



# Research Report 3/2017

## **Factors affecting apprenticeships and traineeships**

### **Part I: Background and supply-side factors affecting commencement and completion of apprenticeships and traineeships**

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### **Part II: Demand-side factors affecting apprenticeships and traineeships**

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The contents of this paper are the responsibility of the authors and the research has been conducted without the involvement of members of the Fair Work Commission.

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- Australian Chamber of Commerce and Industry (ACCI);
- Australian Industry Group (Ai Group);
- Australian Council of Social Service (ACOSS);
- Australian Council of Trade Unions (ACTU);
- Australian Government; and
- State and territory governments.

Part I of this report presents the work of Lucy Nelms, Kelvin Yuen, Alice Pung, and Sabrin Farooqui of the Fair Work Commission, and Joseph Walsh. An appropriate reference for Part I of this report is:

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## List of abbreviations

ABS	Australian Bureau of Statistics
Act	<i>Fair Work Act 2009</i> (Cth)
ACTU	Australian Council of Trade Unions
ANZSCO	Australian and New Zealand Standard Classification of Occupations
Apprenticeship Network	Australian Apprenticeship Support Network
AQF	Australian Qualifications Framework
AQTF	Australian Quality Training Framework
ASQA	Australian Skills Quality Authority
CEDA	Committee for Economic Development of Australia
Commission	Fair Work Commission
DEEWR	Department of Education, Employment and Workplace Relations
DET	Department of Education and Training
Explanatory Memorandum	<i>Fair Work Bill Explanatory Memorandum 2008</i> (Cth)
GTO	Group Training Organisation
Huntly report	Huntly Consulting Group Pty Ltd (2008), <i>Exit from the Trades: Research into attrition from the Trades</i> , research report commissioned by the Department of Education, Employment and Workplace Relations, Canberra.
Kirby Report	Kirby, P (1985), <i>Report of the Committee of Inquiry into Labour Market Programs</i> , research report commissioned by the Minister of Employment and Industrial Relations, January 1985, Canberra.
LSAY	Longitudinal Surveys of Australian Youth
Modern Awards Review Decision	<i>Modern Awards Review 2012—Apprentices, Trainees and Juniors</i> decision [2013] FWCFB 5411
NCVER	National Centre for Vocational Education Research
NES	National Employment Standards
NMW	national minimum wage
NSNL	National Skills Needs List
NTWS	National Training Wage Schedule

Panel	Fair Work Commission's Expert Panel for annual wage reviews
Recommendation Report	Laundy, C, Lindgren, J, McDougall, I, Diamond, T, Lambert, J Luciani, D and de Souza (2016), M, <i>Apprenticeships Reform Advisory Group Recommendation Report 2016</i> , research report commissioned by the Department of Education and Training, August 2016, Canberra.
RTO	registered training organisation
STEM	science, technology, engineering and mathematics
TAFE	Technical and Further Education
Transitional Act	<i>Fair Work (Transitional Provisions and Consequential Amendments) Act 2009 (Cth)</i>
VET	vocational education and training

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## Part I: Background and supply-side factors affecting commencement and completion of apprenticeships and traineeships

### 1 Introduction to Part I

Under s.285(2)(a) of the *Fair Work Act 2009* (Cth) (Act), the Fair Work Commission's (Commission) Expert Panel for annual wage reviews (Panel) must annually review national minimum wages and modern award minimum wages. The Panel must also set a special national minimum wage for award/agreement-free employees to whom training arrangements apply,<sup>1</sup> including apprentices and trainees.

Under the Act, the Panel is required to consider various criteria in the minimum wages objective and modern awards objective.<sup>2</sup> These criteria include social inclusion through workforce participation,<sup>3</sup> the performance and competitiveness of the national economy<sup>4</sup> and the likely impact of any exercise of modern award powers on employment growth.<sup>5</sup> This research report aims to provide information in relation to supply of and demand for apprentices and trainees that is relevant to these minimum wage and modern awards objectives.

The research program for the Annual Wage Review 2016–17 was confirmed in a Statement issued on 16 August 2016 and included a project on factors affecting apprenticeships and traineeships.<sup>6</sup> The aim of this project was 'to discuss factors that can affect people commencing and completing apprenticeships and traineeships ... examin[ing] both supply-side and demand-side factors and how they have changed over time.'<sup>7</sup>

Accordingly this report is published to inform the Panel and parties as part of the research program for the Annual Wage Review 2016–17. It explores a range of potential factors affecting apprenticeship and traineeship commencements and completions in Australia over the last two to three decades as discussed in literature. It is not intended that the report provide exhaustive coverage of these factors or assess the relative impact of these factors. Instead it responds to a specific purpose of informing the Panel on supply and demand factors affecting commencements and completions of apprenticeships and traineeships.<sup>8</sup> This report primarily deals with supply-side factors, and is published in two parts. Part I of this report is structured as follows.

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<sup>1</sup> *Fair Work Act 2009* (Cth), s.294(1)(b)(ii). Employees to whom training arrangements apply' is not defined by the Act, though a 'training arrangement' is defined by the Act to be a 'combination of work and training that is subject to a training agreement, or a training contract, that takes effect under a law of a state or territory relating to the training of employees (s.12).

<sup>2</sup> *Fair Work Act 2009* (Cth), s.284; s.134.

<sup>3</sup> *Fair Work Act 2009* (Cth), s.284(1)(b); s.134(1)(c).

<sup>4</sup> *Fair Work Act 2009* (Cth), s.284(1)(a); s.134(1)(h).

<sup>5</sup> *Fair Work Act 2009* (Cth), s.134(1)(h)

<sup>6</sup> [2016] FWC 5764.

<sup>7</sup> [2016] FWC 4786.

<sup>8</sup> In relation to apprenticeships and traineeships *supply and demand* is sometimes conceptualised as the *supply* of places offered by an employer and the *demand* for those places by respective apprentices and trainees. However, it should be noted that in this report the concept of supply and demand pertains respectively to an individual's decision to *supply* their labour and the employer *demand* for that labour.

Chapters 1 and 2 of the report provide an introduction and background to the apprenticeship and traineeship system in Australia, and also examines the legislative and policy framework.

Chapter 3 examines trends in commencements and completions of apprenticeships and traineeships, and the apprentice and trainee share of total employment, over the past two to three decades.

Chapter 4 explores a range of supply-side factors affecting the take up and completion of apprenticeships and traineeships. This section concentrates on research findings related to factors that are specific to apprentices and trainees, and not factors that affect labour supply decisions more generally, such as household financial need or care responsibilities.

Potential factors affecting supply, that is factors affecting an individual's decision to supply their labour as an apprentice or trainee, that are explored include:

- personal characteristics;
- education and training;
- perceived labour market factors;
- wages;
- perceptions, awareness and promotion;
- intrinsic factors; and
- experience of working conditions and training.

Chapter 5 provides a brief conclusion.

Part II of this report, which is separately authored by Dr Tom Karmel, examines the demand-side factors affecting apprentice and trainee commencement and completions.

## 2 Background

Australia's apprenticeship system, originating from Britain, combines paid employment with on-the-job and institutional training. Traditionally the system was 'almost exclusively' designed for early school leavers, usually male, and became the major means by which crafts and trades skills were developed in Australia (Knight 2011).

The traineeship system arose from the recommendations in the 1985 *Report of the Committee of Inquiry into Labour Market Programs* chaired by Peter Kirby (the Kirby report). This report examined the rising level of youth unemployment and recommended establishing a system of traineeships combining education, training and work to assist young people to gain a 'foothold in the workforce' (Kirby 1985:109). Acting on the recommendation of this report, the Commonwealth, states and territories introduced traineeships into the labour market in August 1985 (Ray 2001). This 'extended the apprenticeship model to a much wider range of occupations, most non-trade, and industries' (Knight 2011:19). Federal government-funded employer incentives were introduced in the mid-1990s, significantly boosting the uptake of traineeships, particularly in the retail and service sectors (Knight 2011).

The *New Apprenticeships* program, introduced in 1998, brought apprenticeships and traineeships together into a single system. Significantly, it made provisions for existing worker and part-time apprentices, 'reinforcing the shift from [a system] almost exclusively for young people who have recently left school ... to one that covers people of all ages' (Knight 2011:20–21). The introduction of school-based apprenticeships and traineeships (initially in 1996 but then as part of the 1998 reforms) also enabled young people to commence a part-time apprenticeship or traineeship while still attending secondary school.

The *New Apprenticeships* program also standardised differences between the states, introduced User-choice policy allowing employers and employees to choose their training organisation, and opened up the market to non-TAFE training providers.

In contemporary Australia, the *Australian Apprenticeship* system refers to both an apprenticeship or traineeship. However, for reasons of consistency and to transcend different naming arrangements over time, the terms 'apprenticeship' and 'traineeship' are used throughout this report. An apprenticeship or traineeship is characterised by:

- the existence of a regulated, employment-based training arrangement, and a registered legal training agreement;
- a commitment by the employer, the apprentice or trainee, and a registered training organisation (RTO) to an agreed training program in a specified occupation, all of which are set out in the training agreement;
- an occupational training program that consists of a combination of paid employment and on-the-job training, and formal (usually off-the-job) training that leads to a recognised qualification; and
- training that is provided at an agreed level in the Australian Qualifications Framework (AQF) and to standards set down in the Australian Quality Training Framework (AQTF) (Knight 2011).

Cully and Curtain (2001a:212–213) note the difference between labour market functions of apprenticeships and traineeships, even though ‘in policy documents and official statistics this distinction has been airbrushed out of existence’. Apprenticeships provide the basis for a vocational career and continue to be generally associated with more traditional trade occupations (for example, to become a qualified electrician), with an entry qualification at the Certificate III or IV level, and can take typically three to four years to complete (McDowell et al. 2011). In contrast, traineeships generally cover a much wider range of predominantly service-oriented occupations such as business, retail, financial services, childcare, and health and community services. They are usually undertaken for a period of less than two years, at Certificate II or Certificate III, but are now increasingly available at higher level qualifications (McDowell et al. 2011).

The remainder of this chapter provides a brief overview of the legislative framework; information on apprentice and trainee wages; and the policy framework through which apprenticeships and traineeships are delivered.

## 2.1 Legislative Framework

### 2.1.1 Commonwealth, states’ and territories’ roles

Wage-setting for apprentices and trainees largely falls within the federal jurisdiction in the form of modern awards and the national minimum wage order (NMWO). Under the Act, the Panel must annually review national minimum wages and modern award minimum wages,<sup>9</sup> and set a special national minimum wage for award/agreement-free employees to whom training arrangements apply.<sup>10</sup>

Terms and conditions of employment that are provided for by the National Employment Standards (NES) or included in a modern award will prevail over existing state and territory legislation.<sup>11</sup> However, the Act provides that certain state and territory laws dealing with ‘non-excluded matters’ such as ‘training arrangements’ continue to operate.<sup>12</sup> The Explanatory Memorandum to the Act specified that this included state and territory laws dealing with the administration of training contracts and awarding training qualifications; but not ‘terms and conditions of employment dealt with by the NES or that can be included in modern awards (such as classifications and rates of pay, certain monetary allowances and penalty rates).’<sup>13</sup>

Accordingly, each state and territory maintains its own training legislation.<sup>14</sup> The main function of the states and territories’ training legislation is to specify the circumstances in which an

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<sup>9</sup> *Fair Work Act 2009* (Cth), s.285(2)(a).

<sup>10</sup> *Fair Work Act 2009* (Cth), s.294(1)(b)(ii). ‘Employees to whom training arrangements apply’ is not defined by the Act, though a ‘training arrangement’ is defined by the Act to be a ‘combination of work and training that is subject to a training agreement, or a training contract, that takes effect under a law of a state or territory relating to the training of employees (s.12).

<sup>11</sup> *Fair Work Act 2009* (Cth), s.26(1); s.27(2)(f).

<sup>12</sup> *Fair Work Act 2009* (Cth), s.27(2)(f).

<sup>13</sup> *Fair Work Bill Explanatory Memorandum 2008* (Cth), at para. 142.

<sup>14</sup> *Education and Training Reform Act 2006* (Vic); *Apprenticeship and Traineeship Act 2001* (NSW); *Training and Skills Development Act 2008* (SA); *Northern Territory Employment and Training Act 1991* (NT); *Vocational Education, Training*

apprenticeship or traineeship is created, thereby enabling employer access to federal government support as well as training wages in modern awards. Apprentices and trainees are also covered by state or territory legislation such as anti-discrimination laws and Occupational Health and Safety laws in the workplace.<sup>15</sup>

### **2.1.2 Apprentice and trainee wages in the National Minimum Wage Order**

The Annual Wage Review Decision 2010–11<sup>16</sup> introduced a NMWO including special national minimum wages for apprentices and trainees.<sup>17</sup> The Panel adopted the apprentice wage provisions and the National Training Wage Schedule (NTWS) in the *Miscellaneous Award 2010* as the basis for the special national minimum wage for award/agreement free employees to whom training arrangements apply, with a provision that adult apprentices should not receive less than the national minimum wage.<sup>18</sup>

### **2.1.3 Apprentice and trainee wages under modern awards**

Awards are the predominant wage-setting instrument under which apprentices and trainees are employed (Oliver 2011). As pre-modernisation state and federal awards generally treated minimum wage rates for apprentices and trainees separately, these separate apprentice and trainee rates have largely carried over into the modern award system (McDowell 2011).

In awards, apprentice minimum wages are expressed as a percentage of the basic rate for a qualified tradesperson, to reflect the lower productivity of apprentices compared to qualified tradespeople. Apprenticeship wage structures vary across industries and occupations, and minimum wage rates for apprentices vary across modern awards (McDowell 2011). Under modern awards, apprentice wages generally increase incrementally with each year of additional work experience.

Apprentices may also be paid above-award wages. A 2012 study by Oliver (2012) analysed the 2009 Australian Bureau of Statistics (ABS) Survey of Education and Training and found that in occupations where there were higher rates of dependence on award wages, such as in hairdressing or food trades, average wages for apprentices were found to be closer to the award rates. Oliver (2012) also found that female trainees, young trainees and new workers were much more likely to earn wages close to the award wage. According to Oliver, apprentices working in small businesses and apprentices working outside of capital cities were less likely to receive above-award payments.

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*and Employment Act 2000 (Qld); Vocational Education and Training Act 1996 (WA); Vocational Education and Training Act 1994 (Tas); and Training and Tertiary Education Act 2003 (ACT).*

<sup>15</sup> For example, in Victoria, apprentices and trainees are covered by the *Equal Opportunity Act 2010 (Vic)* and the *Occupational Health and Safety Act 2004 (Vic)*, as well as federal laws relating to anti-discrimination: Victorian Equal Opportunity and Human Rights Commission, 'Employer responsibilities', accessed 11 November 2016, <<http://www.humanrightscommission.vic.gov.au/employer-responsibilities>>.

<sup>16</sup> The Panel for the Annual Wage Review 2009–10 deferred setting the special national minimum wage for employees to whom training arrangements apply until the Annual Wage Review 2010–11 to allow the Panel to undertake a review into apprentices and trainees and to allow the Australian Government to complete its review of vocational training. See: [2010] FWAFB 4000 at para. 406.

<sup>17</sup> [2011] FWAFB 3400 at para. 397.

<sup>18</sup> [2011] FWAFB 3400 at para. 413.

Minimum wage rates for trainees, including part-time trainees, are generally set by the NTWS, a uniform schedule attached to 100 of the 122 modern awards. The NTWS is based on the wage and classification structure contained in the *National Training Wage Award 2000*.<sup>19</sup> Full-time trainee minimum wages in the NTWS range from 45 per cent to 99 per cent of the National Minimum Wage, \$7.95 per hour to \$17.45 per hour respectively, as at February 2017.<sup>20</sup> The wage is dependent on factors such as the highest level of schooling of the trainee, the qualification being undertaken, and the year of trainee progression through the traineeship (Oliver 2011).

Outside of annual wage reviews, apprentice and trainee minimum wages may be varied by other methods including through: varying modern award minimum wages as part of the two or four-yearly review of modern awards;<sup>21</sup> varying modern award minimum wages at the initiative of the Commission or by application by specified parties<sup>22</sup> for either work value reasons or to achieve the modern awards objective;<sup>23</sup> or by an equal remuneration order.<sup>24</sup>

#### **2.1.4 Transitional Review of modern awards**

As part of the Transitional Review of modern awards,<sup>25</sup> in 2012 the Commission commenced a review of apprentices, trainees and juniors. A Full Bench of the Commission found that apprenticeships had changed significantly, and observed that the average age of apprentices had increased over time.<sup>26</sup> It also noted that many apprentices had completed Year 12 or its equivalent, had already completed vocational training, and had undertaken part-time and casual work with higher wages than they would receive under an apprenticeship.<sup>27</sup> Also noting that 'the present rates of pay in the awards do not provide a fair and relevant safety net for apprentices'<sup>28</sup> the Full Bench in the 2013 Modern Awards Review decision increased the first year apprentice rate of pay in modern awards that make provision for apprentices.

The Full Bench provided higher rates for first and second year apprentices who completed Year 12, stating that 'the introduction of these differentials will protect the position in the labour market of early school leavers whilst also encouraging Year 12 completion.'<sup>29</sup>

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<sup>19</sup> AP790899.

<sup>20</sup> *Miscellaneous Award 2010*, MA000104, Schedule E – National Training Wage.

<sup>21</sup> The 'one off' two year review to be conducted in 2012 is required to be conducted under item 6, Part 2, sch 5 of the *Fair Work (Transitional Provisions and Consequential Amendments) Act 2009* (Cth) and the four-yearly review of modern awards is required under s.156 of the *Fair Work Act 2009* (Cth).

<sup>22</sup> *Fair Work Act 2009* (Cth), s.157(2).

<sup>23</sup> *Fair Work Act 2009* (Cth), s.157(2).

<sup>24</sup> *Fair Work Act 2009* (Cth), s.306 and *Fair Work (Transitional Provisions and Consequential Amendments) Act 2009* (Cth) item 3(2), Part 2, sch. 10.

<sup>25</sup> Under item 6, Part 2, sch 5 of the *Fair Work (Transitional Provisions and Consequential Amendments) Act 2009* the Commission is required to conduct a review of all modern awards after two years.

<sup>26</sup> [2013] FWCFB 5411 at para. 172.

<sup>27</sup> [2013] FWCFB 5411 at para. 173.

<sup>28</sup> [2013] FWCFB 5411 at para. 184.

<sup>29</sup> [2013] FWCFB 5411 at para. 187.

The Full Bench also increased adult apprentice minimum rates. They noted that apprentice wage levels posed a barrier to adult apprenticeship commencements,<sup>30</sup> suggesting a potential positive impact on completion rates for adult apprenticeships resulting from their decision.<sup>31</sup>

The Full Bench decision determined that the new wage rates for apprentices in some professions would apply as of 1 January 2014. The following rates were set for apprentices:

**Table 1: Apprentice minimum rates after the 2013 Modern Awards Review Decision**

Level	Rate
First year apprentice aged under 21 years, commencing on or after 1 January 2014	A minimum rate of 50% of the C10 qualified tradesperson's award rate, and 55% if the apprentice has completed Year 12. <sup>a</sup>
First year adult apprentice who is not an existing employee at an enterprise	A minimum of 80% of the C10 qualified tradesperson's award wage, unless an award already provides for a higher rate. <sup>b</sup>
First year adult apprentice who is an existing employee at an enterprise (having worked for an employer full-time for at least six months, or part-time or on a casual basis for at least 12 months)	These employees must not experience a reduction in their minimum rate of pay. <sup>c</sup>
Second year apprentice aged under 21 years	A minimum of 60% of the C10 rate, or 65% for an apprentice who has completed year 12. <sup>d</sup>
A second year adult apprentice	The national minimum wage or the lowest classification rate in the award, whichever is higher. <sup>e</sup>
Apprentices at the third or fourth year or stage of apprenticeship, in awards with pre-existing adult apprentice wage rates	The Commission decided not to alter rates in awards that had higher rates of pay for adult apprentices in the third and fourth year or stage. <sup>f</sup> Adult apprentices should be paid the higher of the relevant apprentice rate for the year or stage of the apprenticeship or the relevant adult apprentice rate. <sup>g</sup>
Apprentices at the third or fourth year or stage of apprenticeship, where the Commission has introduced adult apprentice wage rates	The rates for third or fourth year or stage adult apprentices should be no less than the rate applicable to a junior apprentice at that stage of their apprenticeship. <sup>h</sup>

Note: <sup>a</sup> see para. 188; <sup>b</sup> see para. 259; <sup>c</sup> see paras 241–250; <sup>d</sup> see para. 189; <sup>e</sup> see para. 260; <sup>f</sup> see para. 260; <sup>g</sup> see para. 261; <sup>h</sup> see para. 262.

Source: [2013] FWCFB 5411.

The Full Bench did not alter trainee wages under the NTWS in this decision, so these wage percentages remain the same for the NMWO and the NTWS attached to modern awards.

<sup>30</sup> [2013] FWCFB 5411 at para. 227.

<sup>31</sup> [2013] FWCFB 5411 at para. 227.

## 2.2 Policy Framework

Apprenticeships and traineeships provide skills to businesses, and offer nationally recognised qualifications to apprentices and trainees (Australian Government 2016e). The Apprenticeships Reform Advisory Group Recommendation Report (Recommendation Report) describes the Australian apprenticeship and traineeship system as ‘essential to developing highly skilled and qualified workers who drive productivity and deliver goods and services that underpin a sizable part of the productive economy’ (Laundy et al. 2016:5) The Recommendation Report states that ‘it is critical to ensure government policy settings at the national and state level continue to support and strengthen the role of apprenticeships and traineeships into the future,’ and suggests that ‘the validity and efficacy of government policy decisions’ can be tested by reference to:

- Targeted skills development: especially in the trade, technical and professional skills areas;
- Quality outcomes: including industry-recognised training and strong collaborations between employers, trainees and apprentices and RTOs; and
- Pathways to employment: particularly for first-time jobseekers.

Apprenticeships and traineeships are delivered through a cooperative arrangement between the Australian Government Department of Education and Training (DET), state and territory governments, industry employers and registered training organisations (RTO) (Australian Government 2016g).

DET has a range of policy, procurement and reporting functions related to the delivery of apprenticeships and traineeships. For example, DET is responsible for developing policy on support services such as the Australian Apprentices Incentives Programme and Trade Support Loans (Australian Government 2016e), further discussed in Section 2.3.

Each state and territory is responsible for developing and maintaining their own policies and guidelines for apprentices and trainees, including determining suitable qualifications and employment arrangements (Australian Government 2016g). Training costs for selected apprenticeships and traineeships are subsidised under the national User Choice policy, whereby the Commonwealth government provides funding for state and territory governments to support their training systems, depending on the skill priorities of each jurisdiction.

Set up by DET in July 2015, the Australian Apprenticeship Support Network (Apprenticeship Network) engages with state and territory training authorities to manage administration, including training contracts, training plan approvals and completion arrangements (Australian Government 2016g).

Apprenticeships and traineeships are one component within the broader vocational education and training (VET) sector, which delivers training in workplace specific skills and knowledge covering a wide range of industries and careers (Australian Government 2017d). The Australian Skills Quality Authority (ASQA) is the national regulator responsible for accrediting and regulating the VET sector in all states and territories except for Victoria and Western Australia which have mirrored these arrangements locally (Australian Government 2016g). Once ASQA accredits a training provider as an RTO, the RTO can then deliver VET services and apply for Australian, state and territory funding to deliver training (Australian Government 2016c).

Training Packages provide the VET sector with nationally-endorsed standards and qualifications for recognising and assessing people's skills in specific industries, sectors and enterprises. They are developed through a process of national consultation with industry (Australian Government 2016l).

Group Training Organisations (GTOs) operate nationally to employ apprentices and trainees and place them with host businesses. GTOs are particularly important to small and medium-sized businesses that might otherwise see committing to an apprenticeship as too risky, lack the resources to effectively manage training, or are unable to provide the breadth of on-the-job training required for the full term of the apprenticeship or traineeship (Australian Government 2016i). Only GTOs registered under the National Standards for Group Training Organisations, which provide a formal framework to ensure national consistency and quality, can apply for Commonwealth funding (Australian Government 2016h).

## **2.3 Government support and incentives for apprentices and trainees**

This section describes the financial support and incentives offered by the Australian Government and state and territory governments to apprentices, trainees and their employers.

### **2.3.1 Government support for employers of apprentices and trainees**

In addition to the previously highlighted support available via the Apprenticeship Network, the Australian Government provides financial incentives to approximately 57 000 employers of apprentices and trainees (Committee for Economic Development of Australia (CEDA) 2016:105). Some of these incentives are payable on commencement, recommencement and completion of the apprenticeship and traineeship. For example, full and part-time apprentices (new or existing workers) in a National Skills Needs List (NSNL) occupation receive \$1500 on commencement, \$750 on recommencement and \$1500 to \$2500 on completion (Australian Government 2015b).

Employers of apprentices and trainees are also eligible to receive additional financial assistance in a range of circumstances, for example those operating in a Declared Drought Area, those employing an apprentice or trainee with disability or a Mature Aged apprentice or trainee (Australian Government 2015b).

RTOs are also assisted to provide tutorials, mentorship, and interpreting services to apprentices and trainees at the rate of \$38.50 per hour to an annual maximum of \$5500 (Australian Government 2015b).

The total Commonwealth allocation for the Australian Apprenticeships Incentives Program, covering grants to employers and apprentices, was \$0.9 billion in 2013–14. It was estimated at \$0.45 billion for 2015–16 (Burke 2016:23).

Further, a wide range of financial incentives to employers and RTOs are also provided at a state or territory level.

More detailed information on government assistance provided to employers of apprentices and trainees can be found at Appendix A.

### 2.3.2 Government support for apprentices and trainees

The following financial support mechanisms are provided by the Australian Government to apprentices and trainees:

- Trade Support Loans: loans for those undertaking an apprenticeship or traineeship in a NSNL occupation, or in Agriculture or Horticulture. The loans are repayable, with a lifetime limit of \$20 000 which is available at different monthly rates across the first four years of training.
- VET Student Loans: replaced VET FEE-HELP<sup>32</sup> on 1 January 2017, and apply to eligible courses at the Diploma level or above (Australian Government 2017b). They cover loans up to a capped amount of \$100 879 and are conditional upon continuing progress through a course of study. Students are responsible for covering any gaps between the loan amount and the tuition fees (Australian Government 2016c). These loans are automatically repayable via the tax system once the apprentice or trainee's annual taxable income reaches a threshold, which for 2016–2017 is set at \$54 869.
- Centrelink payments (Youth Allowance, AUSTUDY, ABSTUDY):
  - full-time apprentices and trainees may be eligible for Youth Allowance if they are under 25, AUSTUDY if they are over 25, and ABSTUDY if they are Aboriginal or Torres Strait Islander. Higher rates may apply in particular circumstances, for example, those aged 22 years of age or older in receipt of Youth Allowance who commence an apprenticeship or traineeship.
  - apprentices and trainees may also be eligible for Rent Assistance and Income Bank.
- Living Away From Home Allowance: available to apprentices and trainees including school-based apprentices and trainees (who are not in receipt of Youth Allowance, Austudy or ABSTUDY) during their first three years of training. It provides a weekly allowance of \$77.17 in the first year of training, \$38.59 in the second, and \$25.00 in the third (Australian Government 2016f).

Support offered by state and territory governments generally comes in the form of travel and accommodation allowances, concession schemes (for example, on car registration) and education subsidies.<sup>33</sup>

Analysis of National Centre for Vocational Education Research (NCVER) data matched with Department of Employment data showed that only around one per cent of apprentices and trainees receive any income support, with non-Indigenous adult apprentices who may be eligible for Austudy the least likely to receive payment (NCVER 2011a:56).

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<sup>32</sup> However, existing VET FEE-HELP students may continue receiving a VET FEE HELP loan in 2017 provided certain requirements are met: see Australian Government (2017), *Study Assist – VET Student Loans*, <<http://studyassist.gov.au/sites/studyassist/vet%20student%20loans/pages/vet%20student%20loans>> accessed 10 February 2017.

<sup>33</sup> See, for example: NSW Government 2016f, 2016b, 2016d; ACT Government 2016a, 2016b; NT Government 2016a, 2016b, 2016d; Queensland Government 2015, 2016c; SA Department of State Development 2015; Skills Tasmania 2014; Tasmanian Department of State Growth 2016; Victorian Government 2015c, 2016b, 2016e; Government of WA 2016a, 2016b.

## 2.4 New and proposed policy changes affecting apprenticeships and traineeships

A number of government policy changes relating to apprenticeships and traineeships have been introduced, announced, or considered in 2016. The overarching aim of these changes has been to address both the decline in the number of apprenticeships and traineeships, and the challenges presented by changing industrial conditions (Standards Australia 2016). Increased government assistance for apprenticeships and traineeships is viewed as a productive way to address skills shortages and unemployment in regional areas (Queensland Government 2016b). There appears to be broad acknowledgement of the priority to increase involvement of industry (Australian Government 2016a) and to encourage science, technology, engineering and mathematics (STEM) skills (NSW Government 2016d; Birmingham 2015).

At the state and territory government level, recent changes have included:

- support in the form of \$1000 scholarships available to apprentices and trainees undertaking selected STEM qualifications, and increased travel and accommodation subsidies (NSW Government 2016c; 2016f);
- announcement of new employer incentives of up to \$20 000 in Queensland (Work Start, Back to Work and 'Youth Boost') (Queensland Government 2016a); and
- the Victorian 'Skills First' response to a 2015 review of VET Funding which provides extra funding for apprenticeships and traineeships through TAFEs and GTOs, as well as a mandatory 10 per cent apprentices quota required on major Victorian Government projects (Victorian Government 2016d).<sup>34</sup>

At the federal level these actions and discussions have included:

- replacing the VET FEE-HELP system with the VET Student Loan system which has enhanced compliance measures allowing government greater power to take action against training providers who breach requirements of the program, stricter monitoring of student engagement and stronger provider reporting requirements (Australian Government 2016n);
- restricting the VET Student Loan system to students undertaking approved Diplomas, Advanced Diplomas, Graduate Certificates, and Graduate Diplomas;<sup>35</sup>
- a Senate inquiry into exploitation of temporary visa workers recommending a training levy of up to \$4000 per 457 visa worker to help fund Australian Apprenticeships (Senate Education and Employment References Committee 2016);
- operation of alternative delivery pilots for apprenticeship and traineeship training such as the Ai Group-led Higher Level Applied Technology apprenticeship (Australian Government 2016d); and
- release of Apprenticeships Reform Advisory Group Recommendations (Australian Government 2016a).

<sup>34</sup> Victorian Government, *Skills First: Real training for real jobs brochure*, August 2016.

<sup>35</sup> *VET Student Loans (Courses and Loan Caps) Determination 2016* (Cth), 21 December 2016.

### 3 Trends and characteristics of apprentices and trainees

This chapter analyses trends related to apprentices and trainees, primarily using the NCVET National Apprentice and Trainee Collection database, which is derived from administrative reporting of state and territory training authorities. These data have been collected on a quarterly basis since 1994, though data for certain series are available from 1963.

NCVER define an apprentice or trainee as a 'person who undertakes a contract of training with an employer and a training provider' (NCVER 2015:4). Full-time apprentices are defined by NCVET as 'those whose ordinary hours of employment, including the training component, are at least the usual hours of employment for a full-time employee in that occupation' (NCVER 2015:16).

The NCVET data do not distinguish between apprentices and trainees as these data are not collected separately by the state and territory training authorities.

The following terms are used in the analysis:

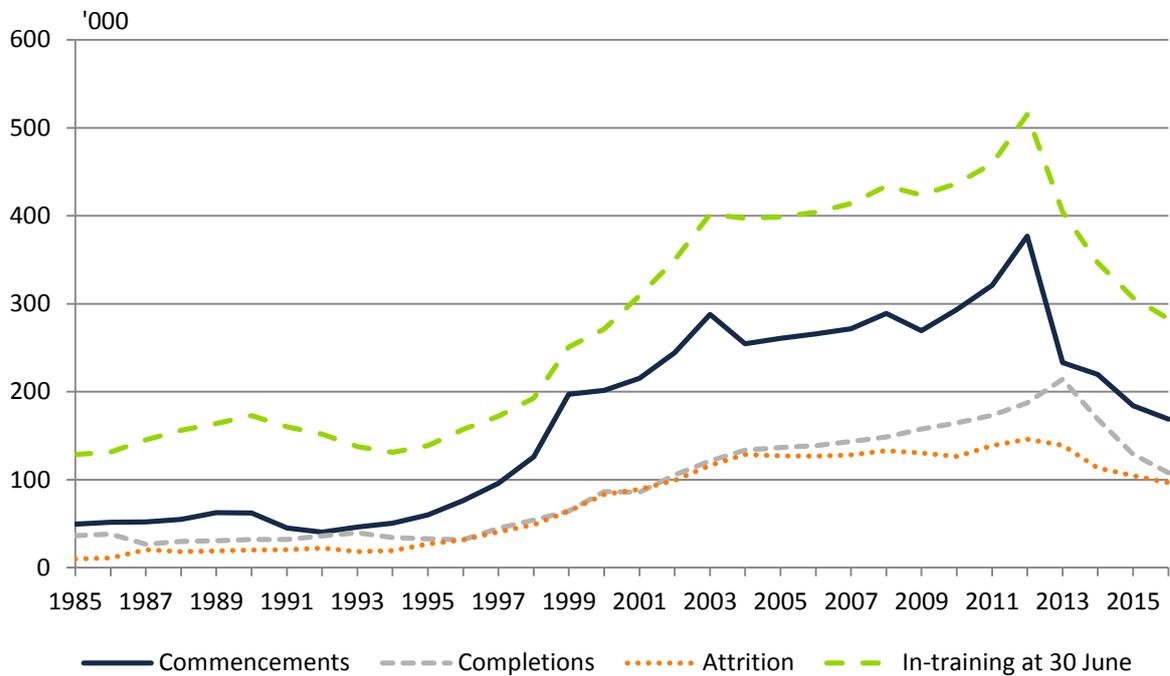
- Commencements are the number of apprenticeship/traineeship training contracts that started in a given period.
- Completions are the number of apprenticeship/traineeship training contracts that were completed in a given period.
- Attrition refers to the number of apprenticeship/traineeship training contracts that have been terminated prior to completion in a given period (also includes contracts that have been transferred due to a change in employer, as well as contracts where the expected term has expired without the apprentice or trainee attaining all the required competency standards).
- In-training refers to the number of apprenticeship/traineeship training contracts where the apprentice/trainee is actively training under the terms of their contract at a given point in time (NCVER 2016a)

As at 30 June 2016, there were 282 900 apprentices and trainees in-training. Over the year to June 2016, there were 168 800 commencements, 107 900 completions and 96 500 attrition occurrences (NCVER 2016b).

Figure 1 shows the number of apprentice and trainee commencements, completions, in-training, and attrition over the 20 years between 1985 and 2016. The number of apprentice and trainee commencements, completions and in-training has increased over the period, particularly between 1995 and 2003. However, after peaking in 2012 (with 2013 being the peak for completions), all series have declined.

Between 1995 and 2004, the number of completions was similar to the number of attrition occurrences. Completions grew faster than attrition occurrences after 2004, though since 2013, completions have converged towards the level of attrition occurrences.

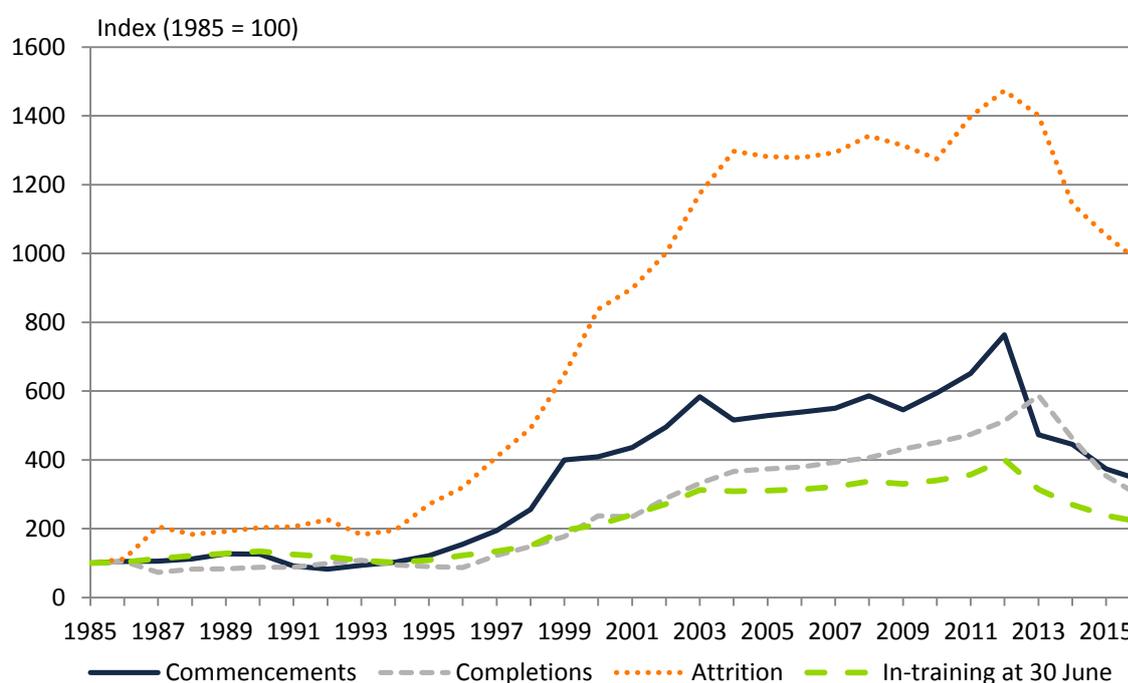
**Figure 1: Commencements, completions, attrition and in-training, June 1985 and June 2016, '000s**



Source: NCVER, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

Figure 2 further examines these growth trends by showing the index of commencements, completions, in-training and attrition between 1985 and 2016. Over the period, attritions experienced the largest growth by far, followed by commencements, completions, and in-training.

While most series began a steady decline after 2012, attritions and commencements experienced the largest fall. Between 1995 and 2012, attritions and commencements had increased the most out of all series.

**Figure 2: Commencements, completions, attrition and in-training, June 1985 and June 2016, index**

Source: NCVER, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

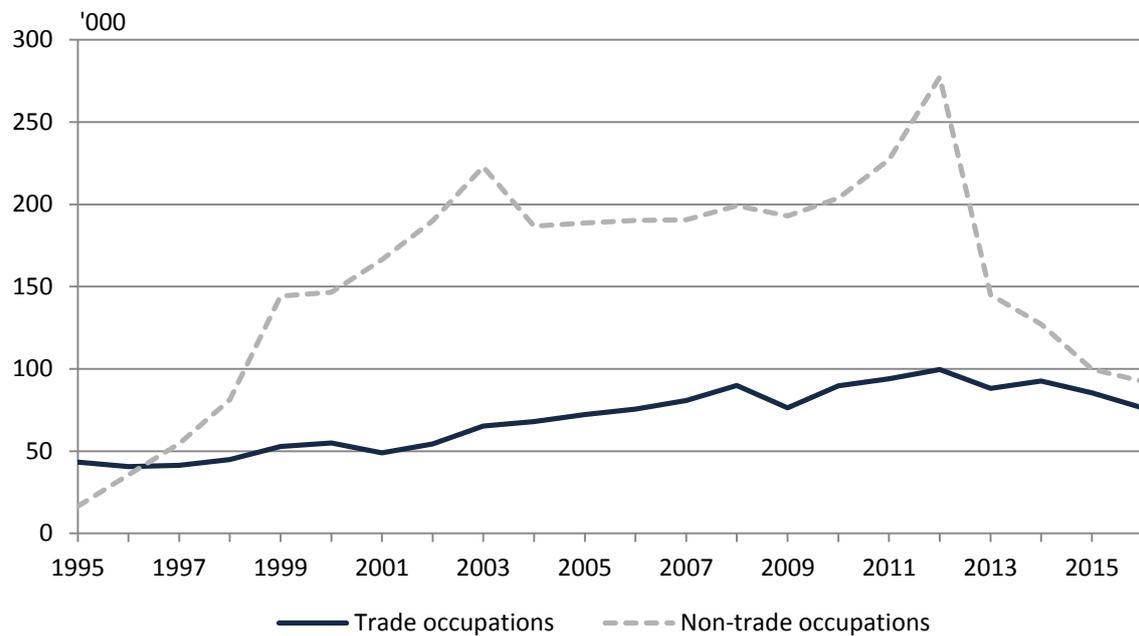
Figure 3 shows that commencements for non-trade occupations<sup>36</sup> increased between June 1995 and June 2012 (with a relative plateau between 2004 and 2009), before falling sharply after 2012. Commencements for trade occupations<sup>37</sup> also trended upwards (albeit at a much slower rate than commencements in non-trade occupations) between 1995 and 2016, with most of the growth occurring between 2001 and 2012, before falling after 2012.

In 1995, commencements in trade occupations accounted for the majority of all commencements (72.3 per cent). This proportion steadily declined to 2012, reaching a trough of 26.4 per cent. The proportion of trade occupation commencements since increased to 45.2 per cent in 2016 due to the significant decline in commencements for non-trade occupations after 2012.

Previous NCVER papers have described commencements in trade occupations as apprenticeships, and non-trade occupations as traineeships (Karmel and Misko 2009), though this definition is not used in current NCVER statistics.

<sup>36</sup> Non-trade occupations are those not in the ANZSCO Technicians and trades workers occupation.

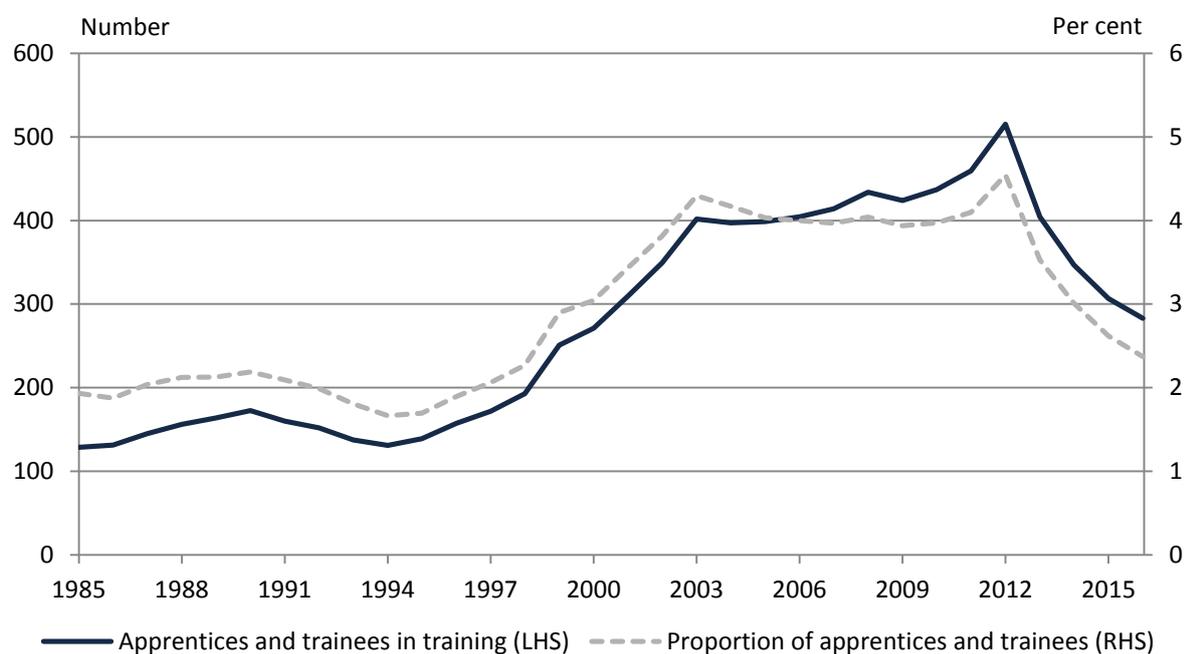
<sup>37</sup> Trade occupations are those in the ANZSCO Technicians and trades workers occupation.

**Figure 3: Commencements by trade/non-trade occupations, June 1995 and June 2016**

Source: NCVER, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

As a proportion of total employment, apprenticeships and traineeships grew between June 1985 and June 2016, accounting for 2.4 per cent of total employment in June 2016 (Figure 4). While this proportion fell between 1985 and 1994, it grew significantly between 1994 and 2003, before stabilising between 2003 and 2012—at 3.9 to 4.5 per cent of employment for most of this period—and falling after 2012.

**Figure 4: Proportion of apprentices and trainees (in-training) as a proportion of total employment, June 1985 and June 2016**



Note: This series was derived from dividing apprentices and trainees in-training at 30 June each year with the number of seasonally adjusted total employed in June from the ABS Labour Force survey.

Source: ABS, *Labour Force, Australia, Dec 2016*, Catalogue No. 6202.0; NCVET, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

## 4 Supply-side factors

Labour supply decisions are shaped by a large range of factors that include financial and non-financial benefits of work, individual characteristics and household characteristics. This chapter discusses a range of factors, some of which overlap, that play a role in an individual's decision to commence or complete an apprenticeship or traineeship. These factors include:

- Personal characteristics;
- Education and training;
- Perceived labour market demand;
- Wages;
- Perceptions, awareness and promotion;
- Intrinsic factors; and
- Experience of working conditions and training.

### 4.1 Personal characteristics

This section discusses a range of personal characteristics (other than educational attainment which is covered in Section 4.2) associated with apprenticeship or traineeship commencement or completion. While there is no attempt to establish that these characteristics directly affect the labour supply decisions of apprentices and trainees, it would appear that certain characteristics are associated with a higher or lower likelihood of an individual commencing or completing an apprenticeship or traineeship.

Section 4.1.1 provides some data on changes over the last two decades in key personal characteristics of apprentices and trainees. Following this is a discussion of findings from the literature on a range of characteristics affecting apprenticeship and traineeship commencements and completions.

This section should be read with an awareness of the interrelated nature of such factors. As Toner suggests, non-completion is multi-factorial and likely to involve strong interaction effects, for example, between age and educational attainment (Toner 2013). Similarly, Stromback and Mahendran (2010:78) state:

In most cases, these observable factors are best seen as proxies for the underlying ultimate determinants. That is, gender, age and level of schooling do not affect the probability of completion directly. Rather, persons of a certain gender, age and level of schooling tend to have some common characteristics, preferences and opportunities that lead them to make similar choices. In the case of student factors, identifying what these common characteristics are can be very difficult as the link between what is observable and the underlying determinants is far from obvious. In the case of other factors, there is a more realistic prospect of doing so.

#### 4.1.1 Change over time in characteristics of apprentice and trainee commencements and completions

Table 2 presents characteristics of those who commenced apprenticeships and traineeships for 1995 and 2015. There is continuity over time in respect of certain characteristics. In 2015, as in 1995, commencing apprentices and trainees were more likely to be male, full-time, and aged 19

years and under. Almost half of apprentice and trainee commencements in were technicians and trade workers. Most apprentices and trainees commenced their training at a Certificate III qualification level and around three-quarters of commencements for apprentices and trainee were in Victoria, New South Wales, and Queensland in both years.

Between 1995 and 2015, the following changes in the characteristics of apprentices and trainees were evident:

- an increase in the proportion of female apprentices and trainees;
- a large increase in those engaged part-time;
- a decrease in the proportion of commencements at the Certificate I/II levels, offset by an increase in higher qualification levels;
- commencements aged 19 years and under fell significantly, offset by increases in all other age groups, particularly 25 to 44 year olds;
- while Technicians and trade workers remain the most common occupation for apprentices and trainees, it experienced a large decline, offset by increases in Community and personal service workers, Machinery operators and drivers, and Sales workers; and
- a decline in the proportion of apprentices and trainees in New South Wales, mainly offset by an increase in Western Australia.

**Table 2: Characteristics of apprentice and trainee commencements, 1995 and 2015**

	<b>1995</b> (%)	<b>2015</b> (%)
<b>Gender</b>		
Male	75.6	64.7
Female	24.4	35.3
Total	100.0	100.0
<b>Qualification level</b>		
Certificate I/II	19.7	6.9
Certificate III	80.0	77.8
Certificate IV	0.3	12.2
Diploma and above	0.0	3.1
Total	100.0	100.0
<b>Full-time/part-time status</b>		
Full-time	97.9	73.0
Part-time	2.1	27.0
Total	100.0	100.0
<b>Occupation</b>		
Managers	1.0	1.6
Professionals	0.2	0.3
Technicians and trades workers	72.3	46.3
Community and personal service workers	3.1	17.9
Clerical and administrative workers	10.9	11.3
Sales workers	3.8	9.4
Machinery operators and drivers	0.4	6.7
Labourers	8.4	6.5
Total	100.0	100.0
<b>Age groups</b>		
19 years and under	76.5	42.0
20 to 24 years	16.5	21.2
25 to 44 years	6.4	28.0
45 years and over	0.5	8.8
Total	100.0	100.0
<b>State or Territory</b>		
New South Wales	33.4	25.4
Victoria	22.8	25.7
Queensland	20.9	22.2
South Australia	6.7	5.8
Western Australia	10.0	14.9
Tasmania	2.9	3.0
Northern Territory	1.3	1.3
Australian Capital Territory	2.0	1.8
Total	100.0	100.0

Source: NCVER, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

Table 3 shows the characteristics of apprentice and trainee commencements by trade and non-trade occupations for 1995 and 2015. In 2015, relative to non-trade occupations, commencements

in trade occupations were more likely to be male, at the Certificate III qualification level, full-time, and aged 19 years and under.

Between 1995 and 2015, there was little change in the composition by gender in trade commencements, while the proportion of females increased (and proportion of males decreased) for non-trade commencements. By qualification level, trade commencements experienced a large increase in the proportion that are at the Certificate IV level, and a small increase for those at the Certificate III level. For non-trade commencements, there was a large decline in the proportion of those at the Certificate I/II level, offset by increases in all other qualification levels. By full-time/part-time status, both trade and non-trade commencements experienced an increase in the proportion of those that are part-time, though this increase was particularly large for non-trade commencements. By age group, there was a large decrease in the proportion of those aged 19 years and under, offset by increases in other age groups, particularly those aged 25 years and over.

**Table 3: Characteristics of apprentice and trainee commencements, 1995 and 2015**

	Trades		Non-Trades	
	1995 (%)	2015 (%)	1995 (%)	2015 (%)
<b>Gender</b>				
Male	85.2	86.8	50.4	45.7
Female	14.8	13.2	49.6	54.3
Total	100.0	100.0	100.0	100.0
<b>Qualification level</b>				
Certificate I/II	5.0	0.3	65.0	12.6
Certificate III	94.8	91.7	34.1	65.8
Certificate IV	0.1	7.7	0.9	16.1
Diploma and above	0.0	0.3	0.0	5.6
Total	100.0	100.0	100.0	100.0
<b>Full-time/part-time status</b>				
Full-time	98.5	90.5	96.0	58.7
Part-time	1.5	9.5	4.0	41.3
Total	100.0	100.0	100.0	100.0
<b>Age groups</b>				
19 years and under	78.3	47.7	72.0	37.1
20 to 24 years	16.2	22.0	17.5	20.4
25 to 44 years	5.3	24.6	9.4	31.0
45 years and over	0.3	5.6	1.1	11.5
Total	100.0	100.0	100.0	100.0

Source: NCVET, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

A more limited range of data are available from the historical NCVET data on apprentices and trainee completions.

Table 4 shows the available characteristics of apprentice and trainee completions by trade and non-trade occupations for 1995 and 2015. Similar to commencements, completions in trade occupations were more likely to be male, and at the Certificate III qualification level relative to non-

trade occupations. Further, the duration of training for completions in trade occupations was more likely to be over two years.

Between 1995 and 2015, the proportion of males increased slightly for completions in trade occupations, while it decreased slightly for non-trade occupations. By qualification level, both trade and non-trade completions experienced a large increase in the proportion that are at the Certificate IV level and above. Non-trade occupations also exhibited a large increase in the proportion that are at the Certificate III level over this period.

By duration of training, for completions in the trade occupations, there was a large increase in the proportion of completions that required between 1 and 3 years of training, offset by a decline in the completions that required over 3 years of training. For completions in the non-trade occupations, there was a large increase in completions that required between 1 and 3 years of training (particularly for those in the 'Over 1 and up to 2 years' category), offset by a decline in the 'Up to 1 year' and 'Over 3 years' categories.

**Table 4: Characteristics of apprentice and trainee completions, 1995 and 2015**

	Trades		Non-Trades	
	1995 (%)	2015 (%)	1995 (%)	2015 (%)
<b>Gender</b>				
Male	83.9	87.6	45.5	43.8
Female	16.1	12.4	54.5	56.2
Total	100.0	100.0	100.0	100.0
<b>Qualification level</b>				
Certificate I/II	5.3	0.3	56.7	10.9
Certificate III	94.5	88.0	43.1	61.7
Certificate IV and above	0.1	11.6	0.2	27.3
Total	100.0	100.0	100.0	100.0
<b>Duration of training</b>				
Up to 1 year	13.1	15.6	79.4	43.8
Over 1 and up to 2 years	8.5	27.5	4.9	46.0
Over 2 and up to 3 years	8.5	17.6	2.1	9.0
Over 3 years	69.9	39.3	13.6	1.3
Total	100.0	100.0	100.0	100.0

Source: NCVET, *Historical time series of apprenticeships and traineeships in Australia, from 1963, 2016*.

#### 4.1.2 Associations found between characteristics and commencements and completions

The literature surveyed showed that some characteristics were associated with an increased or decreased likelihood of commencement or completion of an apprenticeship or traineeship. These findings have been summarised in Table 5.

**Table 5: Findings on the association between characteristics on commencements and completions of apprenticeships**

Characteristic	Findings regarding commencement	Findings regarding completion
<b>Age</b>	<p>Karmel (2006:29) found that certain occupations were dominated by apprentices and trainees of certain age groupings. Males aged under 25 were more likely to be in trades, clerical, sales and service work, while male and female apprentices and trainees over 45 years were more likely to be in intermediate production, transport, clerical, sales and service occupations.</p> <p>Around three-fifths of commencements in 2003 were for existing workers 45 years and over, suggesting that older people are using an apprenticeship or traineeship to obtain further training or credentials at their existing workplaces (Karmel 2006:23).</p>	<p>A number of studies have found age to be factor associated with completion, generally finding that older apprentices and trainees (mid-30s and older) are more likely to complete their training contract (Stromback and Mahendran 2010; Ball and John 2005; Bender 2003).</p>
<b>Gender</b>	<p>Trade apprentices and trainees are more likely to be male, but non-trade apprenticeships and traineeships are more likely to be held by females. This is shown in analysis of Longitudinal Survey of Australian Youth (LSAY) data (Ainley et al. 2010) and in Tables 2 and 3 of this report.</p> <p>From 1997 to 2003, commencements for males under 25 increased by 50 per cent, and by 77 per cent for young women under 25 years. Commencements for males and female aged between 25–44 years increased by a similar proportion, while commencement rates for males aged 45 and over increased by over 150 per cent and 134 per cent for females (Karmel 2006:30, Table 21).</p> <p>Karmel (2006) also found that young men aged under 25 dominated the traditional occupation groups of construction, automotive and electrical</p>	<p>Aggregate apprenticeship and traineeship completion rates were found to be similar for males and females (Bender 2003; Ball and John 2005), however Stromback and Mahendran (2010:68) separately analysed apprentices and trainees, and found male trainees were less likely to complete than female trainees by around four percentage points.</p> <p>Persistence (the proportion of those who commence and either complete their course or remain enrolled) found to be lower for female apprentices compared with males—60 per cent compared with 87 per cent (Curtis 2008:23).</p>

	and electronics trades; while older men (25 years and above) dominated the occupation groups of road and rail transport drivers, and other intermediate production and transport workers (Karmel 2006).	
<b>Indigenous status and language background</b>	<p>Higher commencement rates of apprenticeships and traineeships among young Indigenous persons in 2014 compared with non-Indigenous persons (Skujins and Lim 2015).</p> <p>Indigenous young people were two and a half times more likely than non-Indigenous young people to commence a traineeship (Curtis 2008:20).</p> <p>Those from an English-speaking background were more than twice as likely to have entered an apprenticeship than those from non-English speaking background (Ainley et al. 2010:1).</p>	<p>Indigenous status was found to have a negative effect on completion rates for apprentices and trainees (Stromback and Mahendran 2010; Ball and John 2005). However given low numbers of Indigenous participants Bender (2003) notes large statistical errors are possible. Further, higher rates of persistence in both apprenticeships and traineeships among Indigenous young people (92 and 100 per cent, respectively) than their non-Indigenous counterparts (both 82 per cent) (Curtis 2008:23–24).</p> <p>Being born overseas was found to have a moderately large negative effect on the probability of an apprentice completing but only a small effect for trainees. Those who speak languages other than English at home have a lower probability of completing an apprenticeship and a traineeship (Stromback and Mahendran 2010).</p>
<b>Disability</b>	—	<p>Estimated qualification completion rates for apprentice and trainees who reported a disability ranged between 47–52 per cent, while those who reported they did not have disability (or did not state) had rates of 55–61 per cent over this time (Ball and John 2005:23). Again, in relation to apprentices and trainees with disability, Bender (2003) notes that low observations mean that large statistical errors are possible.</p>
<b>Academic ability</b>	<p>Lower academic ability (below average reading and mathematics achievement measured at Year 9 among 1995 LSAY cohort) was associated with an increased likelihood of commencing an apprenticeship or traineeship (Ainley et al. 2010). Subsequent analysis of</p>	—

	<p>1995 and 2006 LSAY cohorts found that young men are more likely to undertake an apprenticeship if they have lower academic ability, and this group contributed to the growth in apprenticeships and traineeship participation (Karmel et al. 2014).</p> <p>A similar effect was found for those with lower self-reported academic ability and lower self-estimated tertiary entrance rankings (Misko et al. 2007).</p>	
<b>Socio-economic background</b>	<p>Lower socioeconomic status (SES)—measured by parental occupation and education— associated with higher likelihood of undertaking, or an intention to pursue, an apprenticeship or traineeship among those with parents (Karmel et al. 2014; Misko et al. 2007). Students from government schools were more likely than those from non-government schools to undertake apprenticeships (Lamb et al. 2004).</p>	<p>Persistence was lower for young people from low socio-economic status families, and lower for those whose parents have higher education qualifications (Curtis 2008).</p>
<b>Geographic location</b>	<p>Those from a non-metropolitan background were more likely to commence an apprenticeship or traineeship (Ainley et al. 2010).</p>	<p>Apprentices and trainees in rural areas were more likely to complete their contract than those in capital cities or remote locations (Ball and John 2005; Snell and Hart 2008). Apprentices living in a location with a higher concentration of trades workers had a five percentage point higher likelihood of completion in the highest quartile compared with the lowest (Karmel and Roberts 2012:13).</p> <p>Curtis (2008) found lower persistence in traineeships among regionally based young people.</p>
<b>Full-time/part-time status</b>	—	<p>Full-time apprentices have a much larger probability of completing (Stromback and Mahendran 2010; Bender 2003). However lower completion rates for part-time apprentices and trainees may be attributable to differences in characteristics such as education levels (Ball</p>

		and John 2005).
<b>Qualification level</b>	—	Level of qualification was found to be one of the most important influences on completion rates (Ball and John 2005; Bender 2003) with those undertaking higher qualification levels (Certificate III or IV) almost twice as likely to complete (Ball and John 2005:25).
<b>Pre-apprenticeship course completion</b>	An 'articulation rate' from pre-apprenticeship courses into apprenticeships was reported by course providers to be on average 70 to 80 per cent (Toner and Lloyd 2012).	<p>Pre-apprenticeship completions were found to have a positive effect on apprenticeship completions (Stromback and Mahendran 2010; Toner and Woolley 2007). For example, Victorian apprentices who had completed one had around a 15 per cent higher probability of completing an apprenticeship (Stromback and Mahendran 2010:67–68). However, the effect was found to be positive for apprentices in some occupations (such as construction and food) and a negative impact for others (hairdressing and automotive and engineering) (Karmel and Oliver 2011)</p> <p>A positive impact for traineeship completions of undertaking a pre-vocational course was found for some groups, including early school leavers (especially those leaving school after Year 11) and trainees in lower-skilled occupational categories (such as sales workers and labourers), while a negative impact on completion rates was found for other trainees such as those in higher-skilled occupational categories (such as managers and professionals) (Karmel and Oliver 2011).</p>
<b>Personal issues and resources</b>	—	Experiencing personal and health issues, as well as not having access to resources to cope with unexpected events, have been found to be associated with apprenticeship and traineeship non-completion (Ainley and Corrigan 2005; Bednarz 2014). Access to informal support was an important facilitator of completions (Dickie et al. 2011; Harris et al. 2001))

## 4.2 Education and training

This section discusses research findings relating to associations between education and training and commencements and completions of apprenticeships and traineeships. It is divided into three parts:

- recent trends in educational attainment;
- educational attainment and commencements; and
- educational attainment and completions.

### 4.2.1 Recent trends in educational attainment

The pathways favoured by young Australians transitioning from compulsory schooling into working life have changed significantly over recent years (Rowe et al. 2014). The apparent retention rate for Australian students from Year 7/8 to Year 12 was 84 per cent in 2015, compared with 72 in 1995 (ABS 2015b).<sup>38</sup> To further illustrate the change over a short number of years, for example, the rate of young Victorians who had obtained a post-school qualification by age 23 increased from 56 per cent in the 1995 LSAY cohort to 73 per cent in the 2003 cohort; the rate of Year 12 completion for regional students increased from 73 per cent to 94 per cent in this same period (Victoria State Government 2016a:v). Government policy changes, including raising the school leaving age to 17 have contributed to the nationwide increase in the number of students completing Year 12 (for example, see NSW Government 2009).

Around 40 per cent of secondary students go directly on to university (Education Council 2014:2). The uncapping of university undergraduate places has enabled an increase in the number of people studying at university who otherwise may have undertaken apprenticeships (Karmel et al. 2014). Indeed, obtaining a university degree is increasingly viewed as a prerequisite for entering the labour market (Victoria State Government 2016a). The increased rates of Year 12 completion and university study are in line with global trends (Victoria State Government 2016a) and are relevant to apprenticeship commencements in light of research that surmised the 'prototypical' apprentice was an early school leaver (Curtis 2008).

Within the VET sector, there has also been a major expansion of alternative training and study pathways. Whereas VET has been traditionally associated primarily with trade apprenticeships, these now account for only 10 per cent of total VET activity (CEDA 2016:19). VET is now being utilised in diverse ways with some students seeking only to obtain a subset of training competencies from a larger course, while others plan to transition from higher level VET qualifications into university (Cupitt et al. 2015). For school completers, diploma and higher level qualifications (few of which are related to apprenticeships and traineeships) are the most common VET pathways (Curtis 2008). Additionally, the increasing use of online courses has the potential to impact the study preferences of regional and rural students who constitute a disproportionately large share of apprentices and trainees (Australian Government 2016b).

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<sup>38</sup> The apparent retention rate is calculated by dividing the number of students in a cohort in a specific calendar year by the number of students in the same cohort in a previous reference year. These numbers are referred to as 'apparent' as they may differ from actual rates due to many reasons, such as students progressing at a faster or slower than expected rate, migration, and students changing between full-time or part-time study.

In terms of trade-based apprenticeships and traineeships, the traditional four year, Certificate III, delivery model is losing dominance over time, with shorter training durations increasing in prominence (NCVER 2016d). In 1995, the duration for more than half (53.2 per cent) of apprenticeships and traineeships was over 3 years, while in 2016, this proportion declined to around one-fifth (19.7 per cent) of apprenticeships and traineeships (NCVER 2016d). This shift may relate in part to the change from time-based to competency-based assessment. Aimed to expedite skilled worker supply, this may increase the attractiveness of apprenticeships to prospective apprentices (Australian Government 2012).

#### **4.2.2 Educational attainment and commencement rates**

As current trends show in 4.2.1, a majority of apprentices and trainees have completed Year 12 or equivalent. This figure was around 60 per cent in May 2015 (ABS 2015a) and was approximately the same proportion among the LSAY 1995 cohort. However, those who leave school before Year 12 are more likely to commence an apprenticeship or traineeship—41 per cent compared with 17 per cent who did not in the LSAY 1995 cohort (Ainley et al.2010:1). Similarly Misko et al. (2007) found the incidence of deciding to pursue an apprenticeship was higher among those that had not completed Year 12. Completing Year 12 with a VET subject increases the probability of apprenticeship participation, and students from schools with high enrolment in technology subjects in the senior secondary years have an increased likelihood of participating in an apprenticeship (Ainley et al. 2010).

Exploring the impact of increasing university participation on the pool of male trade apprentices, Karmel et al. (2014:8) compared data from males in the 1995 and 2006 LSAY cohorts. The researchers found that over this 11-year period the probability of undertaking both trade apprenticeships and university study increased. However, they also determined that the probability of going to university clearly had a negative association regarding the probability of undertaking an apprenticeship (Karmel et al. 2014).

The growth in higher education participation is largely attributed to individuals with middle to high SES backgrounds. Karmel et al. (2014:35) noted that ‘an expansion in the university sector had a negative effect on equity, with the distribution of apprentices shifting toward low-socio-economic status individuals.’ Karmel noted that there was also an increased share of apprentices with below average mathematics and reading achievement levels. These findings have implications for completion rates given the minimum literacy, numeracy and social skills required to successfully enter and complete even the least technically oriented trades (Toner and Lloyd 2012).

#### **4.2.3 Educational attainment and completion rates**

Educational attainment also has an effect on completion rates for apprenticeships and traineeships. Higher completion rates for apprentice and trainees who commenced between 1995 and 1999 corresponded directly with each additional year of secondary education completed (Ball and John 2005:23). Ball and John (2005:6) found the highest level of school completed was one of the most important influences on completion rates: 54 per cent for those who finished Year 12 compared with 47 per cent for those who only completed Year 9.

Similarly, Stromback and Mahendran (2010:73) found level of schooling had a large effect on the probability of an apprentice completing their apprenticeship, but a much smaller effect for trainees. For example trainees who completed Year 12 were associated with a 3.6 percentage point higher

probability of completing their traineeships than those who had completed Year 11 but for apprentices this figure was 9.3 percentage points.

A number of other studies have also shown that education is an important determinant on the likelihood of completion (Ainley et al. 2010; Cully and Curtain 2001b). Further, Bessey and Backes-Gellner (2007:16) found that:

Apprentices with a higher level of schooling are significantly more likely to stay within the educational system, either as apprentices in another firm or as full-time students again. This could be due to lower costs of learning, but also to a higher level of awareness for the future consequences of dropping out.

In contrast, Curtis' (2008) analysis of persistence among apprentices and trainees found that Year 12 completion had no effect on persistence in apprenticeships and only a small, positive influence on persistence in traineeships.

### **4.3 Perceived labour market factors**

Labour market conditions, as perceived by individuals, may encourage or discourage people to commence or complete an apprenticeship. Toner (2013:14) noted that strong economic conditions, where there are 'skill shortages, rising tradesperson wages, rising apprentice vacancies and ... awareness of rising labour demand resulting from demographic change' have 'stimulated young people to become apprentices.'

Other research focused on the perceived labour market factors that motivated and discouraged people from undertaking an apprenticeship. Misko et al. (2007) found that among perceived labour market factors, job security and future pay and conditions were the perceived factors that motivated people to undertake an apprenticeship.

Similarly, Misko et al. (2001) analysed the benefits of traineeships by surveying trainees, RTO mentors, and employers. From the perspective of trainees, Misko et al. (2001) found that the most frequent perceived advantage of doing a traineeship was the opportunity to gain qualifications, followed by the opportunity of gaining employment in the short term as well as the long term. Other perceived advantages that were noted were improving the understanding of the industry and occupation, and work experience. From the perspective of employers, the most commonly identified advantage for trainees were increasing their skills, followed by the opportunity to gain employment and industry-specific skills (Misko 2001:163). RTO mentors most commonly reported the increased opportunity for a full-time job or future work for trainees, followed by personal and occupational skill development, as the key advantages of a traineeship.

From these survey results, Misko et. al. (2001:175) further noted that two-thirds of trainees who were not previously employed with the current employer were offered jobs once the traineeship was completed, concluding that this demonstrated that traineeships provided an effective entry to employment. However, Misko et. al. noted that traineeships do not always correlate to success in obtaining employment, as for others it is a mechanism to further develop their skills:

... the traineeships are not always successful in this way for all trainees. It is for these trainees that further opportunities for involvement in the world of work through extended structured training will need to be explored. (2001:175)

While strong economic and labour conditions may encourage people to commence apprenticeships, some research suggests that it has the opposite effect on the retention of

apprentices. Toner (2013:11–12) cited research from Kapuscinski (2001), who noted that between the 1960s and the late 1990s, strong economic growth and labour market conditions coincided with increases in apprentices cancelling their apprenticeships, while in recessions, apprentices become more risk averse and were less likely to quit their apprenticeship:

... strong economic growth and rising employment vacancies are a signal to apprentices of 'higher paying jobs in the labour market [and this] results in an increase of [voluntary apprentice] cancellations relative to completions'. Apprentices who are displeased with their apprenticeship are more prepared to voice this displeasure by exiting for a non-trade related job. Conversely, in recessions apprentices become more risk averse as alternative job openings diminish and unemployment rises and are less likely to quit.

Similarly, Karmel and Misko (2009) cited research from Ball and John (2005) and Karmel and Virk (2006) to note that completion rates decreased when the labour market improved, and argued that this is due to apprentices having other opportunities. Karmel and Misko (2009) also argued that they would expect the opposite result when opportunities decline.

In a report prepared by the Huntly Consulting Group (the Huntly report) (2008:27) for the then Department of Education, Employment and Workplace Relations (DEEWR), the majority of surveyed apprentices, tradespersons and ex-tradespersons expressed the view that unless apprentice wages increased substantially, retaining apprentices until they completed their qualifications would be difficult during periods of strong economic growth and labour shortages.

A report by Deloitte Access Economics (2012) commissioned by the NSW Board of Vocational Education and Training found that in periods of sharp trade skill shortages, some apprentices were tempted to quit their training for higher wages working as non-qualified tradespersons in booming industries (Deloitte Access Economics 2012:59–60). The study found that over 80 per cent of NSNL apprentices who began their training in 2002 had completed or were still in training two years later, but only 70 per cent of NSNL apprentices who began in 2009 have since completed or remain in training, suggesting that 'skill shortages are driving non-completions of apprenticeships.' Toner (2013:12) cited this report and interpreted these findings to indicate that the 'opportunity cost of remaining in the apprenticeship is assessed by many apprentices to be too high'.

In addition, Trendle (2007) analysed completion rates for apprentices in traditional trade occupations in Queensland to assess the factors that drive the retention and cancellation of apprenticeships. He found that changes in labour market performance were associated with the rate of cancellations, though only for younger people (20 to 24 year age group). For this group, he found that a one per cent increase in employment growth was associated with a 0.96 per cent increase in the rate of cancellation. Trendle (2007:13) argued that labour market performance did not affect the older age groups as they are more aware of the costs and benefits of the apprenticeship:

The explanation seems to be that persons in this older age cohort are more cognisant of the relative costs and benefits of undertaking training. These costs and benefits change as economic conditions change. In particular, improvements in the health of the labour market impose additional costs on persons in training contracts. These people are in relatively low paid jobs and as the economic conditions improve, the possibility of receiving employment in higher paid jobs increases ... the indirect costs of training increase, making the relative benefits of the training lower.

Harris et al. (2001) documented a wide range of factors associated with apprentice and trainee completion rates. In regard to perceived labour market factors, they noted that the perceived value of the qualification was a factor in the retention of apprentices and trainees. Another factor was the perception that there were limited alternatives that offered better rewards to those without qualifications. Dickie et al. (2011:42) found that among employers with the highest retention rates of apprentices (where on average, less than one out of 12 apprentices did not complete), these employers noted that ‘their industry values formal qualifications and that young people can’t go far without them’.

In particular, Harris et al. (2001:4–5) noted that long-term ‘pay offs’ are a factor in the retention of apprentices and trainees, as it provides an incentive to persist with the negative aspects of being an apprentice/trainee:

The factors that influence of process of retention are also inter-related and cumulative. Many apprentices and trainees spoke of having to bear one or two negative aspects (poor wages, difficulties with study) over the period of their contract of training. These circumstances could be coped with, provided there was support and the promise of improvements and rewards in the not-too-distant future. But there were circumstances where added negatives and the deterioration of the long-term ‘pay offs’ (for example, a decline in demand in the labour market for a particular occupation) no longer seemed to make it worth persisting the current situation.

## **4.4 Wages**

Although Karmel and Mlotkowski (2010b) note that a range of factors associated with a person’s decision to commence or complete an apprenticeship or traineeship, many studies indicated that wages are a key factor. In the context of discussing findings from this literature, it must be acknowledged that human capital investment is a feature of the model of apprenticeships (derived from the medieval guild models of training for a trade) and traineeships (created to curb youth unemployment) (Knight 2011). This investment in human capital is made by both the employer, and the employee who devotes time and training to acquire the relevant trade or workplace skills while forgoing other opportunities (Karmel 2005).

This section explores the effect of wages on the supply of apprenticeships and traineeships, focusing on:

- Apprentice and trainee satisfaction with wages;
- Potential wages in alternative employment and opportunity costs;
- The impact of economic growth and downturn on apprentice and trainee wages; and
- The wage premium upon completion.

Most of the research discussed in this section was conducted prior to 2013.

### **4.4.1 Apprentice and trainee satisfaction with wages**

Reports and studies found that a common reason for the non-commencement of apprenticeships was low wages. In Misko et al.’s study (2007), surveyed students from Years 10–12 cited perceived financial disadvantage, in addition to working conditions, as the main reasons for deciding not to pursue an apprenticeship. Similarly, the sampled apprentices in the Huntly report (2008) cited low wages as the single biggest disincentive to taking up or completing an apprenticeship.

Low wages can lead to, or exacerbate, difficulties in completing the apprenticeship or traineeship. Misko et al. (2007) reported that apprentices had difficulty meeting their needs and financial commitments on their apprentice wages, and the higher comparative wages of their peers in other types of work caused dissatisfaction with their pay. A study by Karmel and Mlotkowski (2011) cited low pay as the most significant source of apprentice dissatisfaction, while 54 per cent of surveyed apprentices in Cully and Curtain's study (2011b) cited 'being treated as cheap labour' as the most important factor for their non-completion. Snell and Hart (2008) looking into the reasons for non-completion of regional apprenticeships and traineeships, also revealed similar research findings. Apprentices surveyed by Snell and Hart (2008) reported having to supplement their income with additional part-time work to make ends meet, particularly for those working in the construction and hospitality trades.

Conversely, Snell and Hart (2008:62) found high levels of satisfaction among apprentices and trainees who had received a higher than average training wage, noting that:

Apprentices working for larger companies with union representation and collective agreements rarely complained about their pay or conditions, they widely recognised that they were in a privileged position compared to many other apprentices and had little or no intention of leaving training.

#### **4.4.2 Potential wages in alternative employment and opportunity costs**

Apprentices and trainees must weigh up the opportunity costs—the potential wages that could be earned in alternative employment—with the implicit value of future higher wages upon completing their training contract. These considerations are affected by factors such as the occupation, industry and duration of the apprenticeship or traineeship, the existence of alternative employment opportunities and the economic performance of the industries and trades in which the traineeship or apprenticeship is undertaken (Karmel and Liu 2011). However, compared to full-time study through which no income is earned, an apprenticeship may be an attractive option. For example, at the age of 25, males who have undertaken apprenticeships report higher earnings and greater job satisfaction than their university peers (Karmel and Liu 2011).

As the duration of an apprenticeship is typically longer than that of a traineeship—Deloitte Access Economics (2012:23) found that the average apprenticeship duration was 49 months while for trainees it was 13 months—the opportunity costs for apprentices (and likely impact on completion rates) may be greater for apprentices than trainees. The Final Report of the Expert Panel for Apprenticeships for the 21<sup>st</sup> Century (McDowell et al. 2011:88) found that the level of apprentice pay:

... extends the period of dependence for young people on parents and family, at a time when many of their peers are entering the unskilled workforce and earning considerably more on junior wages. This had led to apprenticeships being perceived as an unattractive proposition for many young people leaving school and seeking employment.

Surveyed apprentices, tradespeople and ex-tradespeople in the Huntly report (2008) almost unanimously agreed that apprentice wages were less competitive in comparison to the wages offered in many semi-skilled and unskilled occupations.

To provide a sense of the quantum of the opportunity cost, Karmel and Mlotkowski (2010b:26) found that expected wages in alternative trades employment<sup>39</sup> exceeded those in training by an average of \$12 408 per annum, while in non-trades sector it was \$6010 for males and \$3584 for females. Using data from the NCVET Survey of Apprentice and Trainee Destinations 2009, Karmel and Rice (2011:16–17) reported that the sampled participants in the trades<sup>40</sup> were foregoing annual earnings of \$10 000–\$15 000, with some individuals foregoing up to \$25 000. In non-trade occupations<sup>41</sup> foregone earnings were between \$5000 to \$10 000, with males on average foregoing slightly higher amounts than females (Karmel and Rice 2011:16–17). Toner (2013:31) estimated that foregone income for apprentices over the course of their training averaged \$39 706 in 2008 dollars.

Toner (2013) noted that the highest opportunity costs were incurred in the first two years of an apprenticeship when wages are lower compared with latter years, or to alternative employment. However, Karmel and Mlotkowski (2010:22) found that by the third year of an apprenticeship, an apprentice could earn 49.2 per cent more than the apprentice who ceased their apprenticeship and gained alternative employment.

Toner (2013), using data from Karmel and Mlotkowski (2010b), calculated the average cumulative opportunity costs from undertaking an apprenticeship and payback period (i.e. the amount of time required to recover the opportunity costs), finding a wide divergence between occupations. The shortest payback period was for apprentices working in the electro-technology and telecommunication trades (1.5 years) while the longest were for those working as hairdressers (56.4 years) (Toner 2013:31, Table 10).

A decline in wages in alternative employment may lead to apprenticeships and traineeships being seen as a more economically stable work option. In periods of economic downturn, Karmel and Mlotkowski (2011:32–33) found that trade apprentices became more 'risk-averse and stay in their apprenticeship.' The authors noted that the group most affected by economic downturns were trade apprentices. On average, a trade apprentice could have expected a wage in alternative employment of \$29 819 per annum in 2010, compared with \$35 907 in 2008 (in 2010 dollars). This is a decrease of 17.0 per cent. Over this same period, the average wage in alternative employment for non-trade males declined by 7.5 per cent and for females, 4.0 per cent (Karmel and Mlotkowski 2011:19).<sup>42</sup>

#### **4.4.3 The wage premium upon completion**

Nechvoglod et al. (2009) suggested that opportunity costs experienced by apprentices must be balanced against the future premium that a qualified tradesperson receives relative to an unskilled

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<sup>39</sup> Karmel and Mlotkowski (2010b:16) used NCVET Apprentice and Trainee Destination Survey 2008 data to estimate wages in alternative employment based on wage data provided by those who drop out from their apprenticeship or traineeship (and compared this with wages reported by apprentices and trainees in the survey).

<sup>40</sup> Occupations categorised as trades in this report include: engineering, ICT and science technicians, automotive, engineering, construction trade workers, electro-technology and telecommunications trades workers, food trades workers and hairdressers (Karmel and Rice 2011:17).

<sup>41</sup> Non-trades occupations in this report include: managers and professionals, community and personal service workers, clerical and administrative workers, sales workers and machinery operators and drivers, and labourers (Karmel and Rice 2011:17).

<sup>42</sup> A figure for the average wage in alternative employment for non-trades was not available.

worker (the wage premium). Karmel and Mlotkowski (2010b; 2011) note that for trade apprentices, it is the premium attached to becoming a tradesperson—and not the training wage—that is a significant factor to completing their training. However, they note that the training wage matters more for non-trades apprentices and trainees in their decisions to complete training.

The literature indicates that wage premiums vary extensively between industries and occupations, and tend to be higher for apprenticeships than traineeships.

Karmel and Rice's analysis (2011:17) of Karmel and Mlotkowski's (2010b) modelling of NCVER Survey of Apprentice and Trainee Destinations data found that 90 per cent of those who had completed a trade apprenticeship or traineeship reported a positive financial benefit from completing their training, with wage premiums of up to \$30 000 per annum. However, for the non-trades, only 50 per cent of males and two-thirds of females indicated a positive financial benefit, and where there was a positive benefit, it was generally lower than for the trades.

The survey results even showed a negative premium, or absence of a premium, attached to completing some non-trade apprenticeships or traineeships, particularly in sales (–\$5000 for male workers, –\$4400 for female workers), male community and personal service workers (–\$830) and female labourers (–\$12 700). Karmel and Mlotkowski (2010b) suggested that the negative wage premiums associated with some traineeships are a result of minimal skills acquisition, or that the skills acquired are not valued by the labour market over the general work experience obtained during the traineeship (see also Oliver et al. 2011; Karmel and Rice 2011). For trainees, wages in alternative employment exceeded expected wages on completion for nearly half of all non-trade males (Karmel and Mlotkowski 2010b:29). However, the researchers suggested that this partially reflected the original intention of the traineeship program, which was to assist disadvantaged youth to gain employment (2010b).

Curtain and Cully (2001a:212–13) suggest there may be implications of these negative wage premiums on traineeship completion. They noted the significant difference between non-completion of apprenticeships and traineeships and found that three in four former trainees ceased further education and training, citing paid employment as the paramount consideration. Toner found a large variation in the wage premiums received by trades apprentices. Toner (2013) noted that for the trades occupations, training was a good investment because there was a substantial increase in an apprentice's trade wage nine months after completing their apprenticeship, compared with the wage in alternative employment. For example, Toner (2013:31) reported that apprentices in the electro-technology trades earned a premium of over \$23 232 after completion of their apprenticeships, compared with a premium of \$632 for hairdressers.

Lu (2015:28) also found variation in VET graduate incomes after obtaining a qualification in the trades (a majority of whom were undertaking their training as part of an apprenticeship or traineeship). The author analysed data from the 2013 NCVER Student Outcomes Survey and found that on average, graduates from the electro-technology and telecommunications were predicted to earn the highest annual graduate incomes (\$56 436), followed by graduates in the automotive and engineering trades (\$51 045). The report also found that the areas of training resulting in the lowest income returns to graduates were the food trades (\$38 613).

Nechvoglod et al. (2009:9) found that while an apprenticeship was an attractive investment for a young person, it may be less so for older people, particularly in occupations where the skill premium was relatively small. However, Karmel and Mlotkowski (2010b:25) found the wage

premium to be higher for older workers upon the completion of their apprenticeships than for younger workers. They found, for example, a person who was 25 years old upon the commencement of their apprenticeship earned on average 76 per cent more than a person who started at age 16, and a person who commenced at age 30 earned 141 per cent more.

## **4.5 Perceptions, awareness and promotion**

This section examines how apprentice and trainee commencements (and sometimes completions) may be affected by the role and perceptions of a range of people and organisations including other young people, peers and families, schools governments and RTOs.

### **4.5.1 Perceptions of apprenticeships or traineeships among young people**

Perceptions regarding the status of an apprenticeship or traineeship or what it might entail—whether accurate or not—can influence the decision to commence one.

Qualitative research in recent studies suggest pre-existing notions among young people regarding the ‘dirty’ and old-fashioned nature of the work involved in apprenticeships and traineeships (Misko et al. 2007; Alloway et al. 2004; Gemici et al. 2014). The school students in Misko et al.’s (2007:20) study had strong perceptions of poor working conditions associated with apprenticeships—specifically concerns about ‘poor pay, harassment, dirty jobs and unsuitable hours.’

Alloway et al. (2004) found most school students they surveyed knew very little about apprenticeships and traineeships, and Alloway et al. noted that traditional trades were perceived to be ‘uninformed by new knowledge or technologies’ and that VET had an ‘image problem’. Another survey of students found a majority held the perception that VET more broadly was an option best suited to less academically capable students (Dalley-Trim et al. 2008).

Gemici et al. (2014) also found that trades are generally considered to be low status occupations by young people, and in particular are not something to which female students aspire. The preference for university study over an apprenticeship has been specifically linked to the low status of trade occupations. Snowden and Lewis (2015) suggest that this perception has been reinforced by media messages concerning tertiary education.

However the NCVET Apprentice and Trainee Destination Survey showed that the work itself was a key motivation for many who commence an apprenticeship or traineeship. Employment related reasons (e.g. wanted to work that type of job) was the most common category of responses provided by both trade and non-trade apprentice and trainee completers as the reason for starting their contract (66 per cent in 2010) (NCVER 2010). Further, Dickie et al. (2011:10) suggest ‘the image of trades’ is not a barrier for those who have a strong interest: ‘Young people who are committed to doing an apprenticeship really want to be in the trade and for over 50% of them in this study – those most likely to complete their apprenticeship – it is their first and only choice.’

Some occupations in society are generally acknowledged as being of higher-status than others. The Australian Socioeconomic Index 2006 (AUSEI06) provides a continuous measure of occupational status ranging from 0 (lowest status) to 100 (highest status) (McMillan et al. 2009). At the two digit ANZSCO level, the highest occupational rankings are Health professionals (85.1), Education professionals (84.9) and Legal and related professionals (84.4). Conversely, the most common occupations in terms of apprenticeship and traineeship commencements (see Part II of this report, Table 6) have rankings in the lower half of the scale:

- Sales workers, sales assistants and salespersons, sales support workers (34.8, 30.8 and 32.0 respectively);
- Automotive and engineering trades workers (30.4);
- Construction trades workers (36.4);
- General clerical workers (41.9); and
- Hospitality workers (34.7).

The lower status of occupations associated with apprenticeships and traineeships is likely to affect perceptions and undermine promotional efforts regarding apprenticeships and traineeships.

#### **4.5.2 The role of peers and family**

Dickie et al. (2011) and Toner (2005) show that some attitudes and aspects of apprentices' backgrounds impact on their expectations on entry and their intention or likelihood of completion. Apprentices with family or friends in trades appear to have awareness of apprenticeship and traineeship conditions and pay and an understanding of the 'pay off' at the end of the apprenticeship, and this has a positive effect on commencement and completion rates (Dickie et al. 2011). Dickie et al. (2011) noted that a strong family or neighbourhood tradition of working in trades gave young people a high degree of familiarity with trades and tradespeople, an interest in the work and a kind of 'rusted on' career path, particularly in rural or regional areas.

Toner (2005) also found that exposure to trades work could prompt apprenticeship commencements, for example, one surveyed apprentice deciding to do an apprenticeship after observing the work of his electrician friend. Karmel and Roberts (2012) noted higher completion rates among apprentices living in areas with the highest concentration of trade workers compared to apprentices living in areas with the lowest rate of trade workers.

Many young people are discouraged from apprenticeships often by parents who associate undertaking an apprenticeship with low status, poor earnings and uncomfortable working conditions (CEDA 2016; Dickie et al. 2011). The NSW Business Chamber describes recruitment in school-based apprenticeships as sometimes inhibited by parents who think apprenticeships and traineeships are suitable only for students having difficulties at school and perceive the associated qualifications as having 'less value' than those attainable through higher education (McDowell et al. 2011). Gemici et al. (2014) suggest that students who reported that their peers have 'higher' post-school aspirations, and/or who perceived that their parents wanted them to undertake further study, were found to be particularly unlikely to aspire towards undertaking an apprenticeship.

#### **4.5.3 The role of schools**

A report by the Committee for Economic Development of Australia (CEDA 2016:40) found that many young people are discouraged from pursuing apprenticeships and traineeships in the school environment.

Some studies suggest career advisors and teachers promote apprenticeships and traineeships as a career option only for low achieving students. For example Misko et al. (2007) noted that a lack of encouragement from teachers and counsellors can act as a potential barrier to greater interest in apprenticeships among school students. Categorising students by their perceived ability levels, Misko et al. (2007:31, Table 8) found that teachers were more likely to suggest to students that

were 'performing not so well or not so well at all' to undertake apprenticeships compared with students that were 'performing at a very high level.' The authors suggest a lack of information on apprenticeships is a key barrier, as '[a]pprentices and students both cited the lack of promotion of apprenticeships and information about apprenticeships as additional disincentives' (Misko et al. 2007:21).

Alloway et al. (2004) found that career advisers and school principals reported difficulties in finding opportunities for training in traditional trades (compared with retail traineeships for example, which were relatively easy to access).

#### **4.5.4 The role of governments, RTOs and other organisations**

State, territory, and federal governments each play a role in increasing awareness of apprenticeships and traineeships and promoting them as an employment pathway. For example, the Australian Apprenticeships Ambassadors program (Australian Government 2012) and the Apprentice Network actively promote apprenticeships and traineeships through career advice, promotional materials, and awareness raising events.<sup>43</sup>

GTOs and RTOs (including TAFEs) are also invested in awareness raising and promotional activities. GTOs are eligible to receive a range of government subsidies and incentives, to both prospective apprentices and trainees and to employers (National Apprenticeship Employment Network 2016). Group Training Australia (GTA) emphasises the importance of links between apprentice employers and schools, contending that their 'Try-a-Trade' and 'Work Inspiration' programs have a strong track record of contributing to school students' consideration of trade apprenticeships as a career pathway (GTA 2015).

RTOs and especially TAFEs (the main provider of off-the-job training for apprentices and trainees) are subject to the User Choice funding system and as such, promote directly to employers. Many RTOs also offer pre-apprenticeship courses directly to prospective apprentices and trainees (CEDA 2016; CEDA 2014).

There is collaboration between these groups, as well as industry bodies, especially in terms of directing prospective apprentices and trainees and employers to appropriate promotional information and resources, for example the Australian Apprenticeships Pathways website and mobile application.

Streamlining of roles for different stakeholders was an element of the Australian Government's response to the 2011 review of the Australian Apprenticeships system (Australian Government 2012), however there is still a fair amount of information duplication and fragmentation across different sources (Australian Government 2013). The recent Recommendation Report from the Australian Government Apprenticeships Reform Advisory Group (Laundy et al. 2016) suggested the Australian Government should work closely with industry and other key stakeholders, including state and territory governments, service and training providers, schools and careers advisors, to raise the profile and status of apprenticeships.

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<sup>43</sup> Under contract from DET, this initiative is being delivered by the Apprentice Support Network which is an organisation owned and operated by the NSW Business Chamber, Business SA, the Chamber of Commerce and Industry of Western Australia, and the Victorian Employers' Chamber of Commerce and Industry.

However, the challenges of effectively promoting apprenticeships are seen in Fleming and Grace (2014). The authors examined the effect of the Aspire UC Schools Outreach Program, a University of Canberra initiative funded by the Australian Government's Higher Education Participation and Partnerships Program. This program promoted a number of post-school options, including apprenticeships, for regional and rural students in years 7 to 10. The researchers found that, following the program, students were significantly more likely to report post-school plans to attend university, TAFE, and/or work full time, but there was no significant increase in the number of students planning to undertake an apprenticeship.

#### **4.6 Intrinsic factors**

While studies have indicated that employees are motivated by 'extrinsic' factors related to their job such as pay and advancement, 'intrinsic' factors, such as personal interest in the work and control over work, also play a role (Gow et al. 2008). The literature indicates that intrinsic motivations can be an influencing factor on the commencement and completion of apprenticeships and traineeships. Gow et al. define intrinsic motivations as 'motivat[ion] to do things because of an inherent drive.'

Fredman (2014:97) analysed data from the 2009 ABS Survey of Education and Training, and found that while labour-market-related reasons for undertaking VET were predominant, one-fifth of the surveyed VET graduates nominated personal interest and enjoyment, and the improvement of their general education skills, as reasons for undertaking their study and training. Fredman (2014:103) found that intrinsic motivations for VET students included 'interest, systematising knowledge, creative production, identity with a field of practice and a general transformation of life.'

It is likely that intrinsic motivations depend on the occupational identity attached to the apprenticeship or traineeship. The literature suggests that a sense of vocation and identity attached to their occupation appears to be strongest among trade apprentices. Toner (2005) identified a range of intrinsic factors for undertaking a trade apprenticeship including a preference for outdoor or physical work, an interest in technology, the prospect of being able to work overseas, the prospect of self-employment or running one's own business, and the prospect of independence attached to such a business. Toner (2005:29) noted that for such apprentices, their apprenticeship is 'more than a job.' One participant stated that he felt 'proud to be an electrician', while another 'had always wanted to be a carpenter'.

Gow et al. (2008) found that, for surveyed male apprentices from Victoria and Queensland, intrinsic motivation and satisfaction were 'significant predictors' of apprentices' intention to continue their training to completion, while extrinsic motivation was not a significant predictor.

Further, Dickie et al. (2011) summarised that trades apprentices who were more likely to complete their qualification possessed the following intrinsic motivations:

- had a real passion for the trade;
- wanted to work with their hands, out of doors;
- were not interested in another kind of job and are not just trying out the trade to see if they like it;
- were very happy to identify as a 'tradie'; and
- had lots of family and friends who work in trades.

Similarly Misko et al. (2007:45, Table B1.4) found, when apprentices were asked about what had motivated them to enter a traditional trades apprenticeship, 24 per cent had 'always wanted to do that type of work.' Misko et al. (2007:38) concluded that 'an intrinsic interest in the tasks of the occupation plays a major role in decision-making.'

The unique nature of apprentices' vocational interests were suggested by Ainley and Corrigan (2005). Their analysis found that while trainees did not differ very much from the general LSAY cohort, apprentices had higher realistic interests (preference for activities such as building or repairing things) than trainees or the cohort as a whole, and lower conventional interests (preference for activities such as record-keeping, or artistic and social interests).

The discovery of occupational identity in some cases is not expected but may help drive completion of a qualification or lead to further education. Fredman (2014:101) cited the following example: 'One woman had thought a traineeship in aged care would be 'just a job, a way of earning money' but the experience of helping people had 'opened [her] eyes' and she now intended to study further and become a registered nurse.' Fredman (2014:102) also discussed 'general change in life course' as another intrinsic motivating factor for some participants: 'One older woman had a successful job in sales. Dissatisfaction with that and a stressful home life meant she wanted to work in the community ... She took up a traineeship in personal care assistance and found that very satisfying.'

Karmel and Rice (2011:10–11) also noted intrinsic motivations as a factor for successful apprenticeships, with apprenticeship and traineeship-based careers generally well suited to students with a practical, rather than academic, bent. They noted 'students sort themselves into the career paths they see as most suitable for their unique combination of interests and aptitudes.' Dickie et al. (2011:28) similarly suggested that apprentices 'want to keep on learning, just not in the classroom.'

Not having the intrinsic drive necessary to complete an apprenticeship or traineeship is something that may be discovered during the course of the training contract. Dickie et al. (2011:10) found that about one-quarter of all surveyed apprentice recruits were not well suited to the trade or to the apprenticeship experience to which they signed up, and were very unlikely to complete. A further 20 per cent were ambivalent about their current experience and did not rate their chances of completion highly.

## **4.7 Experience of working conditions and training**

Despite research showing a high level of agreement between employers and apprentices and trainees in relation to understanding their obligations (Smith et al. 2011; Bednarz 2014), recent studies and research demonstrate that apprentices' and trainees' experiences of training and working conditions can affect retention and completion rates.

### **4.7.1 Experience of training**

In a number of studies, a lack of adequate training was associated with apprentices and trainees abandoning or terminating their training contracts (Huntly Consulting Group 2008; Cully and Curtain 2001; Misko and Markotic 2001). A 2011 Commission study (Dunn et al. 2011), which included a qualitative research component, found that apprentice participants who had terminated a training contract indicated doing so because they were not receiving on-the-job training and/or

were not provided opportunities to undertake training with a RTO. Ongoing support and advice, as well as continuity of training, reportedly facilitated their re-commencement.

Harris et al. (2001) found that certain aspects during the training experience enhanced retention and completion rates for apprentices and trainees:

- a high level of integration between the training program and the on-the-job environment, and linkages between different levels of qualifications providing a career/learning pathway;
- trainers seen to be experienced, efficient and supportive;
- all parties (apprentices/trainees, managers/supervisors, teachers/trainers) recognising and valuing the skills and knowledge developed over the contract of training; and
- apprentices and trainees supported to develop persistence over the duration of training.

#### **4.7.2 Experience of working conditions**

A number of studies (McDowell et al. 2011; Karmel and Misko 2009; Cully and Curtain 2001b; Callan 2000; Dickie et al. 2011) indicated that it is most often the working conditions, and not training-related reasons, which primarily influence apprentices' and trainees' decisions to complete or terminate their training. Part II of this report provides some further discussion of this based on NCVET Apprentice and Trainee destination data (see Part II, Chapter 11).

Studies have shown that problematic or difficult working conditions contributed to apprentices' and trainees' decision to discontinue training (Snell and Hart 2008; Karmel and Mlotkowski 2010a; Huntly Consulting Group 2008). These problems included poor, unsafe or dangerous workplace practices and conditions, bullying, hours being cut or unreasonably extended, call-in at short notices, pressure to work extra shifts, lack of appropriate supervision (Snell and Hart 2008), and apprentices reporting that their work was 'boring' and not engendering a sense of accomplishment (Huntly Consulting Group 2008).

Dickie et al. (2011) noted that workplace factors contributing to apprentices and trainees completing training included a good first placement, previous positive experience, a good supervisor and participation in structured training. Despite not being particularly satisfied with aspects of their training, some surveyed apprentices and trainees in Snell and Hart's (2008) study cited other factors influencing their retention, such as better than average pay/support in the current position, a desire to obtain a certificate for future employment opportunities, and a lack of being able to find other jobs.

In relation to young trades apprentices, Dickie et al. (2011:13) found that a sense of fairness 'is the tipping point for commitment.' If apprentices perceived the deal to be fair, they were more willing to trade off some of their current disadvantages such as low pay, low status or repetitive work, for the long term advantages they believed would be delivered by a valuable trade qualification, like higher wages.

Studies have indicated that adequate workplace support for apprentices and trainees plays an important role in ensuring successful completion rates (Skills Australia 2010; Clarke and Lamb 2009; Oliver et al. 2011), particularly during the first four to 12 months of the employment arrangement when the apprentice or trainee is most at risk of dropping out (Snell and Hart 2007).

Studies have also found that supportive managers were a significant factor in retaining apprentices and trainees (Cocks and Thoresen 2013; Bednarz 2014; Misko and Markotic 2001). Dickie et al. (2011:39) noted that 'those who say their boss has a fair and positive attitude towards them are much more likely to get through to the end.' In contrast, Ainley and Corrigan (2005) found that dissatisfaction with their supervisor caused some apprentices and trainees to discontinue their training or change employers. People who were dissatisfied with supervisors commented that the supervisors were often criticising, too demanding, never gave positive feedback and treated them disrespectfully (Misko et al. 2007; Dickie et al. 2011). Peer support and peer mentorship was also found to be important in ensuring apprentices' and trainees' wellbeing and mental health (Buchanan et al. 2016), as well as enhancing their satisfaction with their training experience (Snell and Hart 2008).

## 5 Conclusion to Part I

As at 30 June 2016, there were 282 900 apprentices and trainees in training. Between 1985 and 2016, the number of apprentices and trainee in-training and the number of commencements and completions increased—particularly between 1995 and 2003. However, while there has been an increase overall in these measures, after peaking in 2012 (with 2013 being the peak for completions) these numbers have declined.

Part I of this report discussed supply-side factors affecting the commencement and completion of apprenticeships and traineeships. These supply-side factors are those affecting an individual's decision to supply their labour as an apprentice or trainee, with the focus on research findings related to factors specific to apprentices and trainees, rather than factors affecting labour supply decisions more generally.

There has been some continuity in the characteristics of apprentices and trainees over the last two decades although there have also been notable shifts. Among these shifts was a large increase in those undertaking their training contract on a part-time basis, an increase in the proportion of female participation, and a large drop in the proportion of those aged under 19 years with increases in all other age groups.

This report discussed the findings of various studies exploring whether certain personal characteristics were associated with higher or lower likelihoods of apprenticeship and traineeship commencements or completions. For example, older apprentices and trainees were found to be more likely to complete their contract. A further example relates to secondary school completion. A majority of apprentices and trainees had completed Year 12 or equivalent, and those who completed Year 12 had higher apprenticeship and traineeship completion rates. However those who completed Year 12 were proportionately less likely to commence an apprenticeship or traineeship, and research by Karmel et al. suggested that the increasing proportion of young people attending university has negatively impacted on the 'quality' of the prospective pool of apprentices with an increased share of apprentices having below average maths and reading levels.

The discussion of supply-side factors included research findings on the role of wages in apprentice and trainee commencements and completions. The literature, principally from 2012 and earlier, broadly suggested low apprentice and trainee wages were a common reason for non-commencement or non-completion of apprenticeships and traineeships. However the apprentice or trainee wage level must be weighed up against the potential wage premium (highest for those in trade apprenticeships) that may be earned on completion of the training contract.

The attractiveness of commencing an apprenticeship or traineeship may be associated with perceptions of the labour market. In particular, a strong labour market encouraged people to commence an apprenticeship or traineeship. However, perceptions of the labour market were also associated with apprenticeship and traineeship completion, as apprentices and trainees weighed the costs of completing the apprenticeship/traineeship (which would offer higher wages in the future while developing their skills) against higher remuneration from alternative employment.

The interest and take up of apprenticeships and traineeships can also be positively or negatively affected by pre-existing perceptions and the influence of peers, family and school. While government and other organisations are engaged in substantial activity to promote apprenticeships

and traineeships, this is in the context of increased Year 12 completion rates and participation in tertiary education.

The importance of intrinsic motivations to individuals commencing and completing apprenticeships and traineeships was also discussed, with the literature indicating that vocational interest and occupational identity were particularly strong pull factors for apprentices in trade occupations. Apprentice and trainee experiences of training and working conditions were also found to influence the likelihood of completion.

As a final point, while a range of potential supply-side factors have been explored here, Part II of this report contends that demand-side factors have a more profound influence on commencement rates, and that if more places were offered by employers, more people would be engaged in apprenticeships and traineeships.

## Part II: Demand-side factors affecting apprenticeships and traineeships

### 6 Introduction to Part II

This part of the report focuses on the demand side, that is the impact of employers on apprenticeships and traineeships. It first looks at commencements and then at factors relating to the completion of apprenticeships and traineeships.

As outlined earlier, the essence of an apprenticeship or traineeship is that it is a contract between three parties: an employer, a training provider and an individual (see NCVET 2011(a) for a detailed overview of institutional arrangements). While there is a legal contract there is also an unwritten psychological contract with between an employer and employee (Walker et al. 2012). Unlike other forms of education and training an apprenticeship or traineeship can only be undertaken if the individual is employed. That said, the concept of ‘employer’ includes GTOs that employ the apprentice or trainees in legal terms but the apprentice or trainee actually works for a substantive employer (who pays a fee to the GTO).

The apprenticeship or traineeship is associated with a job. However, the occupational identity of the apprenticeship or traineeship does vary. At one end of the spectrum the apprenticeship or traineeship is integral to the occupational identity. This occurs predominantly in situations in which an occupation is licenced and apprenticeship or traineeship training is the dominant pathway into that occupation. An example here is plumbing. To be a plumber an individual will need to obtain an apprenticeship—find a plumbing firm willing to offer an apprenticeship position—and complete the apprenticeship in order to obtain registration. At the other end of the spectrum are jobs in which the apprenticeship or traineeship is incidental to the job. For example, in retail most individuals are primarily interested in obtaining a job rather than the training or qualification. The apprenticeship or a traineeship in such cases is seen as a job rather than an investment in training to open up future opportunities. Generally, traditional apprenticeships (in the trades) have a higher sense of occupational identity than do traineeships (see Smith 2012 for case studies of cleaning and construction traineeships).

The demand for apprentices and trainees by employers depends fundamentally on two factors. The first is the level of employment in the occupation. All things being equal, we would expect the number of apprentices or trainees in a growing occupation to increase and the number of apprentices or trainees in a declining occupation to decrease. The second factor is the inherent demand for apprentices and trainees by employers (that is, holding the level of economic activity constant). This demand goes to the motivation behind the recruitment of apprentices and trainees. Elements here include:

- The access to the institutional wage setting arrangements—the ability to pay an apprentice or trainee a training wage rather than a full wage.
- The access to government subsidies.
- The opportunity to train individuals to the standard required by the employer.
- The opportunity to assess the ability of the individual before offering an ongoing employment contract.
- Altruistic motives such as the desire to ‘give back’ to the occupation/industry.

The mix of these elements will depend very much on the occupation. In the subsequent chapters we decompose the number of commencements into two components: an employment component—the change in the number of apprentices and trainees due to movements in the employment in the occupation in question; and a ‘propensity’ factor which reflects changes in the propensity of employers to recruit apprentices and trainees.

This approach to looking at the demand for apprentices and trainees is based on the idea that it is the occupation that meaningfully defines apprenticeships and traineeships. While this presumption is unexceptional, occupation as a concept is somewhat arbitrary. For example, one can define occupation at the major group level or at the unit level using the standard occupational classification in the Australian and New Zealand Standard Classification of Occupations (ANZSCO). A finer classification will provide more information but can raise questions of robustness if the data become too sparse. The level we choose to use for the subsequent analysis is a hybrid of ANZSCO levels that identifies the traditional apprenticeships with some detail but keeps the overall number of individual apprenticeship and traineeships at a tractable number.

Before presenting the analysis we have one caveat. The numbers of apprentices and trainees reflect the number 'demanded' by employers but is constrained by the numbers of individuals wishing to undertake an apprenticeship or traineeship. Thus we observe the interaction of demand and supply. However, if the number of people wishing to undertake an apprenticeship or traineeship exceeds the number of positions offered by employers, then we can take the numbers to represent the demand by employers. We look at this in more detail later.

The structure of the remainder of this part of the report is as follows. We first present the occupational classification used, and discuss how the nature of apprenticeships and traineeships varies across occupations (Chapter 7). At Chapter 8 we then provide an overview of historical data going back to 1994 (the earliest period for which the data used in this report are readily available from NCVET). Chapter 9 then considers the extent to which apprentice and trainee numbers can be taken as a reflection of the demand for apprenticeships and traineeships by employers. Our conclusion is that it is reasonable to take the numbers as a representation of the demand by employers. In Chapter 10 we present the results of the decomposition, showing that the change in numbers of apprentices or trainees is highly related to general labour demand in some occupations but not in others where changes in training rates dominate the picture. We also include some discussion of how changes in institutional settings (including the extent of employer incentives) have impacted on the demand for apprenticeships and traineeships. This chapter is central to understanding how employer demand has changed. In Chapter 11, we look at the impact of employers on completion rates. We finish with some overall comments in Chapter 12.

## 7 Occupational classification used for the analysis

Table 6 sets out the classification used in subsequent analysis. It includes the distribution of apprenticeships and traineeships based on both commencements and in-training numbers, based on the average over the period July 1994 to June 2016.

**Table 6: Apprenticeships and traineeships by occupation, average July 1994–June 2016**

Occupation (ANZSCO)	Average number in-training	% of A&T	Average annual commencements	% of commencements
1 Managers	8005	2.4	6114	2.7
2 Professionals	2460	0.7	1871	0.8
31 Engineering, ICT and Science Technicians	4898	1.5	3665	1.6
32 Automotive and Engineering Trades Workers	46 865	14.0	17 162	7.7
33 Construction Trades Workers	40 417	12.1	16 077	7.2
34 Electrotechnology and Telecommunications Trades Workers	25 853	7.7	9284	4.2
3511 Bakers and Pastrycooks	3194	1.0	1570	0.7
3512 Butchers and Smallgoods Makers	3130	0.9	1548	0.7
3513&3514 Chefs and Cooks	11 090	3.3	5569	2.5
36 Skilled Animal and Horticultural Workers	6442	1.9	3518	1.6
391 Hairdressers	10 695	3.2	4608	2.1
392 Printing Trades Workers	2050	0.6	748	0.3
393 Textile, Clothing and Footwear Trades Workers	527	0.2	270	0.1
394 Wood Trades Workers	4538	1.4	1835	0.8
30&390&399 other technicians and trades nfd and miscellaneous technicians and trade workers	5775	1.7	3907	1.7
41 Health and Welfare Support Workers	3250	1.0	2341	1.0
42 Carers and Aides	11 989	3.6	10 790	4.8
43 Hospitality Workers	13 033	3.9	13 145	5.9
44 Protective Service Workers	2811	0.8	2608	1.2
45 Sports and Personal Service Workers	3725	1.1	3590	1.6
51 Office Managers and Program Administrators	13 841	4.1	10 778	4.8
52 Personal Assistants and Secretaries	24	0.0	28	0.0
53 General Clerical Workers	13 767	4.1	14 909	6.7
54 Inquiry Clerks and Receptionists	6208	1.9	6736	3.0
55 Numerical Clerks	3667	1.1	3148	1.4
50&56&59 Clerical and Administrative Workers - nfd, Clerical and Office Support workers, other clerical and administrative	3679	1.1	3070	1.4
61 Sales Representatives and Agents	2957	0.9	3178	1.4
60&62&63 Sales workers nfd, Sales Assistants and Salespersons, Sales Support Workers	30 667	9.2	30 010	13.4
70&71 Machinery Operators and Drivers - nfd, Machine and Stationary Plant Operators	5290	1.6	3863	1.7
72 Mobile Plant Operators	2469	0.7	1592	0.7
73 Road and Rail Drivers	8685	2.6	6174	2.8
74 Storepersons	8663	2.6	7051	3.2
81 Cleaners and Laundry Workers	4201	1.3	3963	1.8
82 Construction and Mining Labourers	1145	0.3	1198	0.5
83 Factory Process Workers	11 235	3.4	11 057	5.0
84 Farm, Forestry and Garden Workers	2788	0.8	2780	1.2
85 Food Preparation Assistants	736	0.2	716	0.3
80&89 Labourers nfd, Other labourers	3117	0.9	2738	1.2
Not known, 3500 &3510	107	0.0	111	0.0
<b>Total</b>	<b>333 993</b>	<b>100.0</b>	<b>223 321</b>	<b>100.0</b>

Note: nfd = not further defined.

Source: NCVET data cube

While apprenticeships began in the trades (following the tradition of the medieval guilds) the model incorporating employment and training has spread across all occupational groups, from Managers and Professionals to Labourers. However, the largest numbers are in the trades, especially when looking at the in-training numbers (because the contracts of training tend to be three to four years in the trades, rather than one to two years for other occupations). In addition to the trades we see large numbers in sales, and an average of more than 10 000 in Carers and aides, Hospitality workers, Office managers and administrators, and Factory process workers.

To provide a more detailed characterisation, we present a range of indicators based on the numbers in-training, commencements, recommencements and completions: the average duration of a contract of training, the completion rate and the commencement rate.

**Table 7: Apprenticeships and traineeships: estimated completion rate, duration of average training contract, the proportion of recommencements, by occupation, July 1994 to June 2016**

Occupation (ANZSCO - NTIS) group	Pseudo completion rate (%)	Average duration (in- training / commencements), years	Recommencements as % of commencements
1 Managers	55.6	1.3	3.8
2 Professionals	58.1	1.3	3.1
31 Engineering, ICT and Science Technicians	53.5	1.3	2.9
32 Automotive and Engineering Trades Workers	61.7	2.7	17.7
33 Construction Trades Workers	51.6	2.5	26.7
34 Electrotechnology and Telecommunications Trades Workers	59.9	2.8	19.8
3511 Bakers and Pastrycooks	40.1	2.0	17.3
3512 Butchers and Smallgoods Makers	52.0	2.0	15.9
3513&3514 Chefs and Cooks	38.7	2.0	47.7
36 Skilled Animal and Horticultural Workers	50.6	1.8	8.8
391 Hairdressers	55.2	2.3	43.8
392 Printing Trades Workers	64.5	2.7	6.5
393 Textile, Clothing and Footwear Trades Workers	55.5	2.0	8.9
394 Wood Trades Workers	52.6	2.5	18.3
30&390&399 other technicians and trades nfd and miscellaneous technicians and trade workers	56.6	1.5	3.6
41 Health and Welfare Support Workers	59.5	1.4	3.9
42 Carers and Aides	61.5	1.1	5.0
43 Hospitality Workers	45.1	1.0	3.9
44 Protective Service Workers	56.8	1.1	3.4
45 Sports and Personal Service Workers	53.6	1.0	4.6
51 Office Managers and Program Administrators	54.9	1.3	2.0
52 Personal Assistants and Secretaries	48.4	0.9	1.1
53 General Clerical Workers	61.0	0.9	2.8
54 Inquiry Clerks and Receptionists	50.8	0.9	2.1
55 Numerical Clerks	54.6	1.2	1.4
50&56&59 Clerical and Administrative Workers - nfd, Clerical and Office Support workers, other clerical and administrative	55.1	1.2	2.3
61 Sales Representatives and Agents	48.0	0.9	3.0
60&62&63 Sales workers nfd, Sales Assistants and Salespersons, Sales Support Workers	48.6	1.0	3.3
70&71 Machinery Operators and Drivers - nfd, Machine and Stationary Plant Operators	55.3	1.4	2.6
72 Mobile Plant Operators	52.9	1.6	2.8
73 Road and Rail Drivers	56.7	1.4	4.5
74 Storepersons	56.1	1.2	2.8

	Pseudo completion rate (%)	Average duration (in- training / commencements), years	Recommencements as % of commencements
81 Cleaners and Laundry Workers	55.8	1.1	5.0
82 Construction and Mining Labourers	41.5	1.0	2.2
83 Factory Process Workers	48.0	1.0	2.5
84 Farm, Forestry and Garden Workers	52.7	1.0	2.5
85 Food Preparation Assistants	33.8	1.0	5.2
80&89 Labourers nfd, Other labourers	50.6	1.1	2.3
Not known, 3500 &3510	87.9	1.0	0.9
<b>Total</b>	<b>53.5</b>	<b>1.5</b>	<b>9.1</b>

Source: Author's calculations

The 'pseudo completion' rate is simply the completions divided by commencements. It represents the completion rate assuming a steady-state. Overall, we estimate that the average rate of completion of a contract of training is 53.5 per cent. The highest rate is for the printing trades (64.5 per cent) and the lowest for food preparation assistants (33.8 per cent). The average duration (calculated by dividing the numbers in-training by commencements) ranges from just under a year up to 2.8 years (electrotechnology and telecommunications trades workers). Note this is not the duration of a completed contract of training, because it incorporates both the duration for complete contract and the completion rate. It illustrates that the commitment of both individuals and employers to trade contracts of training is considerably greater than for non-trade apprenticeships and traineeships. The final indicator is the recommencement rate. A recommencement occurs when an apprentice or trainee leaves one employer and finds a new employer willing to allow the apprentice or trainee to complete their contract of training. It is a good measure of how the training has a value beyond that of providing employment. It tends to define occupations where apprenticeships and traineeships are seen as a key way to enter an occupation. Thus we see that the re-commencement rate is much higher in the traditional trades than other occupations. It also reflects occupations with a high degree of 'churn'—where individuals stay within an occupation but move employers. We see that Chefs and cooks and Hairdressers fall into this category—occupations with a reputation of a relatively poor culture for apprentices and trainees.

## 8 Historical overview

As can be seen from Figure 1 trade apprenticeships have a very long history, going back well before traineeships were created, and have seen significant fluctuations from time to time. By contrast traineeships date back to the 1980s (following the findings of the Kirby report) but only became significant after 1995, reaching an initial peak in 2003. Important institutional changes over this period include the removal of age restrictions, and the introduction of apprenticeships and traineeships for existing workers and part-time workers. Government subsidies to employers were also a feature of the landscape and 'it is significant that traineeships were slow to take off until the injection of significant Australian Government incentive payments to employers in the mid-1990s, particularly in the retailing and service sectors' (Knight 2012:18).

In recent years apprenticeships and traineeships have seen a rapid decline, at the same time as some significant changes to the institutional environment, specifically (see NCVET 2016c):

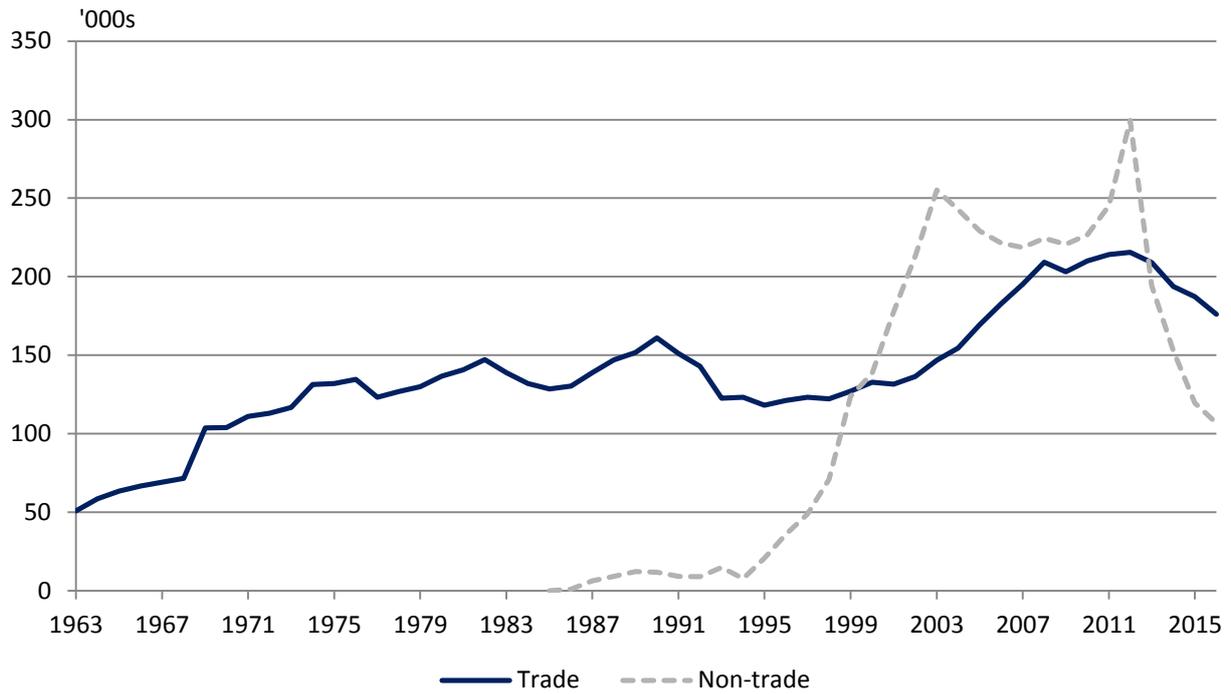
- the removal (by the Commonwealth) of commencement initiatives for existing worker apprenticeships and traineeships not on the NSNL in July 2012;<sup>44</sup>
- the removal of commencement and completion incentives for diploma and advanced diploma qualifications not leading to aged care, child care or enrolled nursing (October 2012);
- the removal of commencement incentives for part-time apprenticeships and traineeships (October 2012);<sup>45</sup>
- the introduction in Victoria of a new fee and funding regime (from 1 July 2012) for all new course commencements;
- the removal of completion incentives for existing worker apprenticeships and traineeships not on the NSNL August 2013 (priority occupations such as aged care, childcare disability care and enrolled nurses were exempt from the change); and
- the review by the Commission (changes from 1 January 2014) of apprentice pay rates under a number of modern awards (see Part I, section 2.1.4).

As can be seen from Figure 5, the decline of non-trade apprenticeships and traineeships has been more dramatic than for trade apprenticeships, noting that most of the changes to incentive payments were focused on non-trade areas.

<sup>44</sup> The NSNL as at July 1, 2015 is at Appendix B2. It can be seen that it covers most trades occupations.

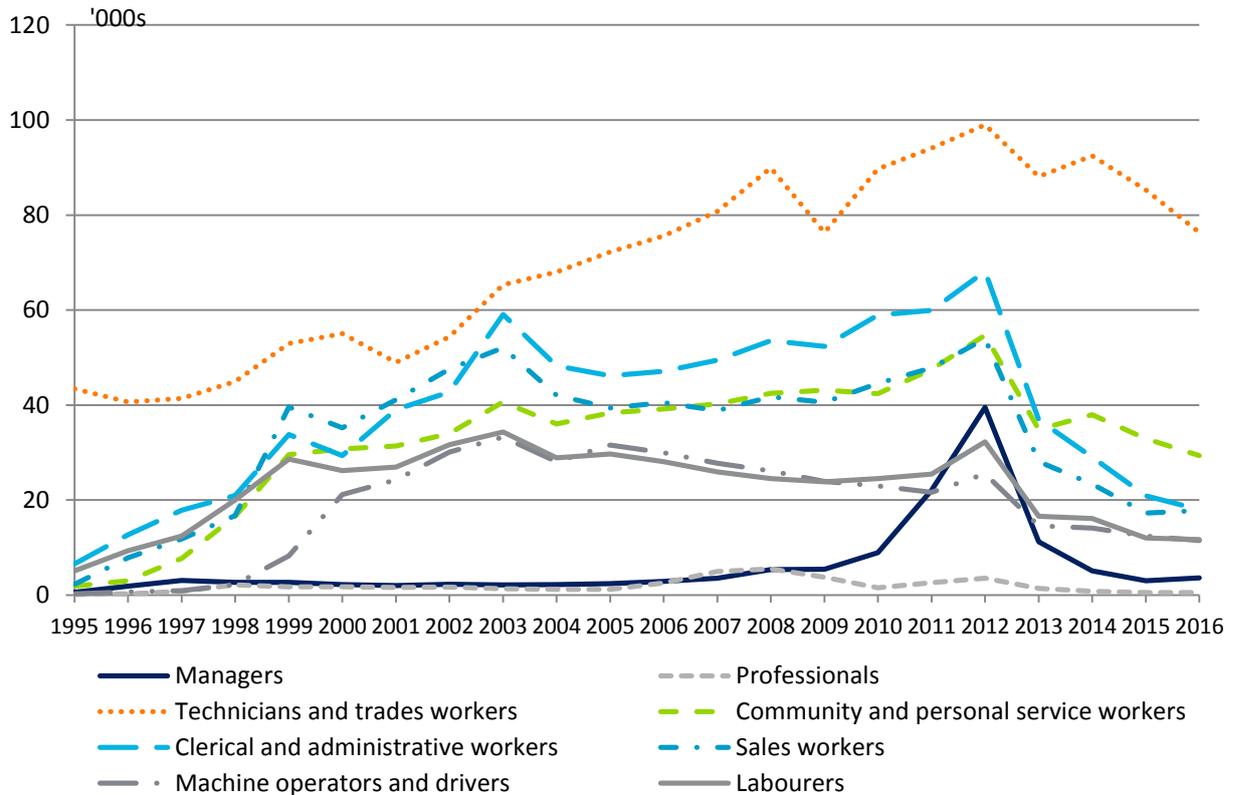
<sup>45</sup> The following cohorts were unaffected: part-time. Certificate III/IV qualifications on NSNL, school-based apprenticeships and traineeships, and part-time diploma and advanced diploma qualifications leading to aged care, child care or enrolled nursing.

**Figure 5: Apprentices and trainees in-training at 30 June, by trade/non-trade**



Source: NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia.

The changes to government incentives had a strong occupational dimension to them. To provide more information, we present the trends at the major group level. We use the number of commencements as the most immediate reflection of employer demand for apprentices and trainees.

**Figure 6: Apprentice and trainee commencements, by major occupational group, year to June 1995–2016**

Source: NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia.

We see that, at the major group level, trade and technician apprentices and trainees are the largest group. Within this group we have seen, with some fluctuations, strong growth between the late 1990s up to 2011, with some falling off after that. Commencements in other occupations were at very low levels in the early 1990s but then grew rapidly apart from in professional and managerial occupations, reflecting government's increased support of traineeships. Commencements in professional occupations have remained at relatively minor level over the whole period, while commencements in managerial occupations surged briefly to 40 000 in 2012 before falling away to much more modest levels. What the figure shows is that traineeships took off in the other occupations—Community and personal service workers, Clerical and administrative workers, Sales workers, Machinery operators and drivers, and Labourers—reaching a peak in 2003 and then in 2012. However, numbers have fallen right away, with current numbers similar to levels of the late 1990s. It appears that the refinement of Commonwealth incentives have had a dramatic effect on most areas of the non-trade occupations.

Annual data for each of the occupations in Table 1 are at Appendix B1.

## 9 Disentangling supply and demand

As noted earlier, we observe the number of apprentices and trainees in training, but have no direct data on the number of individuals wanting an apprenticeship or traineeship, nor the number of employers offering apprenticeships and traineeships. The only data that bear on this are provided by the ABS Survey of Education and Work (conducted in May of each year), where individuals are asked a question about whether they have applied for an apprenticeship or traineeship in respect of that year.

In Table 8 we present the numbers who had applied for an apprenticeship or traineeship for 2016, from the Survey of Education and Work. As a comparison we also include the estimate of the numbers of apprenticeships and traineeships from that survey, as well as the numbers from the administrative statistics collected by NCVER.

**Table 8: Number of unsuccessful applicants for an apprenticeship or traineeship for 2016**

	Applied for but did not gain an apprenticeship or traineeship '000s	Number of apprentices and trainees according to the Survey of Education and Work (May) '000s	Number of apprentices and trainees in training according to NCVER data (June) '000s
Trade occupations	n/a	139.2	176.1
Non-trade occupations	n/a	49.0	106.8
<b>Total</b>	<b>28.6</b>	<b>188.6</b>	<b>282.9</b>

Note: n/a = not available.

Source: ABS, *Survey of Education and Work, Australia, May 2016*, Catalogue No. 6227.0; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia.

The first thing to note is the large discrepancy between the ABS and NCVER estimates of the number of apprentices and trainees. This is because of the different methodology; in the ABS survey the question is answered by a household member compared to the administrative collection which depends on data reported by employers. It appears to be the case that the apprenticeship or traineeship arrangement is not always known to the relevant household. This is particularly the case in respect of non-trade apprenticeships or traineeships. For these individuals it would appear that the employment relationship is much more obvious than the formal training aspect of an apprenticeship or traineeship. This in itself provides support for the notion that the numbers reflect employer demand rather than the supply by individuals.

The data from the Survey of Education and Work provide further support to this notion. Based on the ABS data the number of unsuccessful applicants represents around 15 per cent of apprentices and trainees, indicating that the employment figures reflect employer demand—if employers offered more positions the numbers of apprentices and trainees would be larger.

The final piece of evidence for this proposition, comes from what happened to the numbers of part-time and existing worker apprentices and trainees, after commencement incentives for existing worker and part-time worker apprenticeships and traineeships (for occupations not on the NSNL) were removed in 2012. As can be seen from Table 9 the numbers of commencements to existing and part-time workers in non-trade occupations (which are absent from the NSNL) plummeted when the incentives disappeared (after increasing in 2012, presumably in anticipation of the removal of the incentives). This indicates that employers stopped offering these positions when the incentives disappeared, reinforcing

the idea that the numbers of apprentices and trainees reflect employer demand rather than being constrained by the supply of individuals wanting an apprenticeship or traineeship.

**Table 9: Commencements in 12 months ending June, existing and part-time workers ('000s)**

	Existing worker		Part-time	
	Non-trade	Trade	Non-trade	Trade
2011	90.8	17.4	88.7	8.0
2012	132.8	27.3	102.5	9.1
2013	44.6	20.6	57.0	7.8
2014	35.0	25.8	49.8	7.9
2015	18.2	15.6	40.8	8.1
2016	12.2	9.9	40.8	8.0

Source: NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia.

This makes it pretty clear that not only do the incentives matter but that the numbers of apprenticeships and traineeships reflect demand by employers not supply by individuals.

The general conclusion that the level of apprentices and trainees is largely determined by employers is supported by Toner (2003) in respect of trade apprentices. He concluded that demand-side explanations—by which he means that the level of apprentices is determined by the economic characteristics of firms and industries—provided a superior understanding of declining training rates over the period 1972–2001.

## 10 Decomposing the demand for apprentices and trainees

As argued earlier the demand by employers for apprentices and trainees can be characterised on two dimensions: the level of employment and the propensity to hire an apprentice or trainee. Everything being equal one would expect that increasing employment in an occupation would lead to an increase in the number of apprentices or trainees in that occupation. Similarly, changes in factors affecting the propensity to take on an apprentice or trainee will affect the numbers of apprentices or trainees in that occupation. The propensity to take on an apprentice or trainee will be affected by economic factors such as the level of government subsidy and wage rates, but also other factors such as the degree of confidence in the future, the difficulty of hiring skilled labour, the desire to have skilled labour trained to the employer's requirements, and the perceived cost of supervision of the apprentice or trainee.

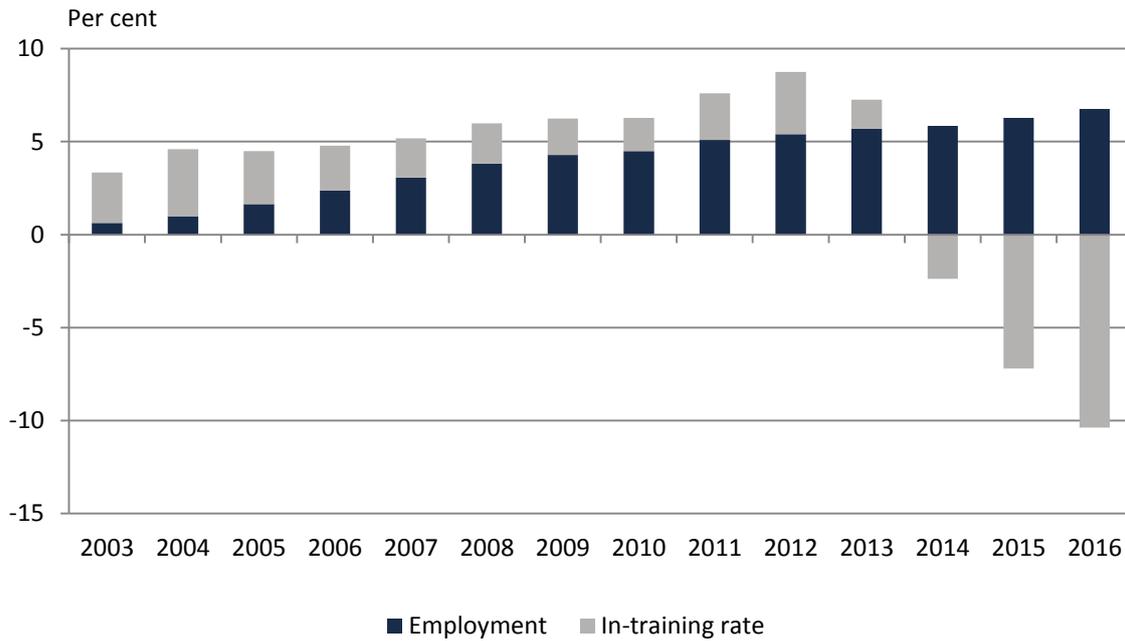
While we are not in a position to isolate the differential effect of all these factors, we can decompose changes in the number of apprentices or trainees (in an occupation) into an 'employment effect' and a 'training rate' effect, using a shift-share analysis. The algebra is given in Appendix B3. Essentially, we can decompose a percentage change in the numbers of apprentices and trainees into the percentage points attributed to employment growth, and the percentage points attributed to the change in the 'training rate'. The calculation can be undertaken in respect of the numbers in-training or commencements/recommencements. We focus on the former since training rates are usually expressed as the numbers in-training divided by employment.

This calculation can be undertaken each year, and then aggregated over the period of time of interest. We choose 2002 as the starting point for the reason that traineeships grew very rapidly in the years after 1995, with the system reaching a certain degree of maturity by 2002.

A graphical version of this decomposition is presented in Figure 7. We choose to use a stacked bar graph. When both effects are positive then the total change is simply the top of the bars. However, when one effect is negative then the total change is the difference between the positive bar and the negative bar.

We begin by presenting the decomposition for the total number of apprentices and trainees.

**Figure 7: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002**

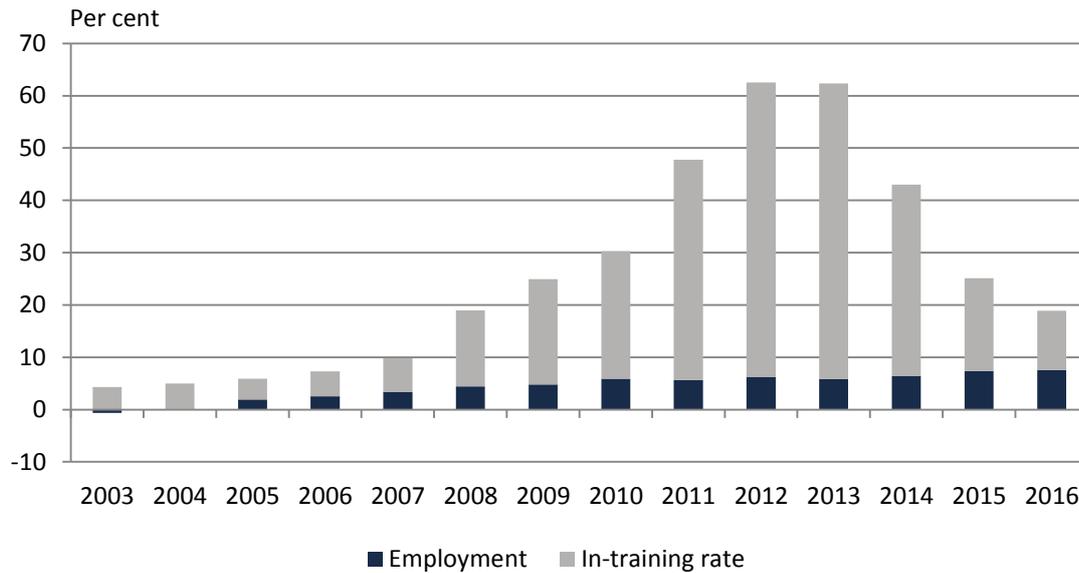


Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

We see that the overall numbers grew steadily until 2012, mostly driven by increasing employment levels. However, the training rate plummeted from 2013 and by 2016 was well below the rate of 2002. In fact the decline in the training rate was such that the total number of apprentices and trainees was below the 2002 level, despite considerable employment growth. If the training rate had not changed we would have expected the number of apprentices and trainees to have been around 7 per cent higher than in 2002.

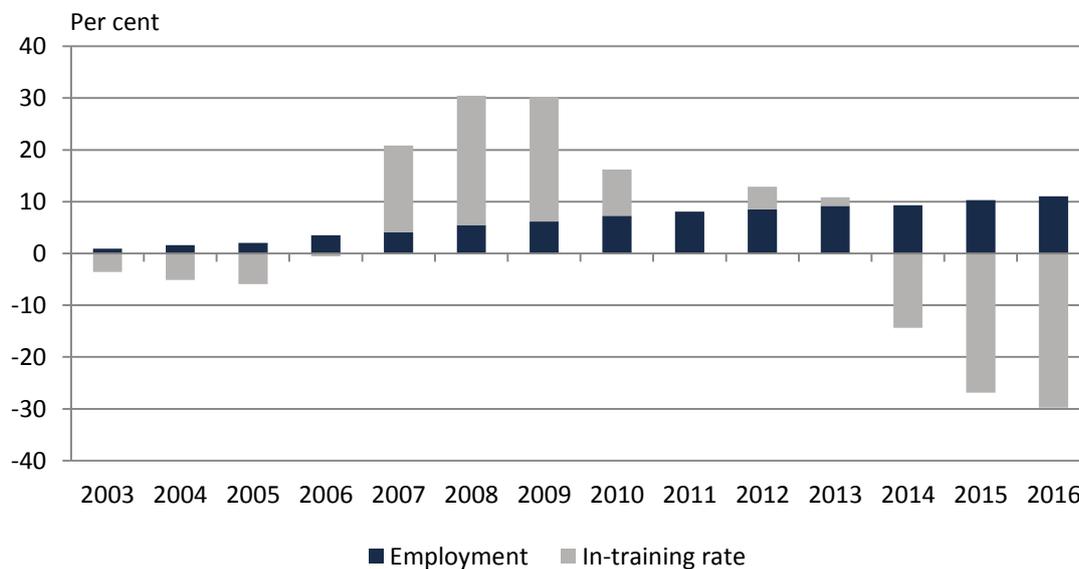
However, as we have stressed the importance of looking at specific occupations, Figures 8–15 show the decomposition for each of the major occupation group.

**Figure 8: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Managers**



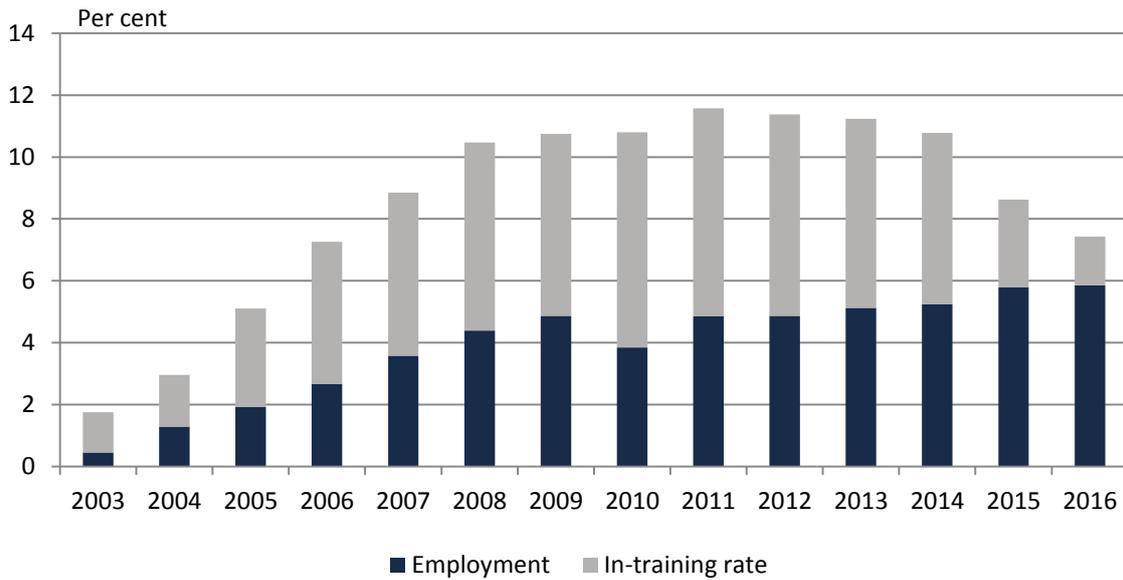
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 9: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Professionals**



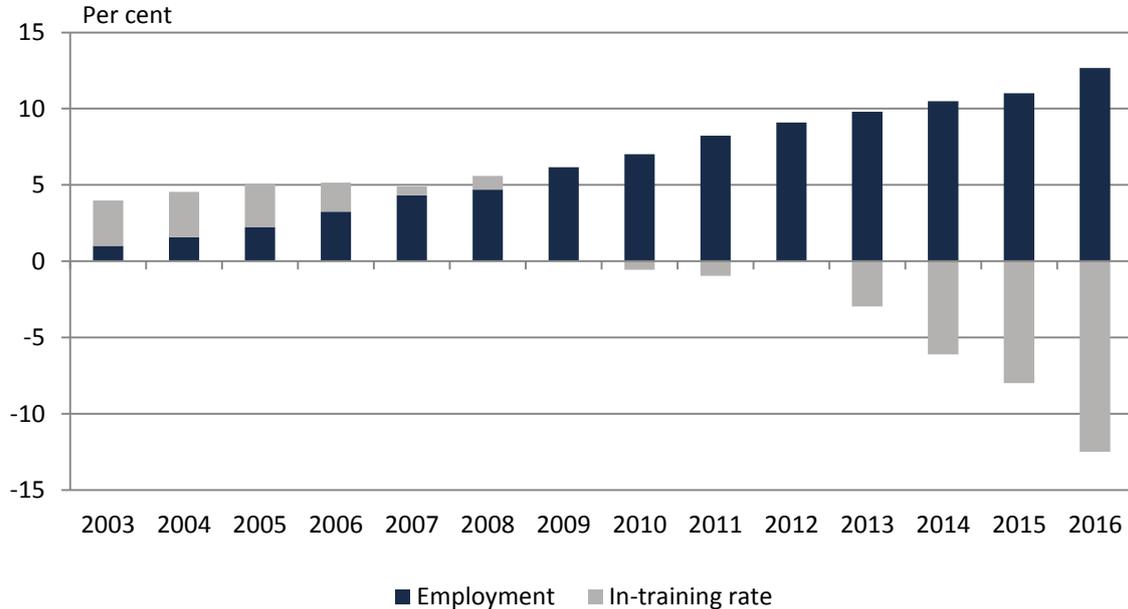
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 10: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Technicians and trade workers**



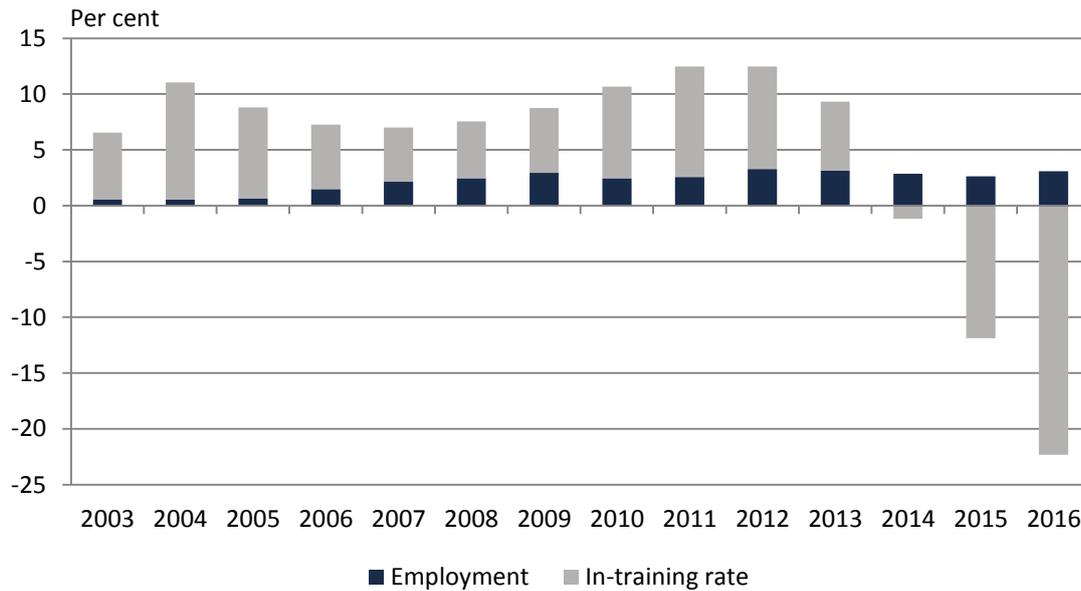
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 11: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Community and personal service workers**



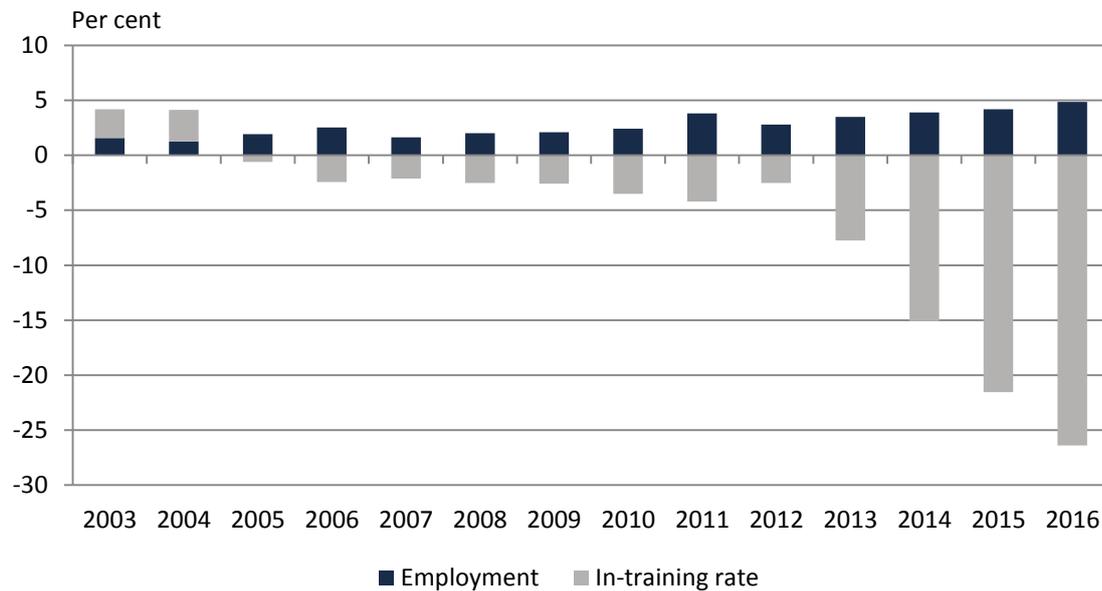
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 12: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Clerical and administrative workers**



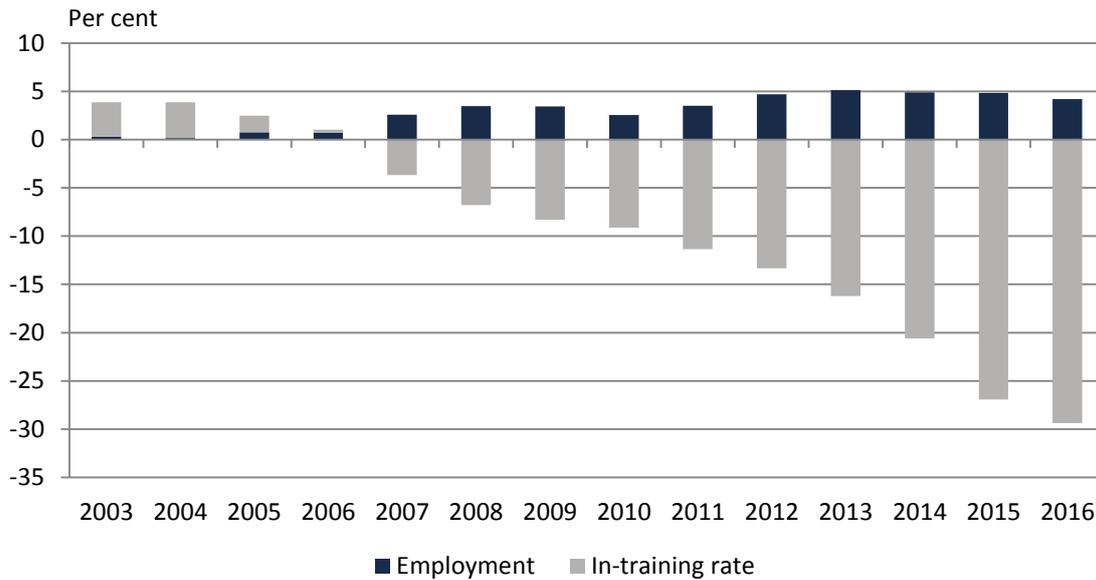
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

**Figure 13: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Sales workers**



Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

**Figure 14: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Machinery operators and drivers**



Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 15: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Labourers**

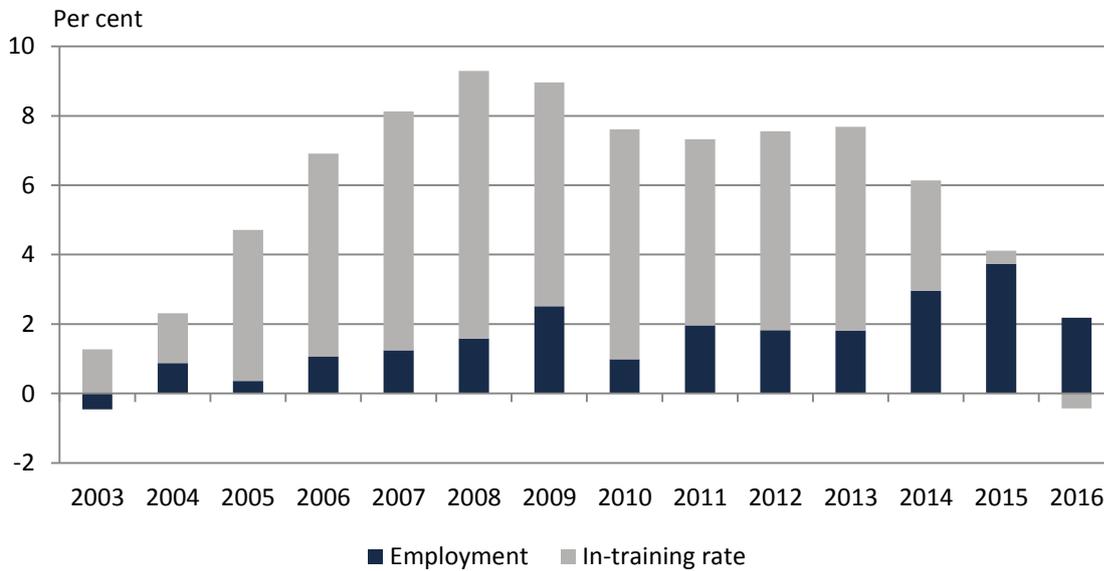


Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia.

We see that training rates have been declining relative to 2002 in all occupation groups. However, among Managers and Trade workers and technicians the training rates in 2016 are still above those of 2002. Thus with positive employment growth in both occupation groups we see overall growth in apprentice and trainee numbers of the order of nearly 20 per cent for Managers and around 7 per cent for Trade workers and technicians. But these numbers are well below the peaks seen in 2011–2012.

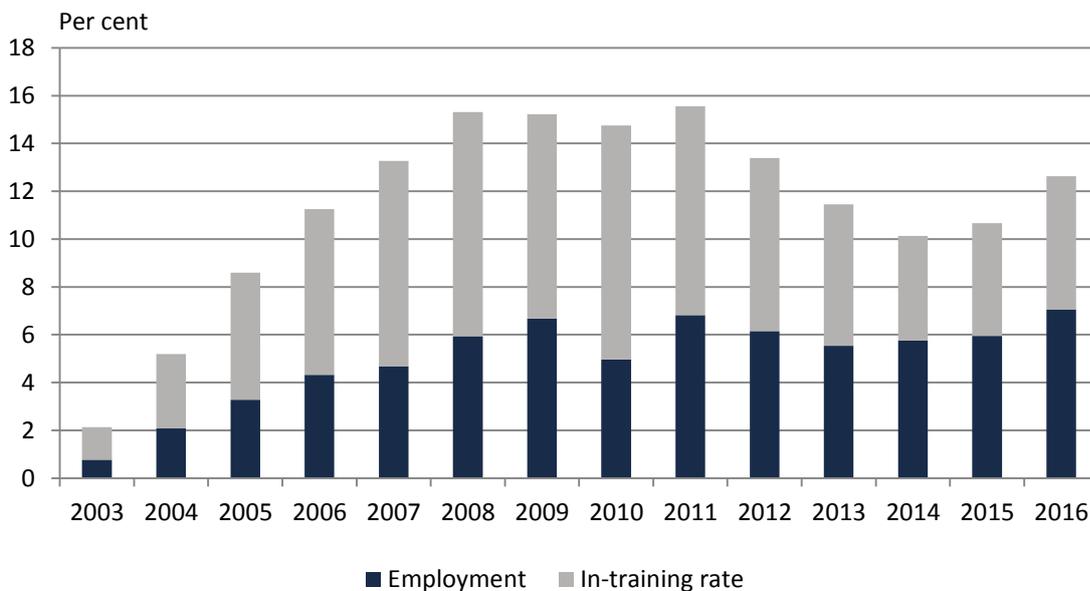
As we have seen earlier, Trade workers and technicians represent the biggest group of apprenticeships and traineeships. We now look at the five largest occupations within that major group: Automotive and engineering trades workers, Construction trade workers, Electrotechnology and telecommunications trades workers, Chefs and cooks, and Hairdressers (Figures 16–20).

**Figure 16: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Automotive and engineering trades workers**



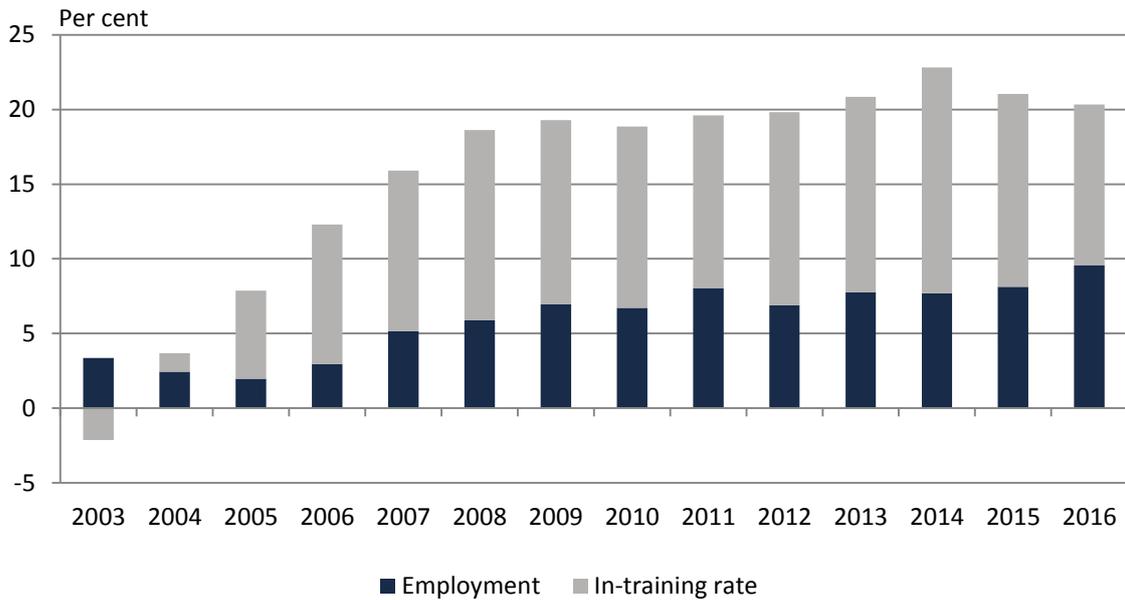
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

**Figure 17: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Construction trade workers**



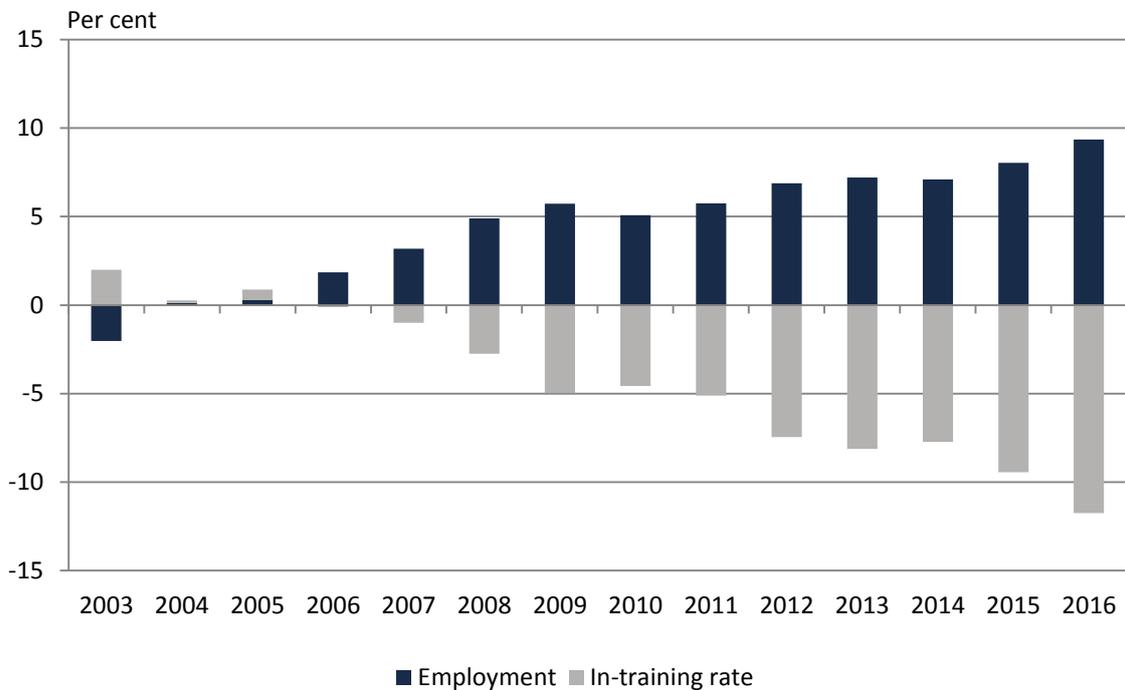
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

**Figure 18: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Electrotechnology and telecommunications trades workers**



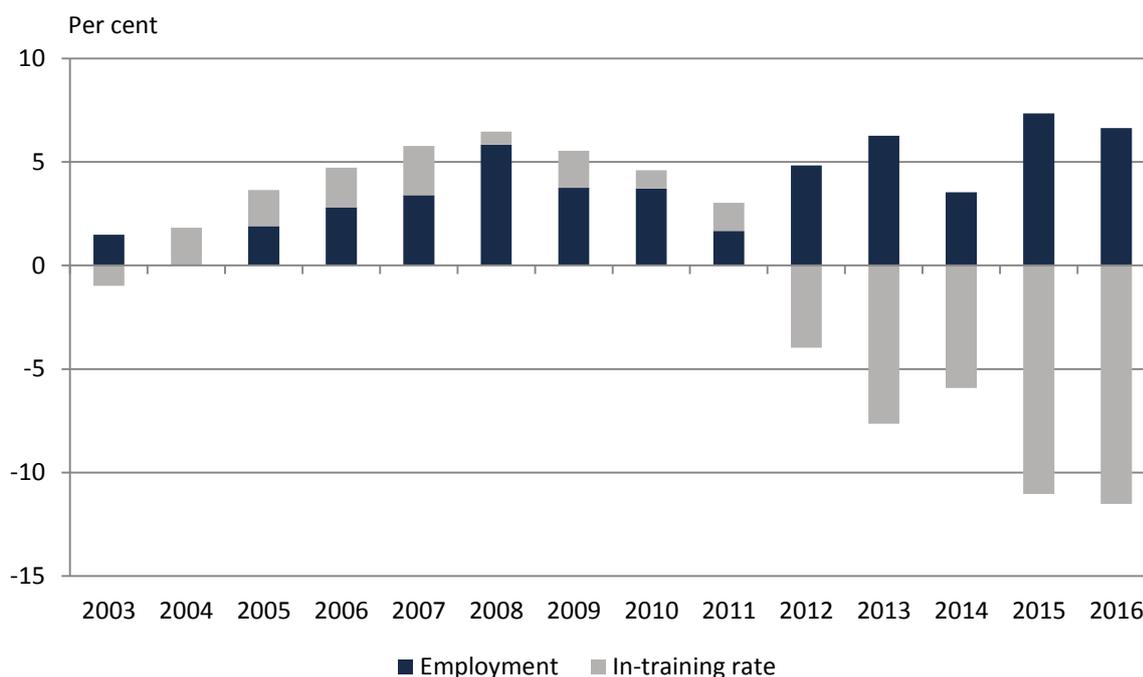
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 19: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Chefs and cooks**



Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 20: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Hairdressers**



Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia.

We see that there is considerable variation in the trends of apprentices and trainees in these occupations. Among Automotive and engineering trades workers there has been desultory employment growth (2016 employment only around 2 per cent higher than 2002) but the training rate is more or less the same level as 2002 (well down on the peak in 2008). Construction workers have seen higher employment growth (2016 employment around 7 per cent higher than 2002), with an obvious cyclical component. However, training rates went up considerably relative to 2002 and have stayed fairly high so that overall apprentice and trainee numbers are some 12–13 per cent higher than in 2002. Growth in apprentices and trainees among Electrotechnology and telecommunications trades workers has been particularly strong and the numbers in 2016 were over 20 per cent higher than in 2002. The growth can be attributed to reasonably strong employment growth together with large increases in the training rate, which have only moderated a little in recent years.

While these occupations have seen overall growth in apprentices and trainees, this is not true for the two remaining large apprentice and trainee trade occupations: Chefs and cooks and Hairdressers. Employment growth among Chefs and cooks has been relatively strong (around 9 per cent since 2002) but the training rate has been in almost continuous decline such that without any employment growth in 2016 the number of apprentices and trainees would have been around 12 per cent lower than 2002. Similarly the decline in the training rate among Hairdressers has been occurring for around 10 years, and has swamped the employment growth over the period.

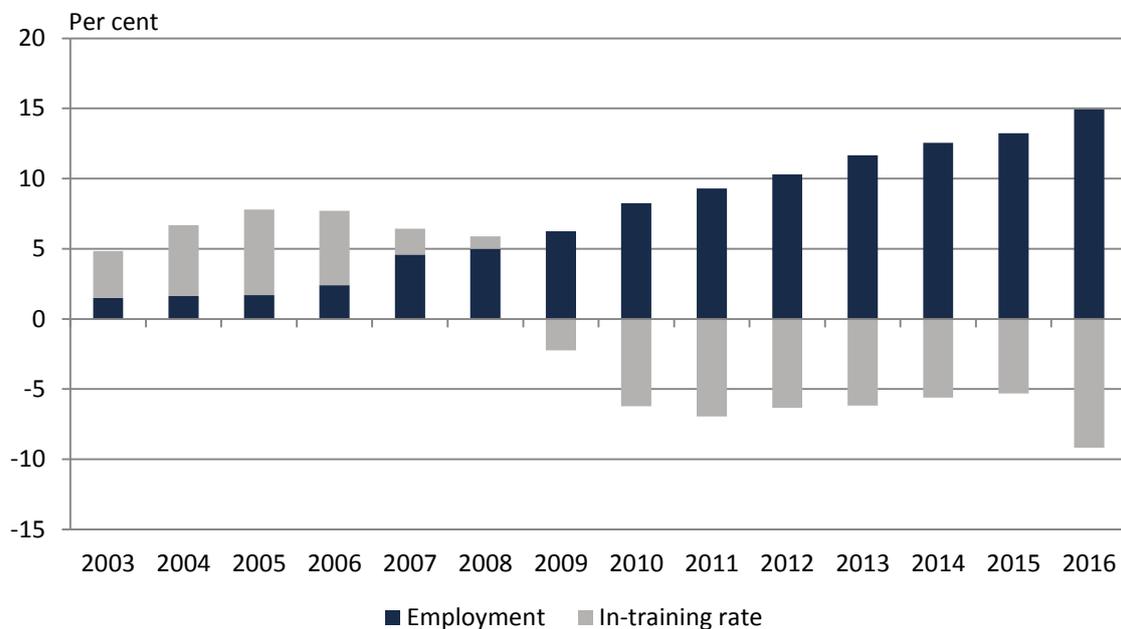
Economic cycles no doubt affect both employment numbers and the trainings rates. Kapuscinski (2001) shows that the business cycle plays a significant role in the dynamics of entry level training over time. Karmel and Mlotkowski (2008) looked at 40 years of data (1967–2006) and found that metal and vehicle, electrical, and building apprenticeship numbers were particularly sensitive to labour market conditions. Printing apprenticeship numbers have declined due to structural change in the industry. They also noted that the relationship between economic factors and the numbers of apprentices was

not robust and that in the more recent period the numbers were lower than would have been the case if the relationship seen in the earlier period had held. Toner (2000) notes a number of factors leading to lower training rates in the construction industry in the 1990s: an increase in the importance of small firms, and an increase in labour hire companies and the corporatisation or privatisation of government utilities (which in previous eras had trained large numbers of trades workers who then were recruited by private employers). Toner (2003) also points to increases in casualisation and part-time work that may have also reduced the training rates (because employers are less likely to invest in training for casual or part-time workers).

One further possibility is that the decision by the Full Bench in the 2013 Modern Awards Review to increase rates of pay to apprentices from 1 January 2014 may have had a negative effect on employer demand for apprentices. However, according to Oliver (2012:159) “most apprentices in trade occupations receive pay in excess of the relevant federal award rate”, and this would tend to mitigate the effect of the decision. Further, the trends in the number of commencements across trade occupations were very variable. For example, the decline in commencements for Hairdressers began in 2011, and the decline in Automotive and engineering commencements began in 2013. In addition, increasing commencements were seen in a number of trades with Construction and Wood trades worker commencements peaking in 2015. This lack of uniformity in commencement trends suggests that if the decision made by the Full Bench had any impact on employer demand for apprentices it was only one of a number of factors.

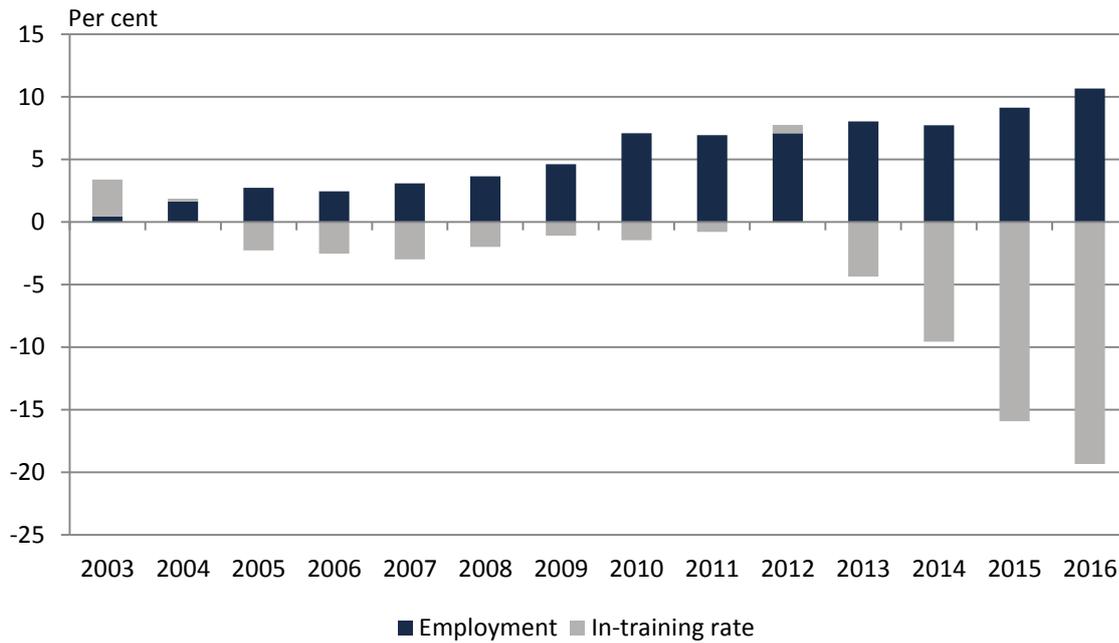
We complete this analysis by looking at four of the largest non-trade occupations (in terms of the number of apprentices and trainees): Carers and aides; Hospitality workers; Office managers and Sales assistants and salespersons.

**Figure 21: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Carers and aides**



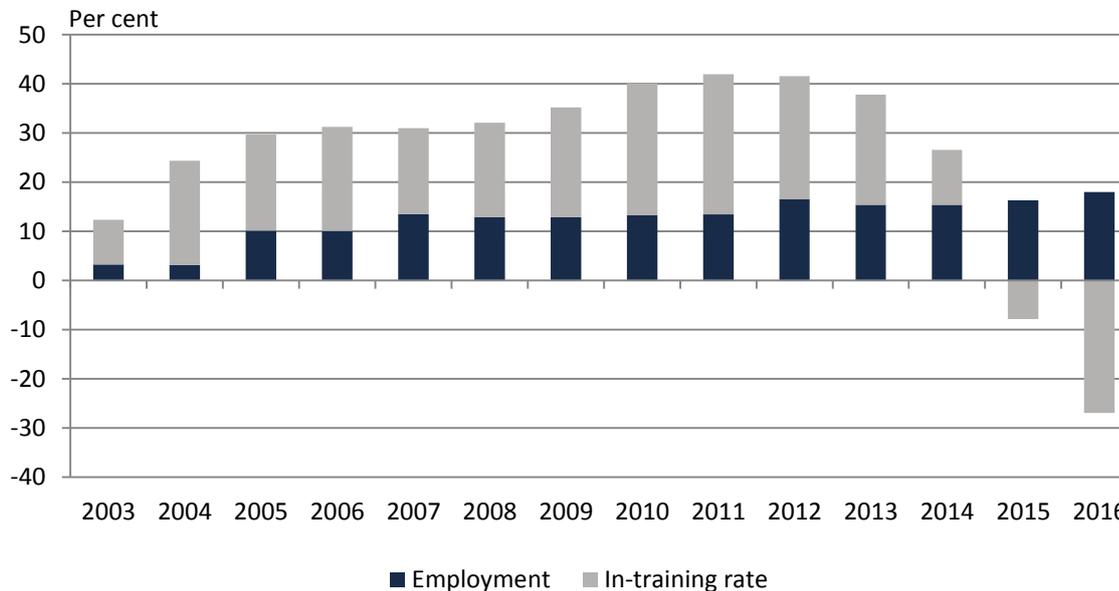
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia

**Figure 22: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Hospitality workers**



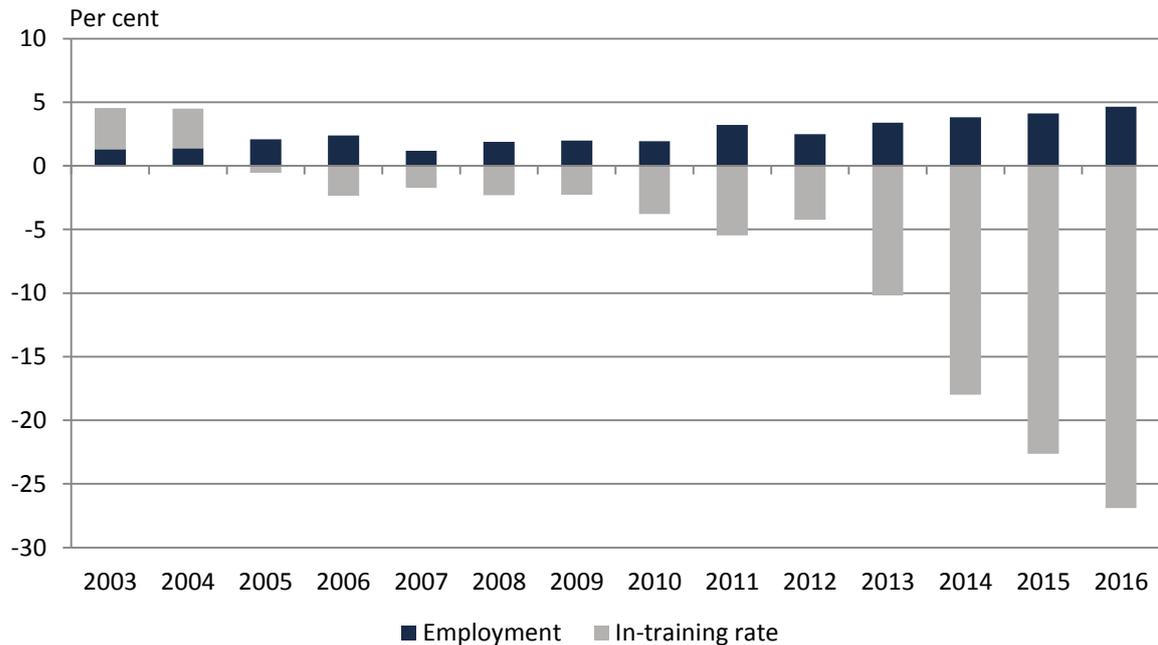
Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

**Figure 23: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Office managers**



Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVET (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVET, Australia

**Figure 24: Decomposition of growth in the numbers of apprentices and trainees, cumulative percentage change from 2002, Sales assistants and salespersons**



Source: Author's calculations; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia.

In only one of these occupations have we seen an increase in the number of apprentices and trainees since 2002—Carers and aides. This has been primarily because of the 15 per cent employment growth since 2002, a strong enough growth rate to out-weigh the decline in the training rate (which detracted about 9 percentage points). In each of the other occupations the decline in the training rate has been larger than employment growth—a decline since 2002 of 19 per cent among hospitality workers, 27 per cent or so among Office managers and around 27 per cent among Sales assistants and salespersons. The big declines have occurred since 2012 and therefore it would be reasonable to attribute at least part of these declines to the changes to Commonwealth incentive payments in 2012 and 2013. This observation is consistent with Pfeifer's modelling (Pfeifer 2016:24) which found a statistically significant decline for the non-NSNL occupations at the time of the removal of incentives (see earlier discussion of the changes). However, the continuing decline in many training rates suggests that there are other factors at work.

Clearly, not all the decline in training rates, which we have observed over a variety of trades and non-trades occupations, can be attributed to the removal of incentives. For example, we have seen large declines in the training rates among Chefs and cooks and Hairdressers. These occupations were exempt from the removal of Commonwealth incentives and therefore the conclusion would have to be that employers have become increasingly more reluctant to take on apprentices and trainees.

It is worth reflecting on why employers take on apprentices and trainees. Clearly there are a number of economic motivations: the ability to pay a trainee wage and the existence of government subsidies in some cases. These considerations go straight to the bottom line for employers. However, there are considerable costs associated with hosting an apprenticeship or traineeship, at least in the trades. Nechvoglod, Karmel and Saunders (2009) found, based on a small number of actual electrical and plumbing apprenticeships, that the apprenticeship model involves a substantial financial commitment from employers. The highest costs to employers are for supervision, as apprentice wages (including on costs such as superannuation and leave) were more or less equal to their productivity. They further

found that the effect of government incentives on employers' decisions to train trade apprentices was minimal, as they do not represent a significant discount to employers.

However, the numbers of electrical and plumbing apprentices attest to their value to employers. These benefits include the ability to test staff before hiring permanently, the matching that has been done if the apprentice has undertaken some pre-vocational courses and the ability to ensure that the on the job training is of the right quality for the employer. The difficulty of recruiting qualified trades workers must also be a factor. In addition, there is no doubt that some employers have altruistic motives—the 'desire to give back to the industry'. Pfeifer (2016) notes that the post training employment of apprentices in their training firm is an important indicator of firms' motivation for training, and points out that the proportion of apprentices continuing in employment in the training firm is considerably higher in Germany than in Australia, perhaps suggesting that the German firms' commitment to training is rather higher than their Australian counterparts.

The situation will differ between occupations and between individuals. Cully (2006, 2008) argues that incentives can be thought of as implicit wage subsidies, and the relative size of the wage subsidy will depend on the duration of the apprenticeships or traineeship and the age of the apprentice or trainee. In some circumstances he calculated that the implicit wage subsidy was as high as 20 per cent. Whether this is important will depend on the intrinsic value of the apprenticeship or traineeships to the employer. The fall in the number of non-trade apprentice or trainees following the removal of certain incentives suggests that the intrinsic value to the employer of the training model may not be very high in some occupations. Karmel et al. (2010) also argue that the original idea of a traineeship was as a way of easing the transition into the labour market for early school leavers and other disadvantaged groups, and suggests that there is little evidence of significant skills acquisition in many of the associated occupations. This is very different from the obvious skills acquisition in the traditional trades.

Karmel et al. makes the point that any reform of the traineeship system must be contingent on being clear about what is trying to be achieved. In the trades, the aim is quite clear: it is about producing qualified tradespeople. But this is not so clear in the many relatively unskilled occupations that have apprentices and trainees. If the model is about helping certain groups into the labour market then the subsidies should be associated with individuals, not an apprenticeship or traineeship as such. On this basis they argue for better targeting of government subsidies and comments:

... the combination of formal education and on-the-job training and work experience is attractive educationally. If employers and employees value the model for its own sake, then traineeships should prosper. On the other hand, if the expansion of traineeships has been largely driven by subsidies, then we might see a significant contraction if those subsidies and other government funding are withdrawn. (Karmel et al. 2010:10)

On the face of the evidence since 2012, it seems that the model is not universally highly valued by employers, and employer support seems to be on the decline in many occupations.

## 11 Employers and completions

To provide context we provide contract completion rates for each ANZSCO major group, with additional detail provided for Technicians and trade workers and Community and personal care workers (Table 10).

**Table 10: Contract completion rates in trade and non-trade occupations, for contracts commencing in 2009–12 (%)**

Occupation (ANZSCO) group	Contract completion rates			
	2009	2010	2011	2012
<b>Managers</b>	53.5	55.7	55.1	59.5
<b>Technicians and trades workers</b>	48.1	46.6	46.2	n/a
31 Engineering, ICT and science technicians	58.2	57.5	58.1	n/a
32 Automotive and engineering trades workers	53.5	51.8	50.9	n/a
33 Construction trades workers	43.5	41.1	40.0	n/a
34 Electrotechnology and telecommunications trades workers	57.5	54.1	50.9	n/a
35 Food trades workers	30.9	31.1	30.5	n/a
36 Skilled animal and horticultural workers	47.6	49.7	47.1	n/a
39 Other technicians and trades workers	52.1	50.2	50.0	n/a
391 Hairdressers	37.4	35.8	35.1	n/a
392 Printing trades workers	61.5	61.2	62.5	n/a
393 Textile, clothing and footwear trades workers	54.5	36.6	46.5	n/a
394 Wood trades workers	44.5	40.0	38.1	n/a
399 Miscellaneous technicians and trades workers	64.7	65.5	63.7	n/a
<b>Community and personal service workers</b>	55.3	56.0	56.8	58.8
41 Health and welfare support workers	57.8	60.2	62.4	59.2
42 Carers and aides	64.3	63.2	63.9	64.0
43 Hospitality workers	47.6	46.9	48.8	53.6
44 Protective service workers	65.7	77.9	54.5	62.7
45 Sports and personal service workers	58.9	61.0	62.6	62.5
<b>Clerical and administrative workers</b>	57.8	56.8	55.4	56.7
<b>Sales workers</b>	55.2	55.7	58.4	59.9
<b>Machinery operators and drivers</b>	60.7	56.1	57.7	59.8
<b>Labourers</b>	52.2	53.6	53.8	55.2
<b>Total non-trade occupations</b>	56.2	55.9	56.3	58.3
<b>Total trade occupations</b>	48.1	46.6	46.2	n/a
<b>All occupations</b>	<b>53.6</b>	<b>52.7</b>	<b>53.0</b>	<b>n/a</b>

Note: n/a = not available.

Source: NCVET (2016), *Australian vocational education and training statistics; completion and attrition rates for apprentices and trainees 2015*, NCVET, Adelaide.

We see that on the whole the non-trade occupations have higher completion rates than trade occupations, partly explained by the longer duration of the apprenticeships and traineeships in trade occupations. On the other hand, the longer duration indicates a more binding relationship, and arguably, it is the pay-off to completing training that is key. In this regard, we see considerable variation in occupations in the trades, with Hairdressers and Food trades workers having particularly low rates and Engineering, ICT and science technicians, Electrotechnology and telecommunications trades workers

and Printing trades workers having relatively high rates. This variation appears to be related to the differential pay-off to completion (Karmel and Mlotkowski 2010b; 2011). Karmel and Rice (2011:24) also argue that the cost of non-completion of an apprenticeship (in the trades) is very high to employers, as they 'incur much of the cost and little of the benefit at the beginning of the apprenticeship'. Presumably this would encourage completion in trades occupations, everything else being equal.

Thus it would appear that occupational identity, occupational culture and duration of a contract are all important factors.

The most obvious starting place for looking at the effect of employers on the completion of an apprenticeship or traineeship is the Apprentice and Trainee destination survey conducted by NCVET in 2008. In the following table we look at the reasons given by non-completers.

**Table 11: Main reason for not completing an apprenticeship or traineeship, 2008 and 2010 (%)**

Non-completers	In a trade occupation		In a non-trade occupation	
	2008	2010	2008	2010
<b>Doing something different/better</b>	<b>23.3</b>	<b>20.2</b>	<b>36.5</b>	<b>41.2</b>
Left job or changed career	9.4	12.5	21.4	28.8
Got offered a better job	3.3*	2.2	10.1	7.2
The pay was too low	8.7	4.7	3.0	2.3
Left to study elsewhere	1.9*	0.8*	2.0*	3.0
<b>Poor working conditions/did not like boss</b>	<b>19.3</b>	<b>13.3</b>	<b>7.0</b>	<b>5.5</b>
Did not get on with boss or other people at work	16.2	10.2	4.3	3.8
Poor working conditions	3.1*	3.1	2.7*	1.7
<b>Didn't like the type of work/industry, or transferred to other apprenticeship/traineeship</b>	<b>16.8</b>	<b>13.7</b>	<b>8.2</b>	<b>8.7</b>
Did not like the type of work	10.2	8.3	5.0	5.4
Not happy with the job prospects in the industry	3.6*	4.2	1.5*	1.5
Changed to another apprenticeship/traineeship	3.1*	1.1*	1.7*	1.9
<b>Wasn't happy with training or study</b>	<b>8.2</b>	<b>5.1</b>	<b>7.9</b>	<b>3.8</b>
Found the study too difficult	1.4*	1.6	**	1.7
Was not happy with the on-the-job training	5.4*	1.9	5.2	1.1
Was not happy with the off-the-job training	1.4*	1.6*	2.0*	1.1
<b>Lost job or made redundant</b>	<b>8.9</b>	<b>26.8</b>	<b>7.8</b>	<b>15.2</b>
<b>Personal reasons</b>	<b>10.0</b>	<b>15.7</b>	<b>16.2</b>	<b>18.8</b>
Family reasons	1.3*	4.0	3.1	5.4
Illness	4.0*	4.5	3.5	3.9
Lack of time	0.9*	2.0	3.8	4.9
Moved	1.2*	3.8	2.9	3.5
Problems with travelling/transport	2.6*	1.3*	2.8*	1.2*
<b>All other reasons</b>	<b>13.4</b>	<b>5.3</b>	<b>16.4</b>	<b>6.8</b>
Apprenticeship/traineeship cancelled or discontinued	3.2*	3.8	6.4	5.3
Other reasons	10.2	1.5*	10.1	1.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Note: \* The estimate has a relative standard error greater than 25 per cent and should be used with caution. \*\* Estimates are not available as they are considered too unreliable.

Source: NCVET (2010), *Australian vocational education and training statistics: apprentice and trainee destinations 2010*, at p. 10, Table 5.

A number of themes emerge from these data which are consistent with information obtained from the LSAY cohort from more than 10 years earlier. According to Ainley et al. (2010), reasons given by the LSAY 1995 cohort for not continuing an apprenticeship or traineeship were most frequently to do with health and personal factors, followed by dislike of the type of work, getting along with supervisors or others at work, being offered a better job or feeling that the pay was too low. The most frequently cited reasons for discontinuing, in other words, appear to be personal, related to the workplace or related to rewards.

From the NCVET data we see that there are significant differences in the reasons given by those undertaking a trade apprenticeship or traineeship compare to those undertaking a non-trade apprenticeship or traineeship. Those in a non-trade occupation are much more likely to cite 'doing something different/better' indicating that there is a much tighter link with the occupation among the trades. On the other hand those undertaking a trade apprenticeship or traineeship are much more likely to give the reason for non-completion as 'Did not like the type of work/industry, or transferred to other apprenticeships/traineeship. Interestingly that poor working conditions or non-sympathetic bosses or workmates have an immediate effect for many, but then decrease in importance with duration (Karmel and Mlotkowski 2010a). Personal reasons tend to be more important for those in non-trade occupations

There are two sets of reasons that directly are linked with the employer. The first is working conditions including relationships with the boss and fellow workers. This reason is given more often for trade occupations, suggesting that there are issues about workplace culture in some trade occupations. The second is quite direct—losing the job or being made redundant. In respect of this reason the most notable point is the increase in the proportion citing this reason for non-completion between 2008 and 2010 (coinciding with the global financial crisis)—from 8.9 per cent to 26.8 per cent in the trades and 7.8 per cent to 15.2 per cent in the non-trade occupations.

Whether the increase in job loss associated with a downturn leads to lower completion rates, though, is a moot point. Such job loss may be more than balanced by the decrease in opportunities outside the apprenticeship or traineeship in times of a poorer labour market. This phenomenon we certainly see in terms of attrition in the trades where employer initiated job losses increase in a downturn but employee initiated job changes decline (see Karmel et al. 2011).

We also note that individual employers (and workplaces) have a very large influence on completion rates. Harris et al. (2001) point to the importance of the workplace environment and argue that completion is more likely if: the trainee/apprentice is able to develop and use a wide range of skills and knowledge; hours and demands of work are realistic and reasonable; physical conditions of work are not too onerous; interpersonal relationships are satisfying and management and supervision are supportive. Karmel and Roberts (2012) show that size matters: employers with at least 25 apprentices have much higher apprenticeship completion rates than smaller employers and also that employer type matters: apprentices with government employers have much higher completion rates than those with private employers. This finding is not that surprising. Large employers and government employers, tend to have the human resource infrastructure that enables them to manage their apprentice and trainee programs effectively. For the same reason, it might have been surmised that group training organisations would have high completion rates but their rates are only a little higher than private employers.

## 12 Conclusion to Part II

An apprenticeship or traineeship is a very particular type of employment and training arrangement. At first sight, the package of employment, formal training and on the job experience seems to have great merit from an educational point of view, and also for the individual who not only gains qualifications but also has a proper income. However, we have argued that to properly understand apprenticeships and traineeships it is necessary to drill down to particular occupations. For some occupations—particularly those that are licenced such as plumbers or electricians, the apprenticeship or traineeship is the main pathway into an occupation. However, in other occupations there may be a multitude of pathways into an occupation, and the apprenticeship or traineeship may be seen as incidental to the employment relationship; the job is key rather than the apprenticeship or traineeship.

Thus for some apprenticeships or traineeships the arrangement is an investment in future skills, and the individual will expect a return on the effort. For others, the apprenticeship or traineeship is not so much about acquiring skills but rather getting a job. In fact, this was the original motivation for introducing traineeships as envisaged by Peter Kirby; traineeships were designed to facilitate the transition to work for early school leavers rather than a way of building the nation's skill base.

In both cases, the number of apprentices and trainees will depend on supply factors—essentially the value of opportunities as an apprentice or trainee relative to other opportunities, and the size of the pay-off to completing an apprenticeship or traineeship—and demand factors—the extent to which employers wish to have apprentices or trainees. In this section we have been concerned with the latter, and have argued that there will be a range of elements that will influence employers, namely the institutional wage setting arrangements for apprentices and trainees, the availability of government subsidies, and the intrinsic benefits of training workers embedded in the firm in question.

We have also argued that it is the demand considerations that are dominant and that the number of apprentices and trainees is largely constrained by employer behaviour rather than employee choice.

In terms of recent trends, we have seen a very significant decline in the number of apprentices and trainees since 2008, such that in many occupations the number is less than in 2002. This is despite considerable employment growth in many occupations. While training rates have held up reasonably in some occupations (Construction and Electrotechnology and telecommunications trades workers for example), they have declined alarmingly in most occupations, including some trades (Chefs and cooks, Hairdressers for example).

Changes to the availability of government subsidies (notably for existing workers and part-time workers in some occupations) clearly have had an effect. Similarly, the decision made by the Full Bench in the 2013 Modern Awards Review to increase apprentice wages may have played a role, but it seems that any effect appears minor given the prevalence of over award payments to apprentices (which would tend to mitigate any impact of the decision). In addition the lack of uniformity in commencement trends across individual trades suggests that if the 2013 Modern Awards Review Decision had any impact on employer demand for apprentices it was only one of a number of factors.

It thus appears that employers are becoming increasingly less enamoured with the apprenticeship and traineeship model, independent of government policy changes.

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## Appendix A: Government assistance to employers of apprentices and trainees

Table A1 details a range of financial incentives paid by the Australian Government.

**Table A1: Commencement, recommencement, and completion incentives available from the Australian Government for employers of apprentices and trainees**

	Commencement	Recommencement	Completion
<b>NSNL Occupation</b>			
Part Time Existing Worker	\$1500	\$750	\$2500
Full Time Existing Worker	\$1500	\$750	\$2500
Part Time New Worker	\$1500	\$750	\$2500
Full Time New Worker	\$1500	\$750	\$2500
<b>Non-NSNL, Priority Occupation*</b>			
Part Time Existing Worker (top if Certificate III or IV / bottom if Diploma or Advanced Diploma)	-	-	\$1500 / \$3000
Full Time Existing Worker	-	-	\$3000
Part Time New Worker (as above)	- / \$1500	- / \$750	\$1500 / \$2500
Full Time New Worker	\$1500	\$750	\$2500
<b>Non-Priority/NSNL Occupation</b>			
Part Time New Worker	-	-	\$1500
Full Time New Worker	\$1500	\$750	\$2500

\*Priority occupations means Aged Care, Childcare, Disability Care, and Enrolled Nursing – these apprentices may be undertaking either a Certificate III/IV or a Diploma/Advanced Diploma qualification whereas all other apprentices must be undertaking a Certificate III/IV.

Source: Australian Government, *Australian Apprenticeships Incentives Program Summary*, July 2015.

Employers of apprentices and trainees in the following circumstances may also be eligible to receive the following support from the Australian Government (2015a):

- \$1250 commencement incentive of a new worker (full time or part time) from nominated equity groups undertaking a Certificate II qualification.
- \$1000 completion incentive for employers of a worker undertaking a Certificate II qualification through a GTO.
- \$750 commencement incentive, and \$750 completion incentive, for employers of Mature Aged apprentices and trainees (45 years and over).
- \$750 commencement incentive, and \$750 retention incentive, for employers of School-based apprentices and trainees.
- \$1000 incentive for employers of Certificate III/IV apprentices and trainees in Rural and Regional skills shortage occupations.
- \$1500 commencement incentive, and \$1500 completion incentive, for employers of a worker undertaking a Certificate II in a Declared Drought Area.

- \$104.30 per week wage support for employers of apprentices and trainees with disability.
- Weekly payments for adult apprentices and trainees (aged 25 years or older) at a rate which is subject to an annual cap and dependent upon year of training and part-time/full-time status.

A range of financial incentives to employers and RTOs are also provided at a state or territory level. These include:

- the NT Training for the Future - Employer Support Scheme provides a commencement grant of \$1000, a completion grant of \$2000, and a recommencement grant of \$500 (NT Government 2016c);
- the NT Occupational Shortage Employer Incentive Scheme which provides up to \$4000 for NT businesses employing an Australian Apprentice (NT Government 2016c);
- the Queensland Apprenticeship Pledge which provided up to \$6000 for each apprentice hired (Queensland Government 2016a);
- the Queensland Group Training Additional Apprentice Bonus, which provides \$5000 to eligible GTOs for each new full-time apprentice commencement in excess of the number of commencements in the previous year (Queensland Government 2016a);
- the Queensland School to Trade Pathway incentive, which provides a \$5000 bonus for commencing a school-based apprentice (Queensland Government 2016a);
- the Queensland Work Start incentive, which provides \$10 000 for hiring an Apprentice who had participated in a Community Work Skills, Work Skills Traineeship, Get Set for Work, Ready for Work, or Youth Skills project (Queensland Government 2016a);
- the SA Critical Skills Fund, which provides up to \$2000 for each Australian Apprenticeship completion in a Critical Skills List qualification (Government of SA 2016); and
- the SA Aboriginal Apprentice Program which provides up to \$12 000 to employers of Aboriginal people over the age of 16 in trade-based Australian Apprenticeships (Government of SA 2016).

Other state and territory government programs for employers of Australian Apprentices are:

- Payroll tax rebates or exemptions— available in ACT,<sup>46</sup> NSW,<sup>47</sup> QLD,<sup>48</sup> and WA<sup>49</sup>
- Workers compensation premium exemptions— available in NSW (ICARE Workers Insurance 2016), SA (Government of SA 2016), and Victoria (WorkSafe Victoria 2016).
- Building and Construction Industry Training Fund— these funds are collected via levies on building and construction work and provide funding to employers for the training of Australian Apprentices in the building and construction industries. These funds operate in the ACT (ACT Building and Construction Industry Training Fund Authority 2016), Queensland (Construction Skills Queensland 2016), SA (Construction Industry Training Board 2016), and WA (Construction Training Fund 2016).

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<sup>46</sup> *Payroll Tax Act 2011* (ACT) sch 2 item 2.16.

<sup>47</sup> *Payroll Tax Act 2007* (NSW) sch 2 item 5.

<sup>48</sup> *Payroll Tax Act 1971* (QLD) s 14(2)(j).

<sup>49</sup> *Pay-Roll Tax Assessment Act 2002* (WA) s 40.

## Appendix B1: Annual commencements by occupation

Table B1: Annual commencements by occupation, year to June, 1995–2016

Year to June	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1 Managers	608	1844	3053	2635	2689	2183	1984	2236	2125	2174	2417
2 Professionals	94	216	815	2112	1720	1733	1611	1632	1288	1214	1153
31 Technicians	858	1134	1128	1819	2726	1956	2188	3934	8986	2145	2456
32 Automotive	12777	13424	13382	12836	14612	14720	13418	13709	15709	18107	20217
33 Construction	9926	7229	7549	9848	11816	13017	9261	11400	14043	17529	17781
34 Electrotechnology	4664	4650	4757	5114	5655	5891	5127	5478	6391	7936	9407
3511 Bakers	1528	1873	1447	1347	1447	1536	1949	1884	1845	2045	1809
3512 Butchers	859	896	800	579	653	704	788	1164	1272	1424	1418
3513&3514 Chefs and Cooks	4248	4171	4299	4479	5293	5732	5197	5087	5239	5752	5601
36 Animal and horticultural	1633	1165	1231	1611	2309	2657	3183	3556	3213	3538	3865
391 Hairdressers	3526	3285	3408	3774	4407	4253	4134	3982	4082	4927	5231
392 Printers	889	737	794	757	707	856	764	653	799	702	734
393 Textile trades	275	223	252	387	549	565	314	533	505	329	246
394 Wood trades	1770	1361	1358	1731	1987	2103	1565	1816	2053	2108	1988
30&390&399 other	442	475	973	696	774	1009	1061	1172	1157	1483	1465
41 Health and welfare	50	47	147	139	436	210	330	470	1251	2164	2200
42 Carers and Aides	274	452	2722	7405	10153	8268	10169	11510	14063	13184	14346
43 Hospitality Workers	1109	1614	3371	6958	10980	14675	13565	15113	17118	13680	14267

Factors affecting apprenticeships and traineeships

44 Protective Services	231	399	487	761	7021	6666	5733	5184	5682	3975	3821
45 Sports and personal	178	495	986	1291	930	975	1598	1698	2532	3002	3694
51 Office managers	30	254	949	689	3542	3435	4055	5021	10388	14662	15278
52 Personal assistants	0	0	3	1	0	0	0	0	0	0	0
53 General clerical	5950	11131	13701	16038	26258	19565	20215	22308	31741	19677	16555
54 Inquiry and reception	251	562	373	467	1354	3602	10084	9111	10542	7816	7476
55 Numerical clerks	62	67	40	153	304	975	2751	4551	4338	3125	3389
50&56&59 other clerical	238	677	2813	3615	2359	1799	1912	1735	2062	2979	3431
61 Sales representatives	449	2979	3880	6493	7003	4886	3361	2656	2264	2014	2435
60&62&63 Sales workers	1810	4870	7922	10247	32594	30297	37769	44942	49795	40045	36901
70&71 Machinery Operators	119	216	365	466	1044	1869	2993	4072	6249	6443	12017
72 Mobile Plant Operators	12	96	168	142	487	1337	2670	2562	2176	1398	1292
73 Road and Rail Drivers	52	222	34	529	3346	11289	8198	12000	11954	9522	7998
74 Storepersons	34	123	366	1026	3370	6676	10404	11465	12847	10691	10250
81 Cleaners and Laundry	60	233	167	737	6401	5286	6148	7269	7206	6484	5806
82 Construction and Mining	34	303	469	595	1139	956	780	1156	2324	1179	1190
83 Factory Process Workers	2112	4232	6089	10365	13183	13054	13363	14487	15993	12942	14393
84 Farm, Forestry and Garden	680	1194	2093	3491	3771	3378	3858	4484	4440	4011	3773
85 Food Preparation Assistants	305	355	688	1137	1007	687	670	547	602	730	930
80&89 Other labourers	1865	2986	2878	3672	3124	2829	2104	3723	3759	3540	3615
Not known	0	0	0	0	0	0	0	0	0	0	0

Factors affecting apprenticeships and traineeships

<b>Total</b>	<b>60002</b>	<b>76190</b>	<b>95957</b>	<b>126142</b>	<b>197150</b>	<b>201629</b>	<b>215274</b>	<b>244300</b>	<b>288033</b>	<b>254676</b>	<b>260845</b>
<b>Year to June</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
1 Managers	2852	3541	5330	5413	8946	22084	39519	11205	5107	2975	3597
2 Professionals	2537	4948	5473	3757	1505	2623	3549	1379	755	508	540
31 Technicians	2494	2584	3396	3376	4256	6957	9255	6430	5954	4191	2414
32 Automotive	21075	21809	23423	18196	19012	20830	22315	19442	16698	16504	15355
33 Construction	18648	21087	24194	17481	22146	21725	17192	17274	17927	23970	22655
34 Electrotechnology	10682	11466	12457	9938	11120	12621	12599	14324	16547	13795	13639
3511 Bakers	1627	1768	1977	1871	1733	1828	1135	934	1034	988	936
3512 Butchers	1462	1721	1908	2014	2190	1939	2578	3001	2363	2238	2096
3513&3514 Chefs and Cooks	5817	6165	6221	5459	6441	6329	5772	6378	7275	6313	5250
36 Animal and horticultural	3967	3690	4245	4351	4690	5154	5562	4959	5037	4262	3518
391 Hairdressers	5529	5823	6018	5373	5871	5512	5104	4778	4524	4126	3704
392 Printers	660	667	639	640	768	795	1076	899	834	519	563
393 Textile trades	370	247	198	161	119	152	127	126	100	97	69
394 Wood trades	1993	2137	2266	1540	1877	1899	1606	1480	1552	2150	2031
30&390&399 other	1268	1625	2976	5963	9507	8335	14640	8056	12654	6112	4117
41 Health and welfare	2823	3431	3986	4328	4520	5135	6732	3246	4509	3233	2107
42 Carers and Aides	13906	13931	13769	12368	12259	13042	14362	13002	14824	12475	10888
43 Hospitality Workers	14748	15787	17163	19169	18710	20343	23817	13120	12575	11112	10205
44 Protective Services	3792	2657	3020	1990	973	1043	1052	1080	693	562	555

Factors affecting apprenticeships and traineeships

45 Sports and personal	3870	4425	4519	5290	5943	7909	8734	4409	5344	5547	5621
51 Office managers	15206	16287	19258	20744	25968	25490	30040	11593	7686	3631	2915
52 Personal assistants	0	0	0	0	0	17	57	46	161	162	164
53 General clerical	15330	15075	15042	12367	11954	11866	11782	8789	8008	7184	7456
54 Inquiry and reception	8075	9303	10251	9538	10113	11773	15168	7757	6941	4734	2902
55 Numerical clerks	4088	3854	4083	5293	5662	5931	5560	5184	3697	3323	2836
50&56&59 other clerical	4380	4942	4944	4423	5235	4876	5552	3518	2517	1825	1702
61 Sales representatives	2547	1827	1692	2228	4060	4968	5893	3108	2779	1209	1185
60&62&63 Sales workers	37935	37014	40061	38362	40466	42853	48076	24960	20618	16072	16614
70&71 Machinery Operators	9151	7122	6301	4693	4635	2727	3636	3047	2437	2961	2423
72 Mobile Plant Operators	2006	2166	2038	2310	2278	1674	2164	1173	936	3242	2698
73 Road and Rail Drivers	8350	8446	7954	8325	8022	8816	7513	4194	3784	2557	2733
74 Storepersons	10472	10016	9819	8569	8041	8425	12235	6132	6919	3618	3614
81 Cleaners and Laundry	6739	5671	5056	4950	4888	4124	4254	1876	1809	963	1054
82 Construction and Mining	1182	1349	1670	1490	1807	1341	1937	1406	1239	1166	1642
83 Factory Process Workers	12855	11746	10803	10895	12151	14290	20309	8562	9181	6607	5642
84 Farm, Forestry and Garden	3441	3003	2950	3038	3039	2769	2093	1675	1412	1397	1159
85 Food Preparation Assistants	638	592	417	415	392	337	942	1458	1116	825	957
80&89 Other labourers	3244	3544	3596	3038	2210	2600	2735	1600	1319	1060	1192
Not known	0	0	0	0	0	0	97	1577	687	1	70
<b>Total</b>	<b>265759</b>	<b>271466</b>	<b>289113</b>	<b>269356</b>	<b>293507</b>	<b>321132</b>	<b>376769</b>	<b>233177</b>	<b>219552</b>	<b>184214</b>	<b>168819</b>

Source: NCVER (2016), *Historical time series of apprenticeships and traineeships in Australia, from 1963*, NCVER, Australia..

## Appendix B2: Occupations on the National Skills Needs List, as at July 1, 2015

- Airconditioning and Mechanical Services Plumber
- Airconditioning and Refrigeration Mechanic
- Aircraft Maintenance Engineer (Avionics)
- Aircraft Maintenance Engineer (Mechanical)
- Arborist
- Automotive Electrician
- Baker
- Binder and Finisher
- Boat Builder and Repairer
- Bricklayer
- Butcher or Smallgoods Maker
- Cabinetmaker
- Carpenter
- Carpenter and Joiner
- Cook
- Diesel Motor Mechanic
- Drainer
- Electrical Linesworker
- Electrician (General)
- Electrician (Special class)
- Electronic Equipment Trades Worker
- Fibrous Plasterer
- Fitter (General)
- Fitter and Turner
- Fitter-Welder
- Floor Finisher
- Furniture Finisher
- Gasfitter
- Glazier
- Hairdresser
- Joiner
- Landscape Gardener
- Lift Mechanic
- Locksmith
- Metal Fabricator
- Metal Machinist (First class)
- Motor Mechanics (General)
- Motorcycle Mechanic
- Optical Mechanic
- Painting Trades Worker
- Panel Beater
- Pastrycook
- Picture Framer
- Plumber (General)
- Pressure Welder
- Printing Machinist
- Roof Plumber
- Roof Tiler
- Screen Printer
- Shearer
- Sheetmetal Trades Worker
- Signwriter
- Small Engine Mechanic
- Solid Plasterer
- Stonemason
- Telecommunications Linesworker
- Telecommunications Technician
- Toolmaker
- Upholsterer
- Vehicle Body Builder
- Vehicle Painter
- Vehicle Trimmer
- Wall and Floor Tiler
- Welder (First class)
- Wood Machinist

## Appendix B3: Decomposition of the change in the numbers of apprentices and trainees in-training

We employ a standard shift-share methodology.

Let  $A_i$  be the number of apprentices and trainees in the  $i$ th occupation.

Let  $E_i$  be employment in the  $i$ th occupation.

Define the training rate  $r_i = A_i/E_i$

Then  $A_i = E_i * r_i$

Taking percentage changes (signified by  $\% \Delta$ ) we get

$$\% \Delta A_i = \% \Delta E_i + \% \Delta r_i$$

where the percentage change is calculated at the mid point in order to increase the formula's accuracy.

Thus we can decompose the percentage change in the numbers of apprentices and trainees into a component measuring employment growth and a component measuring the change in the training rate. Further, we accumulate over years so that we can see the effect of these two components over time.