with employers favouring other means of training and upskilling their employees. Figure 1.1 shows the differences in enrolment in apprenticeships that lead to upper secondary or short post-secondary qualifications.

**Figure 1.1. There are large differences in the use of apprenticeships**

Current apprentices in programmes leading to upper-secondary or short post-secondary qualifications as a share of all students enrolled in upper-secondary and short post-secondary education



Note: 16-25 year-olds pursuing a programme at ISCED 3 and ISCED 4C level.

Source: Kuczera, M. (2017<sup>[2]</sup>), "Striking the right balance: Costs and benefits of apprenticeship", *OECD Education Working Papers*, No. 153, <http://dx.doi.org/10.1787/995fff01-en>.

StatLink  <http://dx.doi.org/10.1787/888933828372>

### *The potential of apprenticeships is often underexploited for the jobs of the future*

The popular image of an apprentice is often of working in a skilled trade or craft, such as construction or manufacturing. This accurately reflects the apprenticeship landscape in many countries, where apprenticeships are most common in manufacturing, construction and engineering. In the United States, for example, approximately 50% of apprentices are in the construction sector and 25% in military occupations (DOL, 2018<sup>[3]</sup>). One challenge

is that the concentration of apprenticeships in skilled trade and craft occupations constrains apprenticeships to a small part of the labour market. In recent decades, OECD economies have seen a shift in employment away from manufacturing and towards services, which now account for over two-thirds of employment on average (OECD, 2017<sup>[4]</sup>). Limiting apprenticeships to “traditional sectors” means missing out on the potential benefits of apprenticeships in sectors where most of tomorrow’s jobs will be found.

Countries with large apprenticeship systems have expanded beyond trade and craft occupations. Australia now has more non-trade than trade apprenticeship starts. In Switzerland, the three most popular apprenticeship occupations are business and administration, wholesale and retail sales and building and civil engineering (Federal Statistics Office (FSO), 2018<sup>[5]</sup>). In Germany, the most popular apprenticeship occupations are in the management and retail sectors (BIBB, 2017<sup>[6]</sup>). In Austria, office, trade and finance is the second largest group of apprentice occupations, with nearly as many apprentices as the machine and metal sector (Wirtschaftskammer Österreich (WKO), 2018<sup>[7]</sup>). In the United Kingdom, it is possible to pursue an apprenticeship as a policy adviser in the civil service (GOV.UK, 2016<sup>[8]</sup>).

### ***A focus on traditional trades limits work-based learning opportunities for women***

Skilled trade and craft occupations are often perceived as traditionally “male” with limited female participation. As a result, women seeking a vocational qualification mostly pursue school-based programmes and do not benefit from the advantages of apprenticeship schemes. For example, in the United States only one in five apprentices are female (DOL, 2018<sup>[3]</sup>). In Ireland, apprenticeships were similarly construction dominated until recent reforms. In 2004, women accounted for less than 1% of new apprentices, but three-quarters of those pursuing school-based VET (Watson, McCoy and Gorby, 2006<sup>[9]</sup>). One way of addressing the gender imbalance that emerges in such “traditional” apprenticeships is to encourage women to enter traditionally male occupations. Several countries have implemented tools to encourage this, but large differences persist in the occupational choices of men and women. This suggests that addressing the gender imbalance also requires the creation of apprenticeship programmes in fields that tend to attract many female applicants.

### ***International experience shows that apprenticeships can be introduced in non-traditional fields***

In recent decades, many countries have sought to diversify the sectoral coverage of apprenticeships in recognition of the potential of apprenticeships as a pathway to a wider range of skilled jobs. Australia introduced non-trade apprenticeships<sup>1</sup> in the 1980s, and these now outnumber trade apprenticeships (Hargreaves, Stanwick and Skujins, 2017<sup>[10]</sup>). In England (United Kingdom) and Ireland, apprenticeships used to be mostly in traditional trade fields, but service sector apprenticeships have grown strongly in England (United Kingdom) since the 1990s (Lanning, 2011<sup>[11]</sup>), and Ireland introduced programmes in service and business areas following the economic crisis (Condon and McNaboe, 2016<sup>[12]</sup>).

*There are many ways of organising apprenticeships*

Apprenticeship models, defined in law through agreements with employers and sometimes labour representatives and embedded in custom, differ across countries. For example, how on-the-job and off-the-job components alternate varies: in Austria, Germany and Switzerland, they are typically alternated within a week; in Ireland in blocks of several weeks; and in Norway, a two-year long school-based component is followed by two years spent in the workplace. Apprentice pay is also highly variable, with apprentices earning a very small share of a skilled wage in some countries and a much higher share in others (see Table 3.1 in Chapter 3). The status of apprentices also varies: in Germany, Norway and Switzerland, apprentices have a special contract, and terminating that contract ends the relationship of the apprentice with the employer; whereas in England (United Kingdom), apprentices are considered employees and sign an apprenticeship agreement on top of an ordinary contract.

*The challenge for policy makers is to design schemes that suit a given context*

Cross-national differences in the design of schemes affect how attractive apprenticeships will be for potential apprentices and employers, as well as how it will affect public finances. The challenge for policy is to develop apprenticeship schemes that work in the context of a given country, sector and occupation. This requires a closer look at the costs and benefits of apprenticeships, which is in the focus of policy argument 1 below. Chapters 2 to 6 focus on various questions that arise in the design of apprenticeship schemes.

**The challenges arising with apprenticeship implementation depend on contextual factors**

There is wide variation across countries in the use of apprenticeships. Many countries seek to promote apprenticeships to facilitate school-to-work transition or to offer opportunities for adults to re-skill and upskill. Building apprenticeships in countries where apprenticeships are uncommon or creating new programmes in economic sectors that typically rely on other forms of training is challenging. However, some simple principles underpin effective provision:

- Social partners, notably professional bodies, should be involved in the design and implementation of apprenticeship schemes. This is essential to encourage their engagement with apprenticeships and ensure that programmes are suited to their needs and employers' capacity to provide placements.
- Competition between apprenticeships and alternative learning pathways (e.g. school-based programmes, post-secondary or tertiary education) needs to be fair.
- Apprenticeships are easier to implement where formal qualifications bring substantial benefits to the learner.

Contextual factors affect how desirable apprenticeships are likely to be for employers and potential apprentices. They also affect how hard or easy it may be to carry out the implementation of apprenticeship programmes, such as agreeing a framework that sets out the content of programmes and how they are delivered, and ensuring their quality. Some of the factors identified concern differences between countries, whereas others are specific to sectors or occupations.

***Policy argument 1: Strong social partnership facilitates the implementation of apprenticeships***

*Social partner involvement helps establish the core content of programmes*

Employers are in a strong position to see if qualifications and curricula meet current labour market needs. They can also guide their adaptation to changing requirements. Apprenticeships are different from many forms of employer-led training as they prepare for an occupation and a career. To achieve this they must contain a large share of strong core content and develop skills specific to the occupation and sector. This is easier to achieve in sectors and occupations where employers (and often unions) are well represented and organised (see Box 1.1 for country examples). Defining the core content of each apprenticeship programme requires taking into account the diverse opinions of employers. *Ad hoc* consultative arrangements may give undue influence to a few random (often larger) companies (OECD, 2010<sub>[11]</sub>). At the same time, sometimes employers have incentives to create apprenticeships that narrowly fit a niche sector. However, although such programmes may be of interest of employers, they may create an artificial barrier to labour mobility as they disguise or develop few skills that are transferable to other occupations (Kuczera and Field, 2018<sub>[13]</sub>). Trade unions can usefully balance the influence of employers and champion interest in transferable skills. In some apprenticeship schemes, trade unions lead the development and running of apprenticeships (e.g. union apprenticeships in the United States).

**Box 1.1. Social partners in apprenticeship policy development**

**Norway**

Social partners (employers and trade unions) play a very active role in policy development at national, regional (county) and sectoral levels. The National Council for VET advises the Ministry of Education on the general framework of the national VET system. The Advisory Councils for VET are linked to the nine vocational programmes provided at upper-secondary level, and advise national authorities on programme content and future skill needs. The county vocational training committees advise on quality, provision, career guidance and regional development.

*Source:* Kuczera, M. et al. (2008<sub>[14]</sub>), *OECD Reviews of Vocational Education and Training: A Learning for Jobs Review of Norway 2008*, <http://dx.doi.org/10.1787/9789264113947-en>.

**Switzerland**

The apprenticeship system is steered at the national level by the Confederation, the cantons and professional organisations (employers, trade associations and trade unions). This arrangement is stipulated by law. The Confederation ensures quality and strategic planning and development of programmes, while 26 cantonal agencies implement and supervise apprenticeship programmes. Professional organisations establish the course content and develop qualifications and examinations and have an important role in the provision of VET by encouraging employers to offer apprenticeship places.

*Source:* Hoeckel, K., S. Field and W. Grubb (2009<sub>[15]</sub>), *OECD Reviews of Vocational Education and Training: A Learning for Jobs Review of Switzerland 2009*, <http://dx.doi.org/10.1787/9789264113985-en>.

*Social partnership facilitates the delivery of high-quality training*

Firms in sectors that have strong social partnerships have access to training know-how and institutional support not available to companies from other sectors and occupations. For example, training offices in Norway are owned collectively by firms and help the delivery of training by establishing new apprenticeship places, training apprentice supervisors and organising theoretical training for apprentices (Kuczera et al., 2008<sub>[14]</sub>). In Germany, chambers organise inter-company training centres, which complement training undertaken at school and within individual firms (BIBB, 2018<sub>[16]</sub>). Similarly, in Switzerland, professional organisations run courses in third-party training centres in most occupations, in addition to developing course content and training plans (FDEA, 2008<sub>[17]</sub>).

***Policy argument 2: Apprenticeships face competition from alternative pathways to skilled jobs****Apprenticeships often compete with school-based programmes*

Apprenticeship is typically one of several pathways to skills and skilled jobs. When offered at upper secondary level, young people may have a choice between academic or school-based vocational programmes. For example, research found that in Austria, apprenticeships compete with school-based vocational programmes (driving up apprentice wages, as discussed in Chapter 3). Meanwhile in Switzerland, school-based vocational alternatives are less readily available, so the apprenticeship system faces little competition (Moretti et al., 2017<sub>[18]</sub>). Apprenticeship schemes that build on completed upper secondary education compete with post-secondary and tertiary education.

*The nature of competition depends on the country context*

In some education systems, young people are tracked into pathways depending on their school results, so choices may be limited to which kind of apprenticeship programme to pursue. At the other extreme, such as in Israel, an apprenticeship is in effect a second chance pathway for school dropouts, rather than a genuine option for young people (Kuczera, Bastianić and Field, 2018<sub>[19]</sub>). In countries where post-secondary and tertiary education requires paying sizable tuition fees, apprenticeships may be financially attractive (e.g. as in England [United Kingdom] and the United States). Sometimes, ensuring fair competition between apprenticeships and alternative options is a challenge. When apprentices are not entitled to the financial support offered to those pursuing other pathways, competition becomes biased. For example, a recent OECD study of England (United Kingdom) noted that young apprentices are treated as employees and are not entitled to social benefits offered to those in school-based programmes.

*Employers also consider apprenticeships among other options*

For employers too, apprenticeships are often one of several ways of training and recruiting skilled employees. Firms may see few reasons to offer apprenticeships if publicly funded vocational programmes provide a pipeline of skilled workers. They may prefer to hire unskilled workers and train them on the job or employ graduates of school-based programmes and top up their skills with training.

*Apprenticeships must be of high quality to compete with alternative pathways*

Beyond the immediate financial implications of different pathways, individual choices (and parental preferences) depend on the prospects that people feel they offer. Individual preferences and employer preferences can be part of a vicious cycle – or a virtuous one. If apprenticeships are of poor quality, employment outcomes for apprenticeship graduates will be weaker. For young people, apprenticeships then become a second choice and those who can, will pursue other options. With apprenticeships of poor quality, employers cannot rely on them as a proof of strong occupational skills, so it makes sense for them to prefer graduates of school-based programmes or those with a post-secondary or tertiary qualification. However, the cycle can also be virtuous: high-quality apprenticeships where apprentices develop useful occupational skills, which are reflected in credible qualifications, will lead to good employment outcomes. For individuals considering different options, an apprenticeship then becomes an attractive pathway to skills; and for employers, it becomes an attractive way of securing a skilled workforce. Chapters 2 to 6 focus on the challenges that arise with designing and implementing high-quality apprenticeships, and how they may be addressed.

**Box 1.2. A European Union approach to high quality apprenticeships**

The Council of the European Union adopted a Recommendation on a European Framework for Quality and Effective Apprenticeships (EFQEA) on 15 March 2018.

The overall objective is to increase the employability and personal development of apprentices and to contribute to the development of a highly skilled and qualified workforce, responsive to labour market needs. The specific objective is to provide a coherent framework for apprenticeships based on a common understanding of what defines quality and effectiveness, taking into account the diversity and traditions of VET systems and policy priorities in the various Member States.

The Framework outlines 14 criteria for quality and effective apprenticeships: 7 for learning and working conditions and 7 for framework conditions.

Member States have three years to implement the Framework.

Source: EUR-Lex (2018<sub>[201]</sub>). Council Recommendation of 15 March 2018 on a European Framework for Quality and Effective Apprenticeships, [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H0502\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H0502(01)).

***Policy argument 3: Strong occupational regulation and employment protection make qualifications more important***

Among the many forms of work-based learning, apprenticeships are special as they lead to a recognised qualification. The importance of holding a recognised qualification depends on the occupation and whether it is regulated: in regulated (or licensed) occupations, only those holding a specific qualification are allowed to practice.

*Apprenticeships are easier to implement in regulated occupations*

With a regulated occupation, the qualification delivered at the end of an apprenticeship is essential for both individuals considering pathways to skills and for employers in search of suitable employees. Without the qualification, skills learnt on the job would be of little use, as a skilled but unqualified person would not be allowed to work. However, in non-regulated occupations, other types of work-based learning may suit both learners and employers – an initially unskilled employee might pick up skills on the job and relevant work experience may be enough to prove their skills and progress throughout their careers.

Another factor that facilitates the implementation of apprenticeships is that the required qualification for an apprentice in a regulated occupation clearly sets out what is expected of a qualified person. Where occupational standards in terms of content are already explicitly or implicitly agreed in the labour market, apprenticeship programmes can build on these standards. This commonly agreed core skillset is at the heart of apprenticeship programmes – they ensure that, for example, an apprentice logistician in one firm develops the same core “logistician skillset” as those training in other firms.

*The extent of occupational regulation varies across countries*

Countries (and sometimes regions within a country) vary a great deal regarding which occupations require a particular qualification to practice (Koumenta et al., 2014<sup>[21]</sup>). Regulation is widespread in occupations where there are compelling health or safety concerns (e.g. electrician, occupations in healthcare), but some countries regulate access to occupations such as car mechanic, florist or manicurist, while others do not.

*Collective agreements sometimes create qualification requirements*

Sometimes, collective agreements established between social partners specify access requirements to a job or regulate promotion criteria, making a specific qualification necessary to reach the next step in the career ladder. The practical implications are similar to those of occupational regulation: a specific qualification will be necessary to fully pursue a career in the occupation concerned.

*Employers are more likely to expect a relevant qualification when firing is hard*

Stringent employment protection makes initial recruitment riskier for employers, because of the difficulty or cost of firing those who turn out to not be suited to the job. When regulation is most stringent for permanent jobs, employers may be particularly demanding when hiring. Research suggests that when employment protection is stringent, firms have higher hiring standards (Blanchard and Landier, 2002<sup>[22]</sup>; Kahn, 2016<sup>[23]</sup>), often in the form of expecting a given qualification (Breen, 2005<sup>[24]</sup>). Research also suggests that qualifications play a particularly important role in signalling people’s skills in countries with larger VET systems, and where schools and employers have close links (Breen, 2005<sup>[24]</sup>).

**The design of apprenticeship schemes can be adapted to suit different contexts**

There are many ways of organising apprenticeship schemes. The challenge is to identify an approach that works for both employers and learners. The country context matters, as do sectoral and firm characteristics, notably the size of the enterprise. The optimal design



features (e.g. choices concerning wages, duration and funding) will often vary with these factors.

- The parameters of apprenticeship schemes can be adjusted to ensure that apprenticeships are attractive to both employers and prospective apprentices.
- Analysing the costs and benefits of apprenticeships can inform the design of new schemes and the reform of existing schemes. Undertaking surveys to measure the costs and benefits of apprenticeships to employers can provide empirical evidence to inform policy making.

***Policy argument 1: Employers will offer apprenticeships if benefits exceed costs***

*Employers can obtain benefits during the apprenticeship programme*

Employers will normally provide apprenticeships when they believe that the benefits outweigh, or are at least equal to, the costs (Table 1.1 sets out the main types of costs and benefits to firms). The benefits emerge through two potential channels. First, during the apprenticeship apprentices can contribute to production, initially performing unskilled tasks and gradually undertaking more and more skilled tasks. Second, employers obtain benefits when the apprentice performs those tasks at a lower cost than a regular employee would do.

*During apprenticeships, employers bear various costs*

Apprentice wages typically represent the largest part of costs to employers (Chapter 3 focuses on apprentice wages). Other pay-related costs include, for example, social security contributions and the reimbursement of travel costs. The second largest cost is usually the cost of apprentice supervisors: skilled employees who spend time away from work to train and guide apprentices. One small research project in Flanders (Belgium) found that the main apprentice supervisors spend a third of their time looking after apprentices (De Rick, 2008<sub>[25]</sub>). Supervisor costs account for 38% of costs in Switzerland and 23% of costs in Germany (Strupler, Wolter and Moser, 2012<sub>[26]</sub>). Further costs for employers arise from paying for tools and equipment used by apprentices. Offering apprenticeships also involves administrative costs.

*After the end of an apprenticeship, employers can reap benefits through recruitment*

The second channel of potential benefit relates to longer-term returns. Upon completion, employers can select reliably productive apprentice graduates, rather than hire employees from the external market. Recruiting former apprentices means the company saves recruitment costs as they do not need to pay for job advertisements or organise interviews, and the company's former apprentices can skip much of the initial training that external recruits need (Mühlemann and Leiser, 2015<sub>[27]</sub>). Retaining a former apprentice as a skilled worker also minimises the risk of wrong recruitment, as the employer will know how the person performs at work – something much harder to judge when considering external candidates. In addition, once a former apprentice is recruited, the company might choose to pay them a wage slightly below their productivity, because they have privileged knowledge of their performance (Acemoglu and Pischke, 1999<sub>[28]</sub>). Such “recruitment benefits” are a major factor in motivating firms to provide apprenticeships in many occupations and countries.

**Table 1.1. Types of costs and benefits to firms**

Costs	Benefits
Apprentice wages and related costs (e.g. travel costs, food allowance)	Productive contribution of apprentices through unskilled tasks
Apprentice supervisor costs	Productive contribution of apprentices through skilled tasks
Training material and infrastructure, supplies (e.g. tools, software, books)	Recruitment benefits (e.g. savings on hiring costs, lower turnover)
Recruitment and administrative costs	Better reputation, social responsibility

Source: Adapted from Mühlemann, S. (2016<sup>[29]</sup>), “The cost and benefits of work-based learning”, *OECD Education Working Papers*, No. 143, <https://doi.org/10.1787/5j1pl4s6g0zv-en>.

### ***Policy argument 2: Parameters of apprenticeship schemes can be adjusted to improve the cost-benefit balance***

*Several factors that affect the cost-benefit balance to employers can be subject to policy influence*

Chapters 2-6 discuss in detail how the following factors influence the provision of apprenticeships and present related policy messages:

- **Apprenticeship duration:** Initially, apprentices tend to contribute little to productive work, and often cost more than they produce. However, at the final stages, apprentices can contribute to production with their skills but are still cheaper than skilled workers, which can allow employers to reap net benefits.
- **How an apprenticeship is organised:** While apprentices are off the job they develop job-relevant skills, but do not contribute to production. What exactly apprentices do while on the job is also important: productive work always benefits employers, whereas learning activities bring benefits later when apprentices use their newly learnt skills to work. With care, learning can often be integrated into productive work, yielding higher benefits for firms.
- **Incentives:** Firms may receive subsidies or benefit from tax breaks when they take on an apprentice. Some incentives may be non-financial, like linking the award of public procurement contracts to the provision of apprenticeships.
- **Apprentice wages:** Representing the largest share of costs to employers, how apprentice wages are set, and their amount, have a strong impact on the cost-benefit balance. While policy makers typically do not set apprentice wages, policy tools can influence them.
- **Apprentice characteristics:** Apprentices with stronger skills will be more productive throughout the apprenticeship than those with weaker skills, and will generate higher benefits for the employer.

*The design of schemes can be adjusted to contextual factors*

Some factors are part of the broader context and are not directly influenced by apprenticeship policy. They also affect the cost-benefit balance to employers and need to be taken into account when setting the parameters of apprenticeship schemes. These factors include:

- **Wage context:** Apprenticeships will be financially more appealing for employers if there is a large difference between the wages of apprentices and those of skilled

workers. Minimum wage laws and collective bargaining agreements are often important as they affect the wage costs of workers and apprentices.

- **Labour market features:** There will be more room to reap “recruitment benefits” if hiring in the external labour market is hard and expensive. This is the case when the labour market is tight, so jobs are abundant and relatively few people are in search of a job (Mühlemann and Leiser, 2015<sub>[27]</sub>). Employment protection is also important: when it is costly to fire a recruit who turns out to be a poor choice, an apprenticeship can be a good way of reducing the risk of wrong recruitment.
- **Occupation:** How long it takes for an apprentice to become proficient at a job varies across occupations, as does the cost of equipment involved, so the cost-benefit balance during apprenticeships varies. Potential “recruitment benefits” also vary: hiring costs tend to be higher in jobs that require sophisticated technical skills (Mühlemann and Leiser, 2015<sub>[27]</sub>).
- **Firm size:** The cost-benefit balance during apprenticeships varies with firm size: larger firms exploit economies of scale (e.g. training several apprentices on the same equipment), and sometimes have better opportunities to train apprentices while involving them in production. On the other hand, larger firms tend to train more in technical occupations (with higher training costs) than smaller firms, which often hire apprentices in the crafts sector. Larger firms are more likely to realise “recruitment benefits” as they tend to face higher hiring costs and more often recruit their apprentices as skilled workers (Mühlemann, 2016<sub>[29]</sub>).

*The attractiveness of an apprenticeship to potential apprentices depends on various factors*

The apprentice wage and labour market prospects affect the attractiveness of apprenticeships to young people or adults considering training options. When apprenticeships are more attractive, employers will have a greater pool of better prepared and skilled applicants, and a lower risk of costly dropout.

***Policy argument 3: Empirical evidence on costs and benefits can underpin policy choices***

*Data reveal a great deal of variation in the cost-benefit balance of apprenticeships to employers*

Empirical evidence shows that the cost-benefit balance varies across countries and across firm types and occupations within countries. Surveys have been conducted in Germany and Switzerland, and more recently in Austria (see Box 1.2), which reveal major differences between these three countries, which all have a long-standing tradition of apprenticeships. For example, an average Swiss firm generates a net profit, while an average firm in Austria and Germany incurs net costs while providing apprenticeships (Dionisius et al., 2008<sub>[30]</sub>; Moretti et al., 2017<sub>[18]</sub>). In terms of compensation for investments during apprenticeships, both Austrian and German companies are more likely to retain their apprentices as skilled workers, thus reaping benefits from recruitment (Mühlemann, 2016<sub>[29]</sub>; Moretti et al., 2017<sub>[18]</sub>). Austrian firms also receive subsidies. Within countries, empirical evidence reveals variations in the cost-benefit balance across firm types and occupations (see for example Figure 2.1 in Chapter 2).

### Box 1.3. Cost-benefit surveys of apprenticeship

Cost-benefit surveys of apprenticeships have been conducted in relatively few countries. The initial methodology was proposed in the 1970s in Germany. The first surveys focused on costs, while subsequent surveys also covered benefits during apprenticeship, and later post-training benefits. In Switzerland, the first representative survey was conducted in 2000 using a very similar methodology to that used Germany. This was followed up by surveys in 2004 and 2009. In Austria, a cost-benefit study was conducted in 1997 with a different methodology, but the latest survey in 2016 used the same methodology as Germany and Switzerland.

#### Estimating benefits during apprenticeships

Supervisors who work daily with apprentices in the workplace are asked to estimate the fraction of time that apprentices perform unskilled and skilled work. The benefit from unskilled work equals the number of hours an apprentice spends performing unskilled tasks, multiplied by the wage of an unskilled worker within the training firm. The same principle applies for skilled work; however, the value to the firm is adjusted by the apprentice's relative productivity in skilled tasks (e.g. if an apprentice takes two hours to carry out a skilled task that a skilled worker would complete in one hour, the relative productivity of the apprentice will be 50%).

#### Estimating costs

The largest cost element is apprentice wage and related costs (e.g. bonuses, 13th month salary and subsidised lunch). The second main cost is the labour costs for apprentice supervisors: firms were asked to report the number of instruction hours that prevented supervisors from carrying out their regular duties in the workplace. When firms hire external instructors to teach certain skills at the workplace, the costs generated were also included. Other costs measured by the surveys include equipment or materials solely for apprenticeship training, and diverse costs such as tuition fees for external courses, books or learning software.

*Source:* Moretti, L. et al. (2017<sub>[18]</sub>), "So similar and yet so different: A comparative analysis of a firm's cost and benefits of apprenticeship training in Austria and Switzerland", *IZA Discussion Paper Series*, No. 11081, <http://ftp.iza.org/dp11081.pdf>; Mühlemann, S. (2016<sub>[29]</sub>), "The cost and benefits of work-based learning", *OECD Education Working Papers*, No. 143, <https://doi.org/10.1787/5jlpl4s6g0zv-en>.

### *Empirical evidence can help assess the implications of policy choices*

Empirical evidence can be used to simulate different scenarios and inform choices regarding different parameters of apprenticeship schemes, for example, higher or lower apprentice wages, or changes in time spent in the workplace or in tasks performed by apprentices. For example, Moretti et al. (2017<sub>[18]</sub>) argue that if apprentice wages in Austria were set like those in Switzerland, and Austrian apprentices spent as much time at

work as Swiss apprentices, an average Austrian firm would generate net benefits during apprenticeships.

Some studies have used apprenticeship data from countries where cost-benefit surveys have been conducted and combined these with contextual data (e.g. wages of skilled and unskilled workers) from another country. For example, a study using Swiss data in the context of VET in Spain (Wolter and Mühlemann, 2015<sup>[31]</sup>) concluded that three-year programmes yield more benefits to employers than shorter programmes, and that most apprenticeships can be offered with a high apprentice wage, while being still profitable for firms. Similarly, Wolter and Joho (2018<sup>[32]</sup>) used data from Switzerland to simulate the costs and benefits of apprenticeships and rates of return to individuals in the English context considering different scenarios. The analysis suggested, for example, that programmes that last at least three years and engage young apprentices have the most favourable cost-benefit balance for firms.

## Conclusion

This chapter asks whether apprenticeships can provide a useful contribution to every country, and finds that across the OECD, apprenticeships are training learners in an ever-growing range of occupations. They are no longer the preserve of the trades and crafts, nor of the private sector. The distinct advantages of apprenticeships as a learning approach are universal: the heavy engagement of employers signalling the clear labour market demand for skills being developed, and work-based learning ensuring that the technical and soft skills developed are highly relevant to actual workplaces. However, specific national (or regional) circumstances are likely to make them more or less attractive, and the particular circumstances of countries, sectors and occupations create predictable challenges that policy must address.

High-quality apprenticeship provision balances the needs of the employer, sector and apprentice (as commonly delivered through social partnership) and ensures that no artificial barriers make apprenticeships less attractive than alternative learning pathways. Countries introducing apprenticeships should be aware that they are easier to implement where formal qualifications bring clear benefits to learners, as in the licenced occupations.

There are many ways of organising apprenticeships. One size does not fit all. The challenge is to identify the approaches that work for both employers and learners. It should be expected that the design features of apprenticeships (e.g. choices concerning wages, duration and funding) will vary by national and sectoral context to ensure that apprenticeships are attractive to both employers and prospective apprentices. There are now established methodologies which enable governments to analyse the costs and benefits of apprenticeships. Survey tools can provide empirical evidence to help policy makers get the balance right.

## Note

<sup>1</sup> Called traineeships.

## References

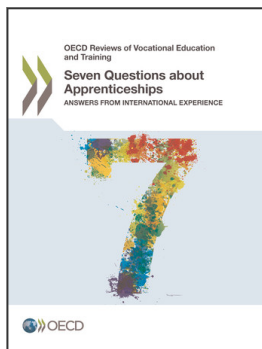
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**From:**  
**Seven Questions about Apprenticeships**  
Answers from International Experience

**Access the complete publication at:**  
<https://doi.org/10.1787/9789264306486-en>

**Please cite this chapter as:**

OECD (2018), “Can apprenticeships provide a useful contribution in every country?”, in *Seven Questions about Apprenticeships: Answers from International Experience*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264306486-4-en>

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