

### Chapter 3. What is the right wage for apprentices?

*This chapter focuses on the question of apprentice pay. It reviews the processes by which the wages of apprentices are determined across a number of OECD countries and the factors, such as training costs, productivity returns, competition from alternative employment and educational provision, which explain variation in earnings. The chapter looks at the cost-benefit balance to employers and to youth and adults considering apprenticeships. It identifies the need for special measures to ensure that apprenticeships are financially attractive to older learners.*

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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

### *Governments have limited influence on apprentice wages*

The issue of apprentice wages is different from other issues discussed in this report, as government influence is relatively limited. Governments do not commonly define how much apprentices earn, instead, apprentice wages are typically set through a process of collective bargaining or agreed on an individual basis between an employer and the apprentice. However, governments can influence apprentice wages in several ways, such as setting minimum wages for apprentices, offering employers financial incentives to reduce the wage burden (see more in Chapter 2), or offering apprentices other financial support to reduce their wage expectations. The analysis presented below may also inform those involved in collective bargaining and individual employers.

### *Apprentice wages affect employer provision of training places*

When employers offer apprenticeships, apprentice wages are the largest part of the costs incurred by employers and therefore a major determinant of the cost-benefit balance of apprenticeships to firms. Even in countries where apprentice wages are relatively low (e.g. Austria, Germany and Switzerland, see Table 3.1), they range between half and two-thirds of total costs. Data in many other countries are patchy, but the share of apprentice wages in total costs is likely to be even higher in countries where apprentice wages are relatively high. For example, a case study in the United States found that apprentice wages (and benefits) accounted for 70% of apprenticeship costs (Helper et al., 2016<sup>[1]</sup>).

**Table 3.1. Apprentice wages in selected OECD countries**

Country	Average apprentice wages as % of skilled worker wages	Wages paid by employers during off-the-job period	Share of apprentice wage cost in total cost of apprenticeship to employers
Austria	On average 50%	Yes	57% in the first year, 72% in the third year (Schlögl and Mayerl, 2016 <sup>[2]</sup> )
Denmark	30-70%	No <sup>1</sup>	n.a.
Germany	25-33%	Yes	About 62%
Norway	30-80%	No	n.a.
Switzerland	On average 20%	Yes	About 50% (Strupler, Wolter and Moser, 2012 <sup>[3]</sup> )

n.a. means not available.

1. In Denmark apprentices are paid during the off-the-job period from a levy fund.

Source: Kuczera, M. (2017<sup>[4]</sup>), “Striking the right balance: Costs and benefits of apprenticeship”, *OECD Education Working Papers*, No. 153, <http://dx.doi.org/10.1787/995fff01-en>.

### *Apprentice wages help match supply and demand*

Just like in the labour market, apprentice wages send a signal to potential applicants, making some choices more attractive than others and helping match supply to demand. Research shows that apprentice wages affect the perceived status of an occupation among potential apprentices (Ulrich, 2016<sup>[5]</sup>). In principle, if an employer faces skills shortages or struggles to attract apprenticeship candidates, it will be willing to offer higher wages. Such signals may be expressed at the individual firm level, for example in Switzerland, where apprentice wages are determined mostly by the market some sectoral bodies provide recommendations for minimum wages but research shows that apprentice wages

are largely subject to market forces (Mühlemann, Ryan and Wolter, 2013<sup>[6]</sup>). Alternatively, apprentice wages may be negotiated at the sectoral level, similarly to wages for skilled workers defined in collective agreements. This is the case in several countries that have minimum wages set for apprentices by occupation and sector (see Table 3.2). Under such arrangements, individual firms may still decide to pay more to attract stronger candidates.

**Table 3.2. How the minimum apprentice wage is determined**

Country	Level at which minimum apprentice wage is determined
Australia	Sectors at national and regional level. In some cases it is up to individual companies.
Austria	Sectors at regional level.
Denmark	Sectors.
England (United Kingdom)	National.
Germany	Sectors at regional level.
Netherlands	Sectors.
Norway	Sectors at national level.
Scotland (United Kingdom)	National.
Switzerland	Unregulated but some sectoral bodies provide recommendations, which are observed by employers.

Source: Kuczera, M. (2017<sup>[4]</sup>), “Striking the right balance: Costs and benefits of apprenticeship”, *OECD Education Working Papers*, No. 153, <http://dx.doi.org/10.1787/995fff01-en>.

### *Supporting higher wages can steer apprenticeships towards more adults*

Adults are particularly sensitive to changes in wages, as they typically need to support themselves and often have family responsibilities. In countries that aim to promote adult apprenticeships, wages will strongly influence whether adults will be able to afford pursuing such programmes. The extent to which apprenticeships are used among adults varies across countries and can change over time. For example, in Germany and Switzerland, where apprenticeships have traditionally been focused on young people, in recent years adult learners have increasingly been encouraged to pursue apprenticeships. In Israel, apprenticeships are used on a small scale, but ambitious recent reforms have aimed to expand their use to train jobless adults and those in low-skilled jobs. Adjusting apprentice wages (and more broadly apprentice income) for adults can be used to steer apprenticeship systems towards a stronger focus on adults.

### **Apprentice wages should reflect the cost-benefit balance of different apprenticeships**

Apprentice wages represent the largest share of the costs of apprenticeships to employers, so their level will impact firms’ willingness to take on apprentices. Apprentice wages need to be set at a level that, when all other costs (e.g. trainer’s wages, training equipment and administrative costs) are included, employers can expect to recoup the total cost of the apprenticeship through the productive work of apprentices and the prospect of recruiting the best apprentices as skilled workers.

Allowing apprentice wages to vary across occupations is desirable because the cost-benefit balance of apprenticeships to employers varies across occupations, and room for variation allows wages to help match supply to demand.

- Governments should not impose an overall level of apprentice wage (although it may want to set minimum wages to protect against exploitation), instead, wage setting arrangements should allow for variation across sectors and occupations.
- Apprentice wages should gradually increase over the programme as apprentices become more skilled and their productivity improves.

***Policy argument 1: Both the costs and benefits generated during apprenticeships vary across occupations***

*Training costs vary across occupations*

Training requires skilled workers to spend time away from productive work to train the apprentices, and these workers are paid for this time. As skilled worker wages vary across occupations, so do the associated training costs. Other costs are related to the equipment and materials apprentices use to learn and practice. These will be higher in technical occupations than in service sector jobs.

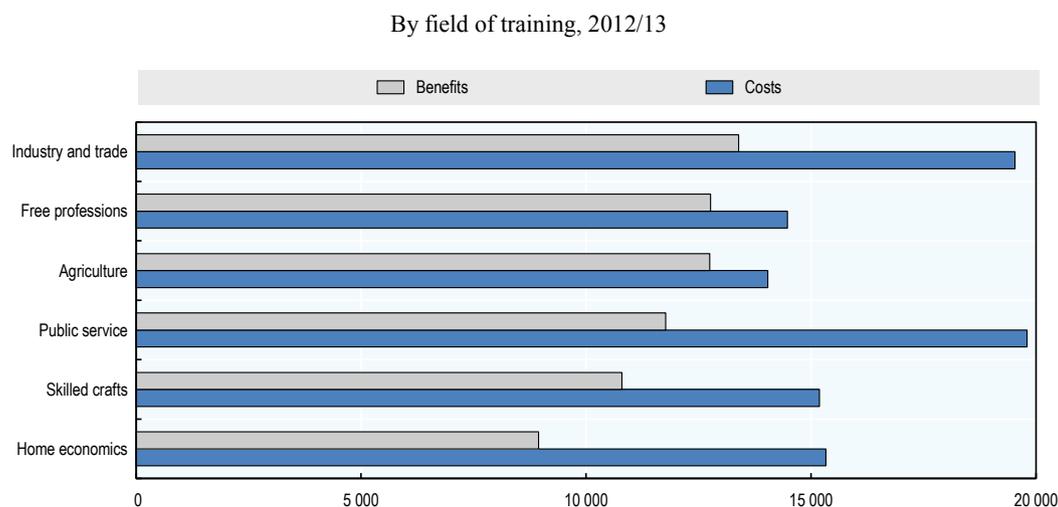
*The benefits employers obtain during apprenticeships vary across occupations*

Employers are content to pay their apprentices wages partly because those costs are, to some extent, offset by apprentices' productive work. This can start on day one with unskilled tasks, such as peeling potatoes or cleaning a workshop (see Chapter 5 on the mix of tasks). As apprentices progress and become more and more skilled, firms can gradually alter the mix and include more skilled tasks.

The productive benefit generated by apprentices depends on how much it would cost to the firm if a regular employee did the same work. This means that the benefits to employers partly depend on the wages of those regular employees. For example, when an apprentice chemical technician prepares a technical report (i.e. performs a skilled task) that would take a qualified technician one hour to do, they generate benefits equivalent to the hourly wage of a chemical technician. If, on the other hand, the apprentice performs an unskilled task (e.g. tidy up the lab), they generate benefits equivalent to the wage of an unskilled worker – typically the minimum wage. As the wages of skilled workers vary across occupations, so do the benefits generated by apprentices.

Figure 3.1 shows how the costs and benefits generated during apprenticeship programmes vary across occupational fields in Germany. A major reason why employers take on apprentices, despite costs outweighing benefits during apprenticeships, is that they can save on recruitment costs. However, Figure 3.1 does not capture such benefits, which can shift the cost-benefit balance to employers.

**Figure 3.1. Average costs and benefits per apprentice during an apprenticeship in Germany (EUR)**



Source: Adapted from Mühlemann, S (2016<sup>[7]</sup>), “The cost and benefits of work-based learning”, *OECD Education Working Papers*, No. 143, <https://doi.org/10.1787/5j1pl4s6g0zv-en>.

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### *The evolution of apprentice productivity varies across occupations*

Apprentices do not work as well and as fast as experienced workers, especially at the beginning of their apprenticeship. However, their productivity relative to skilled workers gradually increases throughout the programme. The pace of improvement varies across occupations (see Chapter 4): in some occupations, apprentices can be productive relatively quickly, while in others they will need lengthy training before being able to contribute to production. Apprentice wages typically increase according to a pre-defined scale over the duration of training to reflect increasing productivity.

Apprentice wages will not mirror apprentice productivity at each point in time, but wage (and other) costs and productive benefits should either roughly balance out over the whole apprenticeship period, or balance out once longer-term recruitment benefits are taken into account. For example, data from Germany and Switzerland show that at the initial stages, apprentices are paid above their productivity. At this stage, they spend a lot of time in training and their productive work involves mainly unskilled tasks. The situation reverses at the final stages of the programme, when apprentices are paid below their productivity. In Switzerland, research estimates that apprentices are 70% as productive as skilled workers during the last year of the apprenticeship programme, while their wages amount to 20-30% of skilled worker wages (SKBF, 2011<sup>[8]</sup>; Federal Statistics Office (FSO), 2016<sup>[9]</sup>). This final period compensates for the initial investment.

***Policy argument 2: The room for employers to obtain benefits after the end of an apprenticeship varies by occupation and firm size***

*Firms are likely to be more responsive to wage levels if they do not expect to retain apprenticeship graduates as skilled workers*

When employers view apprenticeships as a means of recruiting future skilled labour, they have a chance to recoup their investment by taking on the best apprentices as skilled workers, thereby saving on hiring costs. In this case, firms may be willing to pay higher apprentice wages – data from Germany and Switzerland suggest this tends to be the case in larger firms and in firms with high technical requirements (Kuczera, 2017<sup>[4]</sup>; Mühlemann, 2016<sup>[7]</sup>). However, when a firm does not expect to retain their apprentice after completion, or is uncertain about the possibility of doing so, they will be keen to recoup their costs by the end of the training period. Therefore, they will be more sensitive to wage levels.

**Apprentice wages should also reflect the characteristics of apprentices and policy priorities**

Apprentice wages need to be low enough to encourage companies to offer apprenticeships, but high enough to attract apprentices. From the point of view of potential apprentices, the attractiveness of the apprentice wage depends on their needs and how the apprenticeship compares to alternative career pathways available to them.

- Where youth apprentice wages are low, governments should ensure that they are balanced by extensive benefits to the young apprentice in terms of the quality of the learning opportunities with the employer.
- When policy efforts aim to increase the use of adult apprenticeships, measures should be devised to ensure that apprentice income is sufficient to make apprenticeships affordable for adults. This should be based on analysis of the relevant costs and benefits of particular target groups (e.g. by employment status or age) and may include financial support, on top of wages, for adult apprentices.

***Policy argument 1: The optimal wage depends on the costs and outcomes of alternative learning pathways***

*Apprentices are more likely to accept lower wages if they expect good returns later on*

When a young person still in the initial school system, or an adult in search of a better career, considers different options, one of the key questions will be how the costs involved compare to outcomes related to their future careers, including chances of finding employment, working conditions and wages – or more precisely, expectations and perceptions of such outcomes (career guidance and information are discussed in Chapter 7).

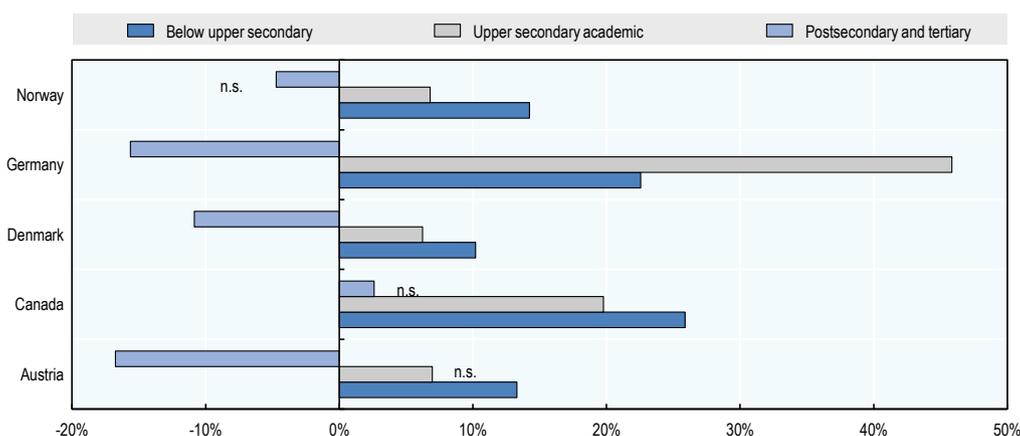
Comparative international evidence on apprenticeship outcomes relative to alternative pathways is patchy, but data from the Survey of Adult Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC), provide some insights into outcomes in Austria, Canada, Denmark, Germany and Norway (see Figure 3.2). These results take into account the level of basic skills, so that the labour market returns

identified do not reflect differences in basic skills. In all five countries, apprenticeship graduates are less likely to be unemployed than those without upper secondary education, and are as likely to be employed as those with post-secondary qualifications (Kuczera, 2017<sub>[4]</sub>). Wage returns are also promising: in all five countries, young apprenticeship graduates earn more than similar adults with academic upper secondary education (but no further studies). At the same time, apprenticeship graduates appear to earn less than those with post-secondary or tertiary qualifications, except in Canada and Norway where the difference is not statistically significant (Kuczera, 2017<sub>[4]</sub>).

Higher wage premiums may reflect various effects in addition to the impact of programmes on job-relevant skills. Some wage differences may result from pre-existing differences between learners who end up in different types of programmes – for example, those who pursue university studies may have better academic skills at the outset than those who decide on an apprenticeship. Even if the programmes pursued did not further develop those skills, university graduates would end up earning higher wages, and higher level qualifications may signal those skills to employers. Some apprenticeship graduates continue to higher levels of education (e.g. around 10% in Germany). Their outcomes, captured by the category post-secondary and tertiary, partly reflect outcomes from an apprenticeship. These biases mean that it is difficult to assess the potential returns where it matters most, i.e. to an individual, probably with mid-level or weaker school results deciding whether to pursue academic upper secondary education or an apprenticeship.

**Figure 3.2. The wage premium for apprenticeship graduates**

16-35 year-olds not in education, by highest level of qualification (excluding foreign qualifications)



*Note:* Coefficients from the ordinary least squares (OLS) regression of log hourly earnings. Coefficients adjusted for numeracy skills, age, gender and firm size. Wage outliers (wages above the 99th percentile or below the 1st percentile) were dropped. Post-secondary and tertiary programmes include programmes at ISCED 4 A and B, ISCED 5 and ISCED 6 level. Upper secondary academic refer to programmes at ISCED 3 level that are longer than two years and those at ISCED 4C that are not vocational. For the definition of apprenticeship graduates see Annex A. n.s.: result is not statistically significant ( $p > 0.05$ ).

*Source:* Kuczera, M. (2017<sub>[4]</sub>) “Striking the right balance: Costs and benefits of apprenticeship”, *OECD Education Working Papers*, No. 153, <https://doi.org/10.1787/995fff01-en>.

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Figure 3.2 shows how much apprenticeship graduates earn compared to those who have pursued other pathways. For example, for Norway the dark blue bar shows that

apprenticeship graduates earn 7% more than those whose highest qualification is at academic upper secondary level. The light blue bar shows that apprenticeship graduates earn 14% more than those who completed only lower secondary education or less. The medium blue bar with the “n.s.” sign indicates that the data do not reveal a statistically significant difference in wages between apprenticeship graduates and post-secondary or tertiary graduates.

### *Apprenticeships need to compete effectively with other programmes*

Individuals will only choose an apprenticeship if the expected benefits (e.g. better employment chances, higher wages and better working conditions) justify the costs involved. To be attractive, apprenticeships also need to be at least as good, in terms of returns on investment, as alternative pathways. Depending on the country and individual context, alternatives will vary. Where apprenticeships are part of upper-secondary education and training (such as in most European countries), school-based vocational or academic programmes are the most likely alternative. In countries where apprenticeships build on basic schooling (such as in the United States), the alternatives are post-secondary education or entering the labour market. Those options will yield different benefits at different costs.

### *Competition from free school-based programmes can drive up apprentice wages*

In countries where apprenticeships compete with school-based programmes, higher wages can make apprenticeships more attractive to young people. For example, Austria and Switzerland have apprenticeship schemes that are relatively similar by international standards. One important difference is that in Austria, the school-based vocational education and training system offers an alternative to young people, while in Switzerland, relatively few school-based programmes are offered. Researchers have argued that in Switzerland, vocationally inclined young people accept relatively low apprentice wages and enrol in an apprenticeship as the main pathway to skilled jobs. By contrast, in Austria, the apprenticeship system competes with school-based vocational pathways, which drives up apprentice wages (Moretti et al., 2017<sub>[10]</sub>).

### *Potential apprentices may be less sensitive to wages when alternative options require tuition fees*

When alternative and comparable training programmes require tuition fees, apprenticeships, even those with relatively low wages, can be financially attractive. For example, in the United States, advocates of apprenticeships often argue that they offer an alternative to college degrees, allowing people to develop job-relevant skills without accumulating debt. While college education requires the payment of tuition fees, classroom instruction delivered during apprenticeships is usually free to apprentices, as employers either provide it in-house or cover tuition costs in community colleges (Helper et al., 2016<sub>[11]</sub>).

### ***Policy argument 2: The optimal wage will be higher for adult apprentices***

#### *Adult apprentices have higher wage expectations*

The reservation wage (the lowest wage a potential apprentice would be willing to accept) depends on both environmental factors (e.g. labour market tightness) and individual characteristics. Younger people have lower reservation wages because their immediate

needs are low if they still live with their parents, because they expect to recoup their investment in an apprenticeship over their lifetime, and because the usual alternative to an apprenticeship is a school-based programme that offers no wage. However, for adults, the most likely alternative to an apprenticeship is full-time employment (or the prospect of it) with an unskilled wage at minimum. Adults often need to cover living costs and have family responsibilities, which means that many cannot afford to live on relatively low apprentice wages for several years. Adults also have fewer years of career left ahead of them than teenagers, so they have less time to recoup their investment (Mühlemann, forthcoming<sup>[11]</sup>). The combination of these factors means that for many adults, an apprenticeship will only be affordable if it offers relatively high wages during the training period.

*Adult apprentices are also more productive than younger apprentices*

The wage expectations of adult apprentices may be matched by employer willingness to pay higher wages if they consider that adults will be more productive during an apprenticeship than a younger candidate. Adult apprentices sometimes have years of work experience, including some in the relevant sector or within the same company. As adults often make use of apprenticeships to upskill or reskill, it is relevant to question whether provision should be significantly different from that aimed at young people.

***Policy argument 3: In countries with large youth apprenticeships, adults in search of a second chance may struggle to find a suitable placement***

*Adults in search of a second chance may struggle to compete with young applicants*

The role that apprenticeships play in a country's skills system is an important contextual feature. In countries with large youth apprenticeship systems (e.g. Germany and Switzerland), adults in search of an apprenticeship will be competing with teenagers. These adults will include some who have completed general education (even tertiary education) and are likely to be very attractive in the eyes of potential employers. However, some will be those who missed their first chance as teenagers and who will be looking to an apprenticeship as a second chance, having started their working life without a qualification. The mere fact of looking for a second chance may send a negative signal to potential employers about their skills, making them a less attractive candidate. Those who have useful work experience may find employers willing to pay them higher apprentice wages. But for those with a troubled work history, higher wage expectations are likely to create a hurdle, as employers will often prefer cheaper young apprentices who do not have a history of dropout. The implication is that in countries with large youth apprenticeship systems, adults who seek an apprenticeship as a second chance training programme are likely to struggle to find employers willing to meet their higher wage expectations. In such contexts, some countries have chosen to provide financial support to adult apprentices so that they can cover their living expenses without expecting employers to offer high apprentice wages (see Box 3.1).

The situation is different in countries where youth apprenticeships are uncommon, and where apprenticeships are one of the pathways to skilled jobs available to young (or indeed older) adults. In such contexts, most adults in search of an apprenticeship will be looking for a training opportunity, rather than a second chance. In countries where apprenticeships mostly serve adults (e.g. Canada and the United States), many adults

work at the same firm that takes them on as an apprentice. For the firm, apprenticeships then become a tool for employee training. As they were paying regular employee wages to the apprentice before the training period, they will be willing to pay relatively high wages during the apprenticeship programme.

*Employers may be more willing to consider adults if applicants are hard to find*

Even in countries with large youth apprenticeship systems, employers will be more willing to take on adult apprentices if they struggle to find well-prepared young candidates. This is the case in Germany, where, partly for demographic reasons, apprenticeship positions in some areas and occupations remain unfilled because of the lack of suitable candidates. Similarly, in Israel, where apprenticeships remain very small in scale, employers face skills shortages and struggle to find apprenticeship candidates in the tight labour market, so the government has designed tools that complement adult apprentices' income during training.

### Box 3.1. Special measures for adult apprentices

In **Germany**, the initiative *Zukunftsstarter* is designed to promote apprenticeships among adults aged 25 to 35 in response to skills shortages and a lack of young apprentices in some sectors. Individuals may receive financial support for education expenses, travel, childcare, tutoring, and subsistence during the training. Apprentices receive a grant upon passing mid-term and final examinations.

**Israel** has financial incentives for adults who wish to upskill, including subsidies that compensate for lost earnings. In *Class in the Workplace*, participants are eligible for a subsidy of NIK 1 500 (New Israeli Sheqel) and a grant upon passing mid-term and final examinations. *Starter* participants receive NIK 1 500 in the first stage of programmes provided in a college. The subsidy amounts to around one-third of the minimum wage.

In **Switzerland**, the earnings of adult apprentices are negotiated between the apprentice and their employer within the constraints of cantonal law. Typically, adult apprentices earn around two-thirds of the unskilled worker wage, compared to one-fifth for younger apprentices. Those under 35 can apply for a scholarship of a maximum CHF 12 000 (Swiss franc) per year, about equivalent to two and half times the median monthly wage of an unskilled worker. In some cases they are eligible for social assistance. Additional financial assistance is available to those who are unemployed.

*Source:* Ben Rabi, D. et al. (2017<sub>[12]</sub>), *Apprenticeship and Work-Based Learning in Israel. Background Report* (unpublished); Mühlemann, S. (forthcoming<sub>[11]</sub>), *Apprenticeship Training for Adults: Theoretical Considerations and Empirical Evidence for Selected OECD Member Countries*.

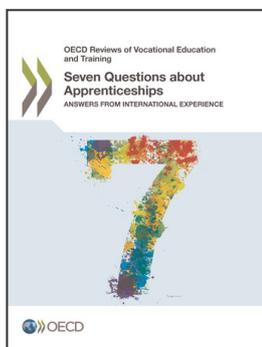
## Conclusion

This chapter asks what is the right wage for an apprentice and concludes that wages need to be low enough to encourage employers to offer apprenticeships, but high enough to attract apprentices. Apprentice wages should vary to reflect the different costs and benefits incurred by employers across different forms of apprenticeship. Governments should resist imposing an overall level of apprentice wage, but should consider setting minimum wages to protect individuals from exploitation. Wages should be set by employers, or by sector, or occupation, within collective bargaining in recognition of the attractiveness of alternative education and employment options open to young people. Governments should recognise that financial barriers may prevent apprenticeships being attractive to older workers and consider remedial special measures, including grants for apprentices.

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