



# Research Report 4/2017

## **Explaining recent trends in collective bargaining**

David Peetz and Serena Yu

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The contents of this paper are the responsibility of the author 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.

A draft of this paper was workshopped with the MWRG prior to finalisation. The authors would also like to thank the MWRG for its comments.

The contents of this report, however, remain the responsibility of the authors.

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## List of abbreviations

ABS	Australian Bureau of Statistics
Act	<i>Fair Work Act 2009</i> (Cth)
CA	Collective agreement
CAs	Collective agreements
DE	Department of Employment
EEH	Employee Earnings and Hours
LFS	Labour Force Survey
WAD	Workplace Agreements Database

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# 1 Introduction

The purpose of this report is to examine the factors that have influenced recent changes in collective bargaining. This is in the context of section 134(1)(b) of the *Fair Work Act 2009* (Cth) (Act), which refers to the need to encourage collective bargaining as part of the modern awards objective.

The main source of data for Collective Agreement (CA) coverage is the biennial Employment, Earnings and Hours (EEH) survey produced by the Australian Bureau of Statistics (ABS)<sup>1</sup>, but another source also used is the quarterly data from the Workplace Agreements Database (WAD) collated by the Department of Employment (DE)<sup>2</sup>. The WAD data used here are mostly from the June quarter of the relevant year, to maximise compatibility with the EEH surveys (undertaken in May). The rest of the introduction summarises the substantive findings of the paper, which begins in Section 2.

## *Methodology and data limitations*

We undertook a form of shift-share analysis over several years, a method by which, in effect, data weights are changed to test differing structural assumptions. There are some important differences between EEH and WAD, so they serve different purposes. These include:

- EEH is a survey and subject to sampling error, WAD is a census;
- EEH has broader coverage than WAD, which is restricted to agreements in the federal system that have not passed their expiry date;
- unlike EEH, WAD can distinguish between union and non-union agreements, and between new and replacement agreements.

Another limitation of EEH is that, as a sample of employers, it produces estimates of the distribution of employment by industry, occupation, sector and so on that differ from those in the monthly Labour Force Survey (LFS). The LFS is considered the more authoritative source on such data. Even in LFS, original estimates are subject to sampling error, and trend estimates, where available, are preferred.

## *Changes in overall incidence of CAs over time*

Over most of the period since 2002, approximately two-fifths of employees have been covered by CAs according to EEH. The proportion of employees on CAs was 36.4 per cent in May 2016, a fall of 4.7 percentage points compared to 2014 (when it was 41.1 per cent) and of seven percentage points from its estimated peak in 2010 (when it was 43.4 per cent, up 3.6 percentage points from 39.8 per cent in 2008).

In the WAD, coverage of current federal agreements<sup>3</sup> peaked at 28.8 per cent of all employees in 2011 before declining to 26.5 per cent in 2014, 24.7 per cent in 2015 and 21.9 per cent in 2016. There has been a decline in the number of employees covered by current federal CAs, from a peak of 2.65 million in 2011 and 2012, to 2.2 million in June quarter 2016

## *Union and non-union coverage and agreements*

Within many countries, there is a close relationship between union density and CA coverage density. In most other countries, CAs in employment can only be made by unions. In Australia, the vast

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<sup>1</sup> Published as ABS, *Employee Earnings and Hours, Australia*, Catalogue No. 6306.0.

<sup>2</sup> Published most recently as Department of Employment, *Trends in Federal Enterprise Bargaining*, 2016.

<sup>3</sup> Current federal agreements are those agreements that have been approved but have neither been terminated nor nominally expired at a given point in time. An agreement is deemed to be current on its nominal expiry date.

majority of employees on CAs will be on union CAs, so we would expect that an important explanatory factor in any decline in CA coverage will be the decline in union density.

The decline in union density between 2000 and 2016 was much greater than the decline in CA coverage density. There appears to have been an increase in ‘free riding’ over time. Some sort of lag is to be expected between union density and CA density, and this appears to have been the case in the data. Lags might occur because some employees may leave a union after a CA is negotiated but remain covered by the CA, and once a union has negotiated a CA with the employer, the employer may be reluctant to change from union to non-union bargaining even after density has declined, because of one or more of: employee resistance to loss of benefits, employer hesitance to provoke a union organising drive, or employer belief in the efficiency of union bargaining.

Much of the earlier decline in CA coverage density appeared due to a decline in employee coverage by non-union agreements. From 2010 to 2014 there had been a substantial increase in coverage by current federal union CAs (by 2.4 percentage points) offset by a more than halving of coverage by current federal non-union CAs (by 2.6 percentage points, to only 2.0 per cent). Between 2014 and 2016, however, there has been a drop in coverage by union agreements, which appeared to reflect the cumulative effect of a decline in replacement union agreement-making.

#### *Job characteristics, changes in incidence of CAs over time and compositional effects*

A key question addressed by this report is what impact, if any, has the changing structure of employment had on CA coverage? We examine changes in CA coverage estimates by various aspects of job characteristics—in particular, industry, occupation, sector and employment status.

At the *industry* level, there have been long term declines in employment in Manufacturing and in Agriculture, forestry and fishing, as well as Information media and communications. Increases have occurred in the employment shares of Health care and social assistance, Professional, scientific and technical services, Construction and Administrative and support services. There have been large drops in agreement coverage between 2012 and 2014 in industries including Public administration and safety, Mining, and Administrative and support services. In the period to 2016, developments in Retail trade, where a major agreement was cancelled, and Public administration and safety, where bargaining has experienced some difficulties, appear particularly important in explaining the drop in the number of employees with current federal agreement coverage. We estimated what the overall CA coverage density would have been in each year, if coverage density in each industry had been the same as in 2014, but employment shares had changed according to the ABS’ Labour Force Survey (LFS). Between 2000 and 2014, structural change in the industry composition of employment would have boosted CA coverage by 1.21 percentage points—not a large effect, but still noticeable. A further 0.13 percentage points was added between 2014 and 2016. This analysis was undertaken at the 1-digit (most aggregated) industry level; analysis of structural effects on union density suggest that analysis at the 2-digit (more finely grained) level would produce a less positive, or perhaps even a negative, effect.

Using the industry weights of employment implied in EEH, rather than the more widely used LFS, has quite an impact on estimated movements in CA coverage density. Over the four year period 2010 to 2014, nearly two thirds of the decline in CA coverage in EEH was due to the use of the less reliable EEH industry employment weights rather than the preferred LFS weights. In each period considered, the greater variability in the EEH industry employment weights meant that the change in CA density would have been less if LFS weights had been used instead of EEH weights.

The large difference in CA coverage density between the *public sector* (almost 90 per cent) and *private sector* (about 30 per cent) means that the long term decline in the share of public sector

employment can have quite an impact on overall CA coverage estimates. The structural effect of changes in the sector composition of employment has been strongly negative, over the period from 2000 and 2014. Most recently, between 2012 and 2014, apparent structural change in the sectoral composition of employment in EEH accounted for about half of the total decline in CA coverage density.

With regard to *occupation*, there was a long-term increase in the share of employment by Professionals and Community and personal service workers, while a decline was observed for Technicians and trades workers, Clerical and administrative workers, and Labourers. Shift-share analysis showed a very small positive structural effect up to 2014—in 2000, CA coverage density would have been 0.32 percentage points lower than the CA coverage density in 2014, even if each occupation had the same density as in 2014. Using LFS rather than EEH occupational weights would have made little difference to the measured change in CA coverage density to 2014.

Around three-quarters of employees are employed on a *permanent* basis, while around a quarter are *casual* employees. CA coverage density is higher amongst permanent employees across all years, although it has declined from 45.9 per cent in 2008 to 42.65 per cent in 2014. Conversely amongst casual employees, it has risen from under a third of employees in 2008 to 35.52 per cent in 2014. Changes in the casual/permanent composition of employment had a small positive impact on CA density between 2000 and 2016. Using LFS weights would have only a small, negative impact on measured change in CA coverage density to 2014.

The share of *part-time employment* has steadily increased, from 23.43 per cent in 1992 to almost a third of workers (31.57 per cent) in 2016. This substantial change in employment composition has however, seen only small, positive, and diminishing structural effects from 2000 to 2016, as the difference in CA coverage density between those two groups is small.

Overall, the analysis has not determined that structural changes in the labour market have significantly driven the decline in CA coverage. If anything, some structural changes in the labour market have facilitated slight increases, rather than decreases, in CA coverage to 2016. Industry level factors have played some role, though these should not be exaggerated. For example, there has been a decline in the coverage of current federal CAs in the Retail trade and Public administration and safety industries. Indeed, those two industries, along with Health care and social assistance, account for most of the drop in current federal agreement coverage between 2014 and 2016. Outside the substantial drops in these three industries, declines in federal agreement coverage in some industries were offset by increases in others.

Estimates of CA coverage are sensitive to the data source. In particular, using employment weights from the EEH instead of the LFS led to differences in CA coverage estimates, changes in those estimates, or both. Generally, the employment estimates from the LFS are accepted as the more accurate. Using the LFS industry weights rather than those in EEH would have produced a considerably smaller decline in CA coverage density to 2014, but we cannot estimate the effect after that.

Projections of employment patterns over the period to 2020 suggest a minor future structural impact on CA coverage density and union density, but this does not appear likely to be large. Using Department of Employment projections for employment by industry at the 1-digit level to November 2020, the estimated impacts on CA coverage density and union density are expected to be small but positive: about a 0.29 percentage point increase in CA coverage density, and a 0.39 percentage point increase in union density. It is probable that the trajectories of public and private sector employment would have a bigger impact on CA coverage than the industry or occupational composition of future employment.

In summary, declining CA coverage density has to be seen in the context of declining union density and changes in award coverage. The measured decline to 2014 may have been exaggerated by the industry composition of employment in the employer survey used, but we do not know if that affected the decline afterwards, which appeared considerably sharper. Other factors appear to be, before 2014, a decline in non-union agreement-making and, more recently, developments in particular industries including Retail trade and Public administration and safety. Structural change in the labour market has only had a small impact on coverage estimates, with the main negative factor being the shift away from public employment, while industry change has worked in the opposite direction.

## 2 Methodology and data limitations

Our approach principally focused on structural issues, as these were of greatest interest. So we undertook a form of shift-share analysis over several years (a method by which, in effect, data weights are changed to test differing structural assumptions), to identify:

- what would CA coverage have been absent changes in the composition of employment (that is, how much change in CA coverage can be attributed to structural change)?
- what are the principal areas of within-category changes in CA coverage (eg. have they been greater in full-time, part-time or casual jobs, in particular industries, in particular occupations, etc.)?
- by how much have each of these factors contributed to the overall change in CA coverage?
- to what extent does the employer-based sampling methodology of EEH affect estimates—that is, would the same patterns be recorded if the employment weights used were based on the LFS?
- based on projections of future employment, what future changes would we expect from anticipated structural changes in the economy to 2020?

The shift-share analysis is fundamentally a series of bivariate analyses rather than a multivariate one, so we should not expect each variable to have similar effects over time (that is, effects in the same direction). In this report, the shift-share analysis involves holding CA coverage density fixed at 2014 values, and applying different employment weights to different employment categories (eg. industry, occupation, etc.) to re-estimate the number of employees that would have been covered by CAs. The structural effects attributable to changes in the labour market are then calculated by comparing what CA coverage density would have prevailed if 2014 values had applied in other periods, to what actually emerged in 2014. For further details, refer to the Appendix B: Technical appendix.

Most CAs are negotiated with (or at least signed off by) unions, and so decline in union coverage could be a factor in decline of CA coverage. So some of the above analyses have been repeated with the ABS union membership series (previously Catalogue numbers 6310.0 and 6325.0, now 6333.0).<sup>4</sup> However, the latter is collected at a different time and from different sources to EEH—it is based on a survey of employees in the LFS, not the survey of employers that forms the basis of EEH—so the ability to draw links should not be exaggerated. Comparing the change in union coverage and the change in CA coverage in EEH could give some indication of change, if any, in what labour economists call ‘free riding’<sup>5</sup> on the ‘benefits’ of agreements (or alternatively changes in union

<sup>4</sup> ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia*, Catalogue No. 6310.0; ABS, *Characteristics of Employment, Australia*, Catalogue No. 6333.0; ABS, *Trade Union Members, Australia, August 1996*, Catalogue No. 6325.0.

<sup>5</sup> For example, see Wilkinson, D, Harbridge, R, and Walsh, P (2003), ‘Labour Market Re-Regulation and Its Effects on Free Riding in New Zealand’ *Journal of Industrial Relations* 45, no. 4, pp. 529–38; Haynes P and Boxall P (2004), ‘Free Riding in New Zealand: Incidence, Motives and Policy Implications’, *Labour and Industry* 15, no. 2, pp. 47–63. For a more general discussion of free riding in the context of organisations, see Kidwell, RE, Nygaard, A and Silkoset, R (2007), ‘Antecedents and Effects of Free Riding in the Franchisor–Franchisee Relationship’, *Journal of Business Venturing* 22, pp. 522–44.

coverage of award-only employees). This must be done with many caveats, as the data come from different sources and cover different time periods (EEH is conducted in May, union membership data collected in August). Obtaining primary data on free riding is very difficult (eg. employee data on instrument coverage is notoriously unreliable, greatly understating CA coverage), so it can only be inferred. A comparable analysis of the union membership series both serves as a reality check on the structural changes seen in EEH, and identifies whether there are comparable or divergent trends in union and CA coverage within particular categories (eg. within industries) and what this might mean for free-riding, employee non-coverage or even data credibility.

There are some important differences between EEH and WAD, so they serve different purposes. Published EEH data make no distinction between federal and state agreements (or even formal vs informal agreements), while WAD only covers formalised federal agreements. While most private sector agreements outside Western Australia have been in the federal jurisdiction since the late 2000s, there are still many state public sector workers who are covered by state industrial relations legislation and systems. WAD distinguishes between union and non-union agreements, though the definition of a union agreement varies between legal regimes. (Prior to the Act, unions were signatories to or bound by agreements, and union agreements were created under a separate stream of legislation. Under the Act there is a single agreement-making stream but unions can be covered by an agreement even if it was not involved in the bargaining process. WAD data do not distinguish between coverage and bargaining presence.)

Perhaps the most important difference between WAD and EEH is that WAD coverage estimates apply only to agreements that are within their formal period of operation. However, an agreement continues to apply even after it formally expires, until such time as it is formally rescinded upon application by one of the parties and a hearing by the Fair Work Commission. Some agreements continue in force for many years after they have formally expired, including some agreements that were negotiated during the 'WorkChoices' regime of 2006–2008.<sup>6</sup> These factors (inclusion of non-federal and non-formalised agreements, and of agreements beyond their expiry date) explain why EEH estimates of CA coverage are much higher than WAD estimates.

In addition, employer beliefs about who is covered by what instrument, in EEH, may be different to what is enacted by the WAD coders, particularly after agreements have expired.

Both LFS and EEH are limited by virtue of being surveys, rather than, as WAD is, a census. LFS however, is regarded as being a more timely and robust source on the composition of the labour force, as it is collected monthly and from a large sample of households. The primary purpose of the EEH survey is to provide estimates of earnings and hours paid for at a point in time. Being based on a two-yearly survey of employer payroll-based data, the EEH estimates of employment and coverage by industry are different to what would be obtained from a survey of employees. The LFS, being a monthly survey of employees, provides different estimates of employment by industry to EEH.<sup>7</sup> The EEH is not specifically designed to produce estimates of the numbers of employees, and the ABS regards the LFS as the primary source of employment data in Australia between population censuses.<sup>8</sup> Indeed, for many years the ABS declined to publish its employment estimates from EEH,

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<sup>6</sup> Toscano, N (2017), 'Thousands Stuck on Workchoices Deals: Analysis', *The Age*.

<sup>7</sup> A range of publications from this data source is headlined by ABS, *Labour Force, Australia*, Catalogue No. 6202.0.

<sup>8</sup> ABS, *Employee Earnings and Hours, Australia, May 2016*, Explanatory Notes: "From May 2010, estimates of numbers of employees by method of setting pay are presented in this release, to add context to other estimates by method of setting pay. Care should be taken in the interpretation and use of such estimates, as the Survey of Employee Earnings and Hours is not designed specifically to produce estimates of numbers of employees.... Users are directed to [Labour Force, Australia](#) (cat. no. 6202.0) as the primary source for official ABS estimates of employment."

referring users instead to LFS data. EEH also excludes Agriculture, forestry and fishing from its scope.

For some series, the ABS deals partly with the sampling error problem by creating 'trend' estimates, based on a Henderson moving weighted average of seasonally adjusted survey estimates. This reduces some of the variability in the estimates. 'Trending' is done by the ABS for its aggregate LFS series (employment, unemployment, labour force and so on) as well as, recently, broad industry-level employment estimates. Trend data not only assist with removing sampling error, but also in showing the underlying movement in data which is otherwise clouded by 'noise'. Other ABS estimates have not been trended (eg. sector, casual/permanent employment status, and occupation). A difficulty with the ABS union membership series, however, is created by changes in the series instituted from the 2014 publication. It became biennial, and the denominator for many of the estimates changed from employees (including owner-managers of incorporated enterprises) to all employed persons. As most union members are employees (few are owner-managers of either incorporated or unincorporated enterprises) and the ratio of employee to employed persons varies by industry, this in itself created the appearance of an apparent structural shift in, and reduction of, union density (the proportion of employees who are union members) in published union density estimates. The term 'density' is also applied to CA coverage, to signify where reference is being made to the proportion of people who are covered by CAs under various estimates.

### 3 Changes in overall incidence of collective agreements over time

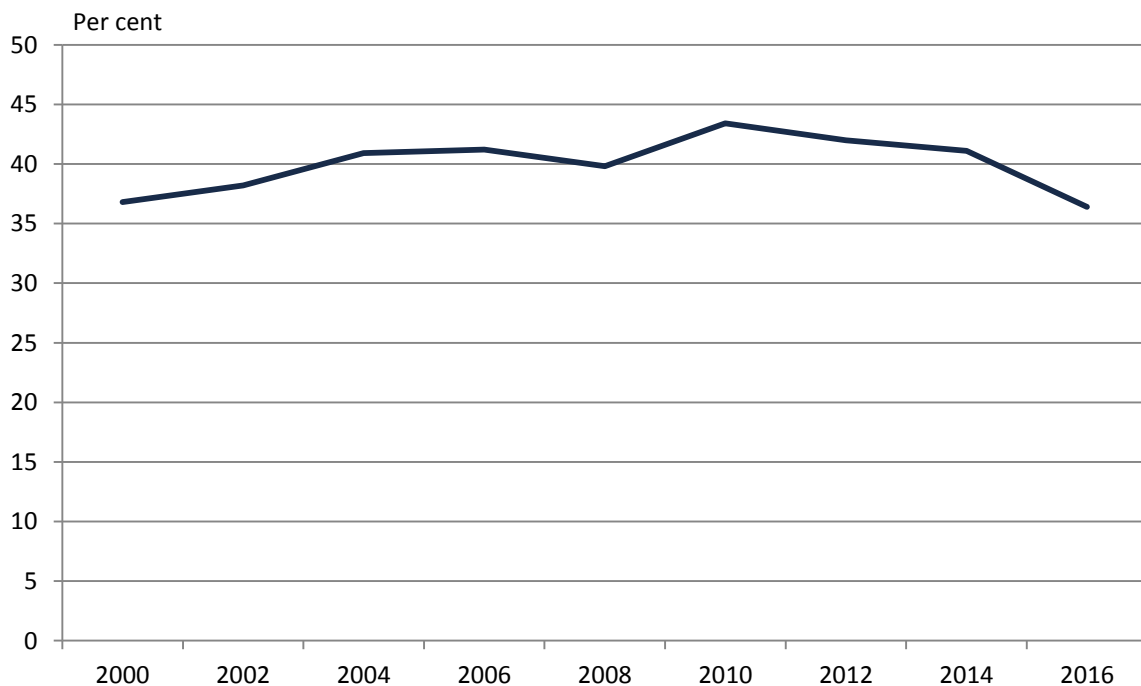
Over most of the period since 2002, approximately two-fifths of employees have been covered by CAs according to EEH. In Table 1 and Figure 1 we can see that the proportion of employees on CAs was 36.4 per cent in May 2016, a fall of 4.7 percentage points compared to 2014 (when it was 41.1 per cent) and of seven percentage points from its estimated peak in 2010 (when it was 43.4 per cent, up 3.6 percentage points from 39.8 per cent in 2008). Figure 1, a graphical representation of the last column, shows that CA coverage rose from 2000 to 2004, remained at or above 40 per cent of employees from 2004 to 2014, before experiencing significant decline.

The number of employees covered by CAs in EEH in 2016 (3.70 million) was an estimated 375 000 lower than in 2014. Between 2010 and 2014, the decline in CA coverage was in density, not numbers of employees covered, but between 2014 and 2016 both fell.

**Table 1: Coverage of agreements in EEH, numbers of employees and percentage of employees, 2000–2016 (May)**

Year (May)	Number of employees			Percentage of employees	
	Awards (‘000s)	CAs (‘000s)	All employees (‘000s)	Awards (%)	CAs (%)
2000				23.2	36.8
2002				20.8	38.2
2004				20.0	40.9
2006				19.0	41.2
2008				16.5	39.8
2010	1361.2	3891.9	8967.7	15.2	43.4
2012	1544.1	4033.6	9605.9	16.1	42.0
2014	1860.7	4070.1	9898.9	18.8	41.1
2016	2307.3	3695.2	10 147.0	22.7	36.4
Change 2012–2014	316.6	36.5	293.0	2.7	–0.9
Change 2014–2016	446.6	–374.9	248.1	3.9	–4.7

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

**Figure 1: Coverage of agreements in EEH, percentage of (LFS) employees, 2000-2016 (May)**

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

The table also shows that award coverage declined from an estimated 23.2 per cent of employees in 2000 to 15.2 per cent in 2010, before rising again to 18.8 per cent in 2014 and 22.7 per cent in 2016. The purpose of this report is not to consider the causes of these variations in award coverage, but it is worth noting that the ABS defines award coverage here as relating to employees whose pay is

entirely set by their award, whereas 'individual arrangements' included not only people who had individual contracts that paid well above the award but also some who received only slightly more than award. Hence the extent of 'award-based' employment is considerably higher than the number of 'award' employees in EEH: in 2013 approximately twice as many organisations reported having at least one employees on 'award-based' arrangements (where awards were used in some way to set pay or guide pay decisions for at least one of the employees in their organisation) compared with 'award-reliant' organisations (in which at least one employee was paid the exact award rate), the gap being due mainly to 'over-award' payments.<sup>9</sup> If the award rate 'caught up' with any such employees' pay rates, they would shift from being covered by 'individual arrangements' to 'awards' in EEH.

There appears to be, in fact, a strong arithmetic relationship between award coverage and CA coverage ( $r=-.88$ ), one which is not evident between CA coverage and coverage by other methods of setting pay ( $r=.08$ ). As CA coverage has gone up, award coverage has gone down and vice versa. In recent years, it is likely that the simplification of awards through the award modernisation process, particularly through reducing the number of awards operating in larger workplaces (which previously might have had both federal and former state awards in place), will have made compliance with awards simpler for employers, and especially so for those predominately dealing with multiple awards.

One other interaction between awards and agreements also needs to be considered. It is possible that certain data definitions changed over this period. For example, while the distinction between agreement and award coverage may seem straightforward, this is not necessarily the case when negotiations between employers and unions lead to an outcome manifest as an award. This was common in the period before 1990 (in the form of 'enterprise awards') but might still occur in some state public sector wage setting. As a result, some part of the shift between award and agreement coverage could feasibly reflect changing definitions of what constitutes an 'award' and an 'agreement'.

Table 2 shows current federal CA coverage estimates from WAD. Numbers of employees covered are taken directly from WAD, while estimates of the proportion of employees covered by current federal CAs are derived from combining these data with data from the LFS.

Current federal CA coverage rose fairly quickly to around 19 per cent of employees by 1995, and then to 23 per cent 2006. The creation of a single national system was the most likely factor behind the sharp rise in coverage from 23 per cent in 2009 to over 27 per cent in 2010. Coverage peaked at 28.8 per cent in 2011 before declining to 26.5 per cent in 2014, 24.7 per cent in 2015 and 21.9 per cent in 2016.

Unlike CA coverage in EEH, there was also a decline in the number of employees covered by current federal CAs, from a peak of 2.65 million in 2011 and 2012, 2.5 million in 2014 and 2.2 million in June quarter 2016. Thus whereas in EEH, overall CA coverage was stable between 2012 and 2014, in WAD, current federal CA coverage fell by 120 000 over a similar period, and the fall in coverage density in WAD (1.4 percentage points) was a little greater than that in EEH (0.9 percentage points). However, the decline in 2016 was partly a result of the cancellation of a large agreement in the retail sector, and a resultant downward revision by nearly 80 000 in employee coverage by current federal CAs in each of December 2015, March 2016 and June 2016. This downward revision reduced coverage in WAD by around 0.7 percentage points in each of those quarters, about a quarter of the decline in agreement density between 2015 and 2016. The decline in current federal CA coverage has mirrored the substantial drop since 2014 of 4.7 percentage points in overall CA coverage reported in EEH.

<sup>9</sup> Wright S & Buchanan J (2013), *Award Reliance*, Fair Work Commission Research Report 6/2013, p. 11.



**Table 2: Coverage of current federal agreements in WAD, numbers of employed persons and percentage of employees in LFS, 2000–2016 (June quarters)**

Year (June quarter)	Number of employees on current federal CAs (‘000s)	All employees (‘000s)	Percentage of employees on current federal CAs (%)
2000	1393.5	7085.1	19.7
2001	1519.2	7169.6	21.2
2002	1602.0	7234.4	22.1
2003	1695.9	7488.3	22.6
2004	1549.0	7684.4	20.2
2005	1812.7	7900.0	22.9
2006	1904.1	8145.7	23.4
2007	1998.9	8512.6	23.5
2008	1839.8	8746.0	21.0
2009	2046.8	8842.8	23.1
2010	2440.0	8954.6	27.2
2011	2646.1	9185.5	28.8
2012	2654.3	9414.4	28.2
2013	2469.6	9532.2	25.9
2014	2533.8	9546.0	26.5
2015	2422.3	9792.1	24.7
2016	2170.6	9893.7	21.9
Change 2012–2014	–120.5	131.6	–1.7
Change 2014–2016	–363.2	347.7	–4.6

Source: Department of Employment, *Trends in Federal Enterprise Bargaining*, September 2016; ABS, *Labour Force, Australia, Detailed, Quarterly*, Nov 2016, Catalogue No. 6291.0.55.003.

## 4 Union and non-union coverage and agreements

In this section we consider the relationship between unionism and CA coverage and the changing patterns of union and non-union agreements. This includes consideration of replacement agreements and how their patterns vary between union and non-union agreements. There are no data on either union/non-union status or replacement status of agreements in EEH; this is only available through WAD. So, much of the Australian data in this section come from WAD. However, for context we open with a mention of international patterns.

### 4.1 The relationship between trends in union membership and the incidence of collective agreements

In most other countries, CAs in employment can only be made by unions, and there is no scope for non-union employees to directly bargain with employers to create agreements that override statutory conditions without union involvement in some way. So internationally, CA coverage is closely linked to union coverage: amongst OECD countries in 2006 there was a correlation of  $r=.6$  between these two variables ( $n=38$ ).<sup>10</sup> They are not the same thing, however, and in many countries unions use extension provisions of some type to expand the coverage of CAs beyond the workplaces for which negotiations immediately occur. In many countries it is possible for employees to be covered by a CA without being a union member. Nonetheless, within most countries, there is a close relationship between union density and CA coverage density. Table 3 lists data from 11 countries (with robust numbers of observations and data variation) showing a strong correlation between CA coverage density and union density: in nine of the eleven cases it is above  $r=0.6$  and the median correlation amongst them was  $r=.92$ . That said, institutional arrangements in each country differ, and themselves make a difference to how close or distant that relationship is. In Australia for example, significant shifts in workplace relations law took place between 1993 and 2010. Extension mechanisms for CAs are pervasive in some countries and rare in others, especially with enterprise-based bargaining systems. From the 1970s through the 2000s, CA coverage tended to show greater stability within countries than union density, due according to the OECD, to there 'having been relatively little change in the extent to which employers apply the terms of contracts negotiated with unions to their non-union workforce, whether voluntarily or in response to administrative extension mechanisms.'<sup>11</sup> Still, it is clear both by reasoning and by empirical data that a large influence on CA coverage density is union density.

<sup>10</sup> Based on calculations from data in Organisation for Economic Cooperation and Development (2013), 'Chapter 4 (Figure 4.13. Coverage Rates of Collective Bargaining Agreements and Trade Union Density Rates', *Economic Policy Reforms 2013: Going for Growth*.

<sup>11</sup> Organisation for Economic Cooperation and Development (2004), *Employment Outlook (Paris 2004)*, p. 129.

**Table 3: Correlation between union density and CA coverage density, various countries, 1960–2011.**

<b>Country<sup>a</sup></b>	<b>Correlation between union density and CA coverage density</b>	<b>Number of data points (joint observations)</b>	<b>Minimum union density</b>	<b>Maximum union density</b>	<b>Minimum CA coverage density</b>	<b>Maximum CA coverage density</b>
Canada	0.97	51	26	37	29	40
Czech Republic <sup>b</sup>	0.91	16	17	64	32	56
Germany <sup>c</sup>	0.99	23	18	36	61	85
Iceland	0.89	15	66	99	66	96
Japan	1.00	49	18	35	16	32
New Zealand	0.94	20	21	69	17	70
Slovenia	0.66	18	24	100	92	100
Sweden	0.21	18	66	87	83	94
Switzerland	0.47	18	17	36	40	50
United Kingdom	0.92	25	27	52	31	80
United States	0.95	20	22	31	13	34

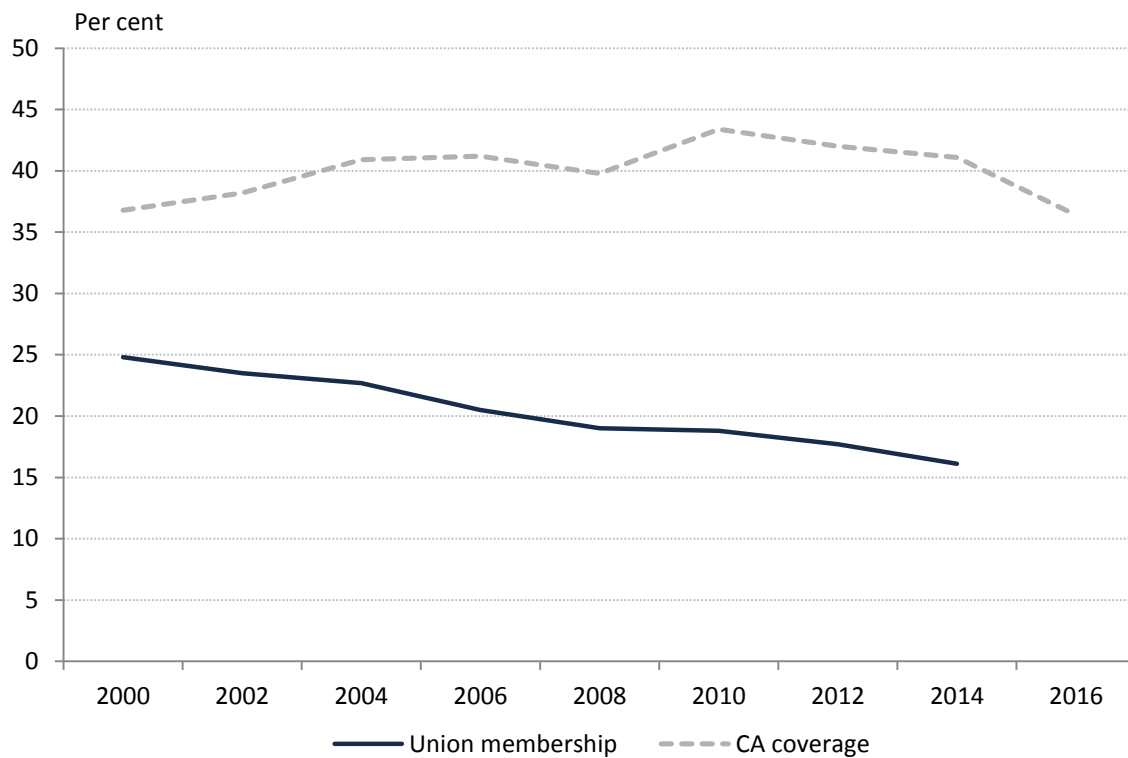
Notes: a: Restricted to countries with at least 15 joint observations of union and CA density (that is, years in which both data items were collected), and with sufficient variation in the data (that is, variation between minimum and maximum union density of at least 5 percentage points). (Australia does not appear in this table because of too few data points.)

b: before 1993: Czechoslovakia

c: before 1990: West Germany.

Source: Visser, Jelle. (2013). Data Base on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2011 (ICTWSS), Version 4.0.

In Australia, union density has fallen substantially since 1990, and indeed since 2000 when the modern EEH data collection commenced—from a trend estimate of 24.8 per cent in August 2000 to 16.1 per cent in August 2014, as shown in Figure 2 (the data behind this Figure are in Appendix Table A1). While some caution needs to be adopted in comparing these data sources—we saw earlier the issues arising from the different industry weighting systems in the employer and employee-based datasets used for EEH and LFS respectively, and there is a three month gap between the EEH and LFS surveys that are behind the CA and union density estimates—those caveats are not so large as to render the conclusions here dubious or invalid.

**Figure 2: Union density and CA coverage density in EEH, 2000–2016**

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0; ABS, *Employment Benefits and Trade Union Membership, various*, Catalogue Number 6310.0; ABS, *Characteristics of Employment, Australia, various*, Catalogue Number 6311.0; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003.

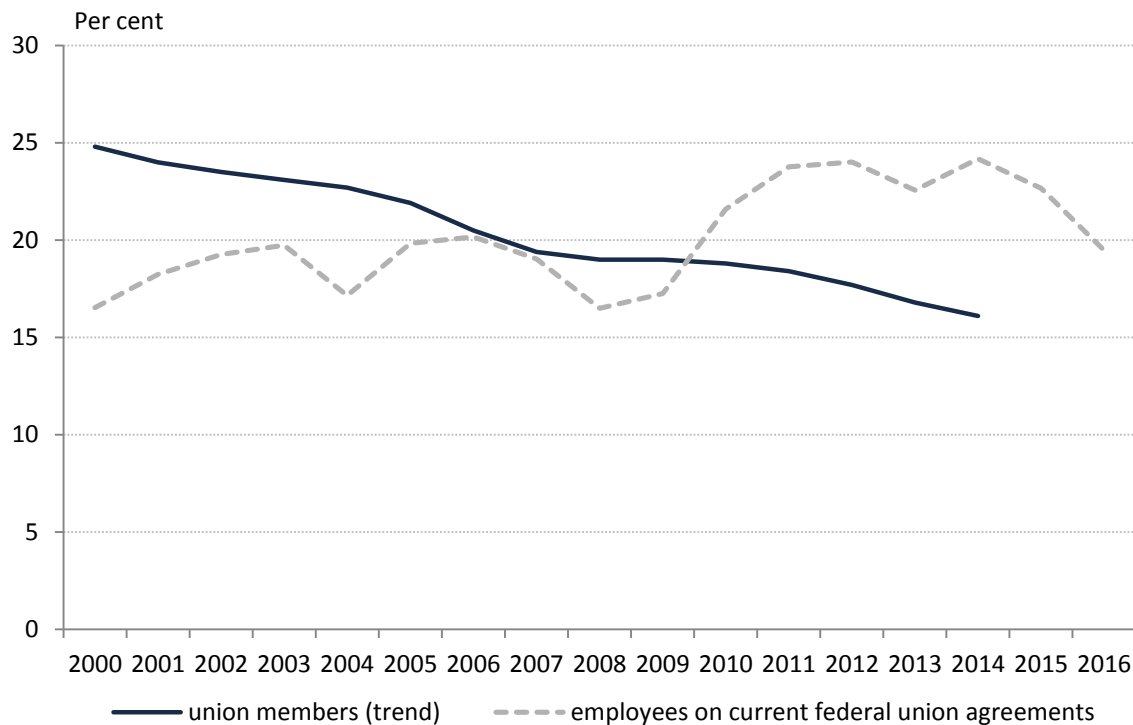
The decline in union density shown in Figure 2 was much greater than the decline in CA coverage density. Indeed, in only three of the seven periods did both measures decline (2006–2008, 2010–2012 and 2012–2014); in the other four periods CA coverage density increased while union density declined. So the notable thing is not that CA coverage appeared to decline in EEH between 2010 and 2014, but that, given the fall in density, it did not decline by more. While the fall in trend union density, of 2.7 percentage points, represented a decline of 14 per cent, the 2.3 percentage point fall in CA coverage density represented a decline of just 5 per cent. The larger fall (of 4.7 percentage points) in CA coverage density over the two years to 2016 still left CA density only 0.4 percentage points below its 2000 level, whereas union density was almost two fifths, or 9.6 percentage points, lower in 2014 than in 2000. Unless there is an unexpected reversal of the direction union density has taken, by 2016 its fall will be even greater. The vast majority of employees on CAs will be on union CAs: data on current federal agreements from WAD, discussed later, suggest the proportion has typically been around nine-tenths. So we would expect that an important explanatory factor in any decline in CA coverage will be the decline in union density.

The pattern shown here suggests two things. Firstly, there appears to have been an increase in ‘free riding’ over time, so CA coverage has, for much of the period, been relatively stable despite declines in union density. Secondly, some sort of lag is to be expected between union density and CA density, and this appears to have been the case in the data. Lags might occur because some employees may leave a union after a CA is negotiated but remain covered by the CA. Once a union has negotiated a CA with the employer, the employer may be reluctant to change from union to non-union bargaining even after density has declined, because of one or more of the following reasons: employee resistance to loss of benefits, employer hesitance to provoke a union organising drive, or employer

belief in the efficiency of union bargaining. So the most recent decline in CA coverage density in EEH may simply be a function of that lag, though the size of it is impossible to estimate.

The estimates of CA coverage in Figure 2 are based, of course, on the EEH data including the EEH industry weights. However, as we shall see later, using more reliable LFS weights (which would also increase compatibility with the union membership series) would reduce the estimated fall in CA coverage between 2010 and 2014. Still, it does not change the broad picture that emerges from Figure 2.

Last, there is benefit from comparing trends in union membership directly with patterns in current federal union CAs, and this is done in Figure 3. It is true that there is less comparability between these numbers than in the previous figure—there are many union members who are not on current federal union agreements because they are outside the formal federal system, with some of the most unionised sectors such as health, education, public administration and emergency services having a significant presence in the remnant state systems. On the other hand, we at least have accurate numbers of workers on current federal union agreements through WAD. Caveats aside, the broad picture that emerges is consistent with that from Figure 2, albeit starker. In 2000 there were more union members than there were workers on current federal union agreements. This surplus declined even before the introduction of the national system, but since then the number of workers on current federal agreements has exceeded the total number of union members (which includes many unionists in state systems, and some on expired agreements or awards). Since 2014 the number of workers on current union CAs has declined (only partly a result of the cancellation of a large retail agreement) which might suggest a further forthcoming decline in union density (whether this has actually occurred will await the release of the 2016 union membership data) or might simply reflect the lagged effects of earlier declines in union density. There have been previous drops in current federal union agreement coverage, suggesting the possibility of some cyclical component, but the only drop of comparable size to the 2016 drop was between the 2006 and 2008 period.

**Figure 3: Union density and current federal union agreement coverage density in WAD, 2000–2016**

Note: Prior to 2009, a union agreement required that a union was an active bargaining party to the agreement; post-2009, this requirement was relaxed. Comparisons between pre and post-2009 data for employees on current federal union agreements should therefore be made with caution, with data from the post-2009 period likely to overstate union agreement coverage compared to equivalent data from the pre-2009 period.

Sources: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employment Benefits and Trade Union Membership, Australia, various*, Catalogue Number 6310.0; ABS, *Characteristics of Employment, Australia, various*, Catalogue Number 6311.0.

## 4.2 Union and non-union agreements

The decline in CA coverage density in recent years does not appear on the surface to be concentrated in union agreements. Table 4 shows the numbers of employees covered by union and non-union current federal agreements in WAD from June quarter 2009 to June quarter 2016. From 1998 to 2006 a fairly stable 10 per cent of agreement-covered employees had been on non-union agreements under the Workplace Relations Act,<sup>12</sup> so the overall employee incidence of non-union agreements grew slightly, from 1.8 per cent in 2000 to 2.4 per cent in 2006, roughly in line with the growing employee incidence of union agreements (from 16.5 per cent to 20.2 per cent). In the WorkChoices era, however, there had been a significant growth in non-union agreement-making, and the overall employee incidence of non-union agreements peaked at 6 per cent in 2009 (after many employers had sought to gain coverage by non-union agreements before WorkChoices was repealed). Of the increase in current federal agreement coverage between June 2006 and June 2010, largely resulting from the move to a single national system, two thirds was accounted for by growth in

<sup>12</sup> Data from 1998 and 1999 do not appear in the table but the 10% estimate is from White L, Steele M & Haddrick S (2001), 'A Decade of Formal Collective Agreement Making in the Federal Jurisdiction', paper presented at the paper to conference on Ten Years of Enterprise Bargaining. Other data from *Trends in Federal Enterprise Bargaining*, published quarterly by the Department of Employment and its predecessors, the main publication output from the Workplace Agreements Database.

non-union agreements, and one third by growth in union agreements. That said, this particular statistic should be treated with caution due to a change in the definition of 'union' and 'non-union' agreements in WAD arising from the passage of the Act in 2009.<sup>13</sup> If anything, the surfeit of non-union agreement growth over union agreement growth in that 2006–2010 period is likely to have been underestimated as a result of the change in definition. That trend did not continue, however, because the Act did not contain the same employer incentives for non-union agreement-making as had the WorkChoices legislation. Between 2010 and 2012, union CA density continued to grow (by 2.3 percentage points), while non-union CA density fell (by 1.1 percentage points).

**Table 4: Coverage of union and non-union current federal agreements in WAD, numbers of employed persons and percentage of employees in LFS, 2009–2016 (June quarters)**

Year (June quarter)	Employees covered			Coverage density		
	Union agreement	Non-union agreement	Employees	Union agreement	Non-union agreement	Total
	('000s)	('000s)	('000s)	(%)	(%)	(%)
2009	1526.3	530.0	8842.80	17.3	6.0	23.3
2010	1934.3	508.7	8954.60	21.6	5.7	27.3
2011	2182.7	467.4	9185.50	23.8	5.1	28.9
2012	2261.3	397.1	9414.40	24.0	4.2	28.2
2013	2151.5	318.2	9532.20	22.6	3.3	25.9
2014	2308.0	225.8	9546.00	24.2	2.4	26.5
2015	2220.0	202.2	9792.10	22.7	2.1	24.7
2016	1927.4	243.3	9893.70	19.5	2.5	21.9

Source: Department of Employment, *Trends in Federal Enterprise Bargaining*, September 2016; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003.

Between 2012 and 2014, the numbers of employees covered by current union federal agreements rose by nearly 50 000, while there was a drop of around 170 000 in the numbers covered by current non-union agreements. While the coverage density of union agreements was stable between 2012 and 2014, the coverage density of non-union agreements fell by 1.5 percentage points, and this accounted for all of the decline in coverage density for current federal agreements. Indeed, from 2010 to 2014 there had been a substantial increase in coverage by current federal union CAs (by 2.4 percentage points) offset by a more than halving of coverage by current federal non-union CAs (by 2.6 percentage points, to only 2.0 per cent). This could suggest that employers felt less pressure or need to negotiate replacement agreements for non-union employees than for union employees. This may be due to the environment of low wages growth or because the earlier objectives of settling non-union agreements had been achieved (while some employers may have seen a benefit in actively not replacing non-union agreements that had been negotiated many years earlier).<sup>14</sup>

However, this interpretation is tempered by the fact that the trend was partially reversed after 2014. Between 2014 and 2016, non-union coverage density was relatively stable while all the drop in CA coverage density was due to a drop in coverage density in union agreements. A significant part of this decline was due to unusual developments amongst Retail trade agreements, including the expiry of

<sup>13</sup> Prior to 2009, a union agreement required that a union was an active bargaining party to the agreement; post-2009, this requirement was relaxed. Comparisons between pre and post-2009 data should therefore be made with caution, with data from the post-2009 period likely to overstate union agreement coverage compared to equivalent data from the pre-2009 period. However analysis of changes from, for example, 2012 to 2014 remain valid.

<sup>14</sup> Toscano, N (2017), 'Thousands Stuck on Workchoices Deals: Analysis', *The Age*.

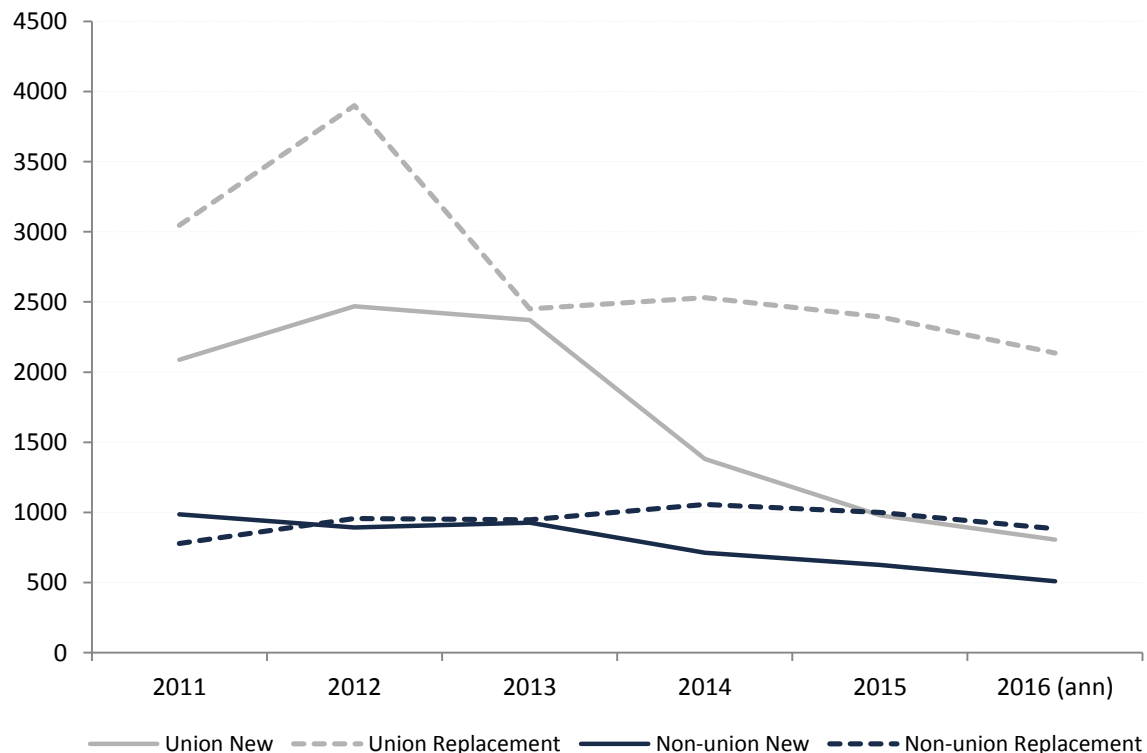
the Woolworths and Coles agreements (affecting around 100 000 and 80 000 employees, respectively). While it is possible that some employers may have felt the need to update and replace non-union agreements that were paying little more than award rates, this does not in itself explain enough of the decline in current federal union agreement coverage between 2014 and 2016.

### 4.3 Replacement agreements

Prior to 2010, only a minority of agreements certified in the quarter were coded in WAD as being ‘replacement’ agreements, that is they took the place of another, typically expired agreement. From 2011, replacement agreements were a majority. This largely reflected the spread of CAs into smaller organisations as the system matured. Since as early as 1994, a majority of employees under federal CAs were in replacement agreements. By 2014, over 90 per cent of employees under agreements certified that year were in replacement agreements.

Figures 4 and 5 look at agreements certified in each year since 2011, and categorises them as union or non-union and as replacement or ‘new’ agreements. Unlike most of the other data used in this report, these two figures look at patterns in commencing (not current) agreements, as these help us understand the forces shaping the recent coverage of current agreements (so we should not directly compare the numbers here and in other tables). Figure 4 uses a count of commencing agreements as the unit of analysis while Figure 5 uses the numbers of employees covered by those agreements. The data are taken from the publicly released WAD database, which only covers agreements approved in the first half of the year, so the figures for 2016 have been annualised and so should be treated with particular caution.

**Figure 4: Types of commencing agreements, 2011–2016**



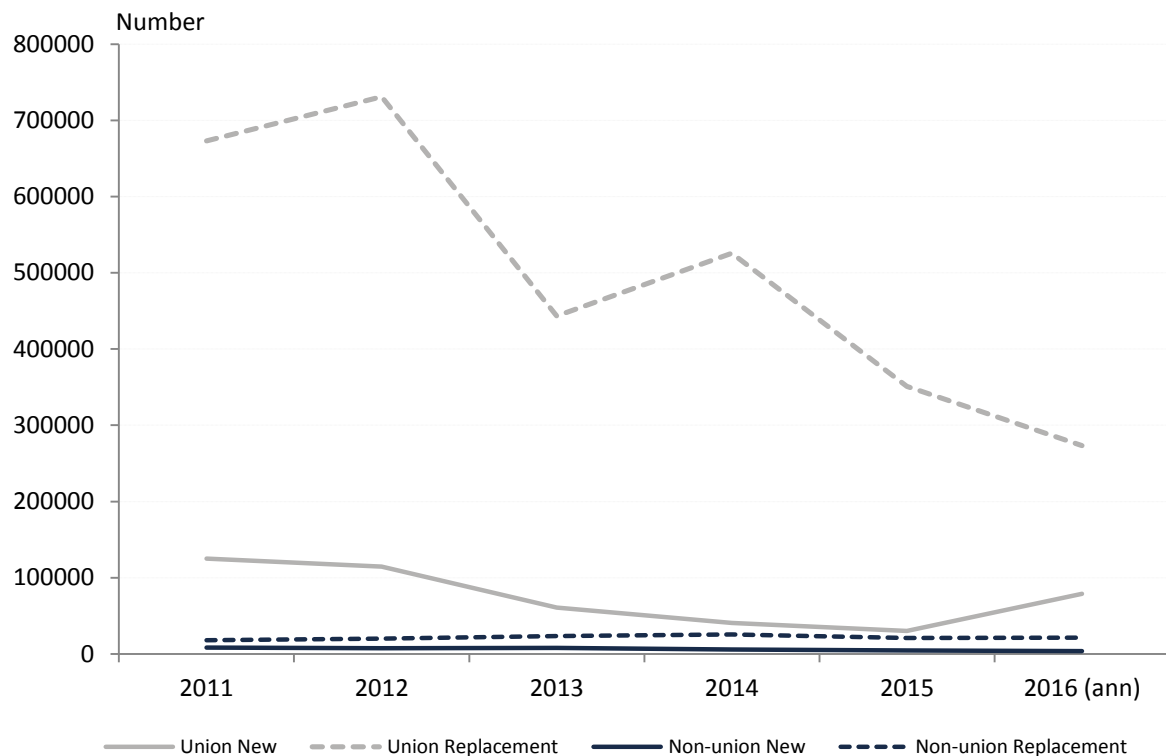
Source: Department of Employment, *Workplace Agreements Database*, June 2016.

Figure 4 shows declines in the numbers both of new union agreements and replacement union agreements commencing over the period, while the numbers of new and replacement non-union



agreements were lower, but relatively steady. Figure 5, by comparison, shows the importance (in terms of size) of replacement agreements, particularly amongst union agreements. We see a large decline in employee coverage of new union agreements from 2011 to about 2014, but what looks like a revival in new union agreements in 2016 (as the data are annualised, and commencement data in particular are affected by cyclical trends, it is hard to be confident). More importantly, we see a substantial drop in employee coverage of commencing replacement federal union agreements between 2011 and 2016, over a five-year period that is longer than could be explained as cyclical variation (as the average duration of a federal CA is around 3 years). It is, in broad terms, a pattern we would expect to see if agreement coverage lagged behind union density, as declining union numbers would eventually reduce pressure for replacement agreements in previously highly unionised workplaces. That said, the size of that decline over the past few years may be greater than might be expected, but this could also reflect factors in specific industries like Retail trade (mentioned earlier) and Public administration and safety(mentioned below in Section 5).

**Figure 5: Employees covered by types of commencing agreements, 2011–2016**



Source: Department of Employment, *Workplace Agreements Database*, June 2016.

In summary, the data in this section suggest that:

- the decline in CA coverage, particularly between 2014 and 2016, is not surprising given the long period of decline in union density that has preceded it;
- perhaps the main surprise has been that the decline in CA coverage has not been greater, though this may be partly due to an increase in ‘free riding’, and reluctance by employers to switch established bargaining arrangements due to employee resistance, employer fears of union organising campaigns and/or efficiency benefits of collective negotiation through existing institutions;

- in the lead up to 2014, much of the decline in CA coverage density appeared due to a decline in employee coverage by non-union agreements, which was perhaps returning to more historically 'normal' levels after the unusual levels reached during and immediately after the WorkChoices era;
- between 2014 and 2016, however, non-union coverage has remained low but relatively stable, while there was a drop in coverage by union agreements, which appeared to reflect the cumulative effect of a decline in replacement union agreement-making.

Previous surveys have shown it is managers, not unions, who initiate or motivate a majority of agreements,<sup>15</sup> so the decline of union density probably reduces the incentive on managers to initiate negotiations. To the extent that unions initiate bargaining, declining union density also reduces the capacity of unions to do so. There is little indication that non-union bargaining is rising in response to the drop in union bargaining, which probably reflects a tendency for collective bargaining to mostly occur either through a union, or not at all. While some employers might use non-union agreement-making (and the restrictions on industrial action that it generates) as a means of discouraging unionisation, the decline in union density reduces the incentive on employers to use non-union agreement making for that purpose, so there is no need for non-union bargaining to rise to 'take up the slack' when union bargaining declines.

There may also be industry-specific factors at work, as well as compositional forces, so the next section explores these.

## 5 Job characteristics, changes in incidence of collective agreements over time and compositional effects

This section examines changes in CA coverage estimates in EEH and, where appropriate, WAD by various aspects of job characteristics—in particular, industry, occupation, sector and employment status. It also considers the impacts of changes in the composition of employment between these categories, and differences between EEH and LFS estimates of the relative incidence of certain categories, upon CA coverage density estimates.

### 5.1 Industry patterns

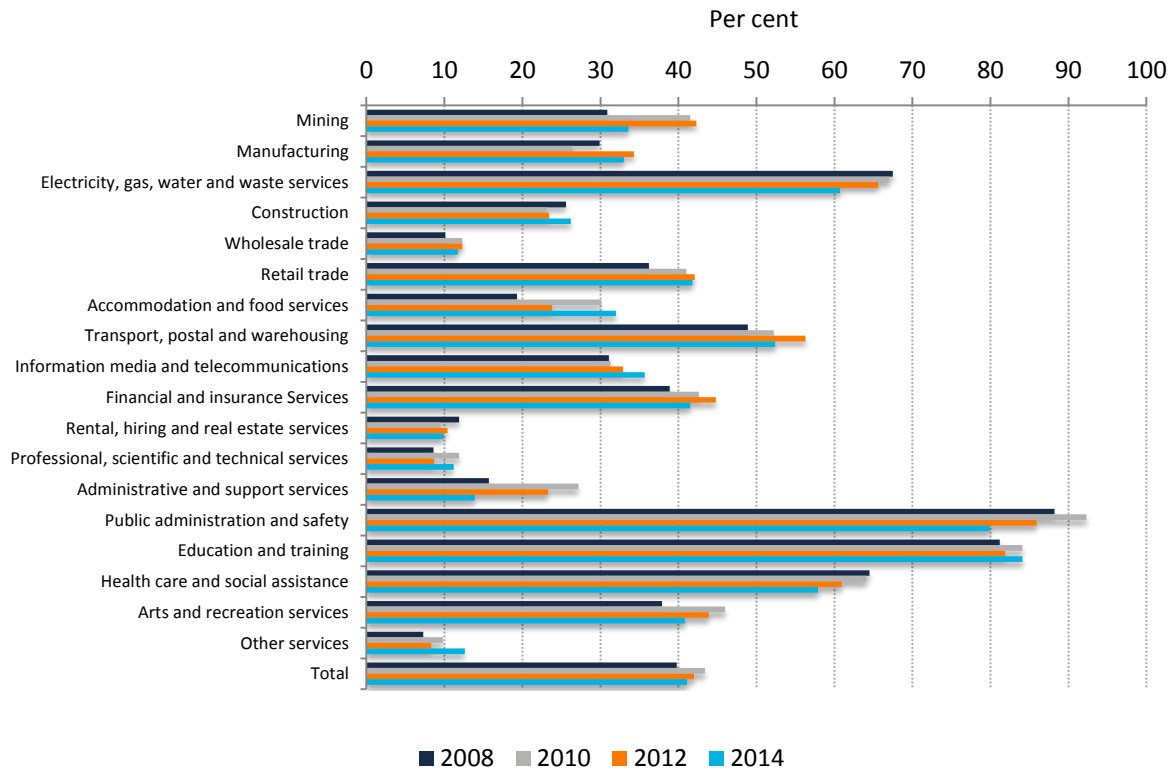
Industry coverage of CAs in EEH is shown in Figure 6. The data are only consistently available from 2008 (for coverage density) and 2010 (for numbers covered).<sup>16</sup> In all years coverage density is highest in Education and training, Public administration and safety, Electricity gas and water and Health care and social assistance, and lowest in Rental and real estate services, Professional, scientific and technical services, Wholesale trade, Other services, and Administration and support services. The largest drops in agreement coverage between 2012 and 2014 were in industries with a range of prior density: high (Public administration and safety); medium (Mining); and low (Administrative and support services). Increases in density were also apparent across a range of industries. The decline in Manufacturing (1.4 percentage points) was one of the closest to the overall decline evident in EEH, and so developments in that industry cannot explain developments overall. That said, sampling errors in cells this size must make one wary about accepting industry coverage

<sup>15</sup> Fair Work Commission (2015), *Australian Workplace Relations Study: First Findings Report: Consolidated Content from Online Publication*; Morehead A, Steele N, Alexander MJ, Stephen K and Duffin L (1997), *Changes at Work: The 1995 Australian Workplace Industrial Relations Survey*, South Melbourne: Longman, 1997.

<sup>16</sup> Industry-level data were published prior to 2008 but used a different industry classification system and so they are not directly comparable with later data.

results at face value.<sup>17</sup> Indeed, it was difficult to discern consistent industry patterns because changes in CA coverage in one year in an industry were often followed by movements in the opposite direction the next year. This is partly a reflection of sample size effects at the industry level. The only industries that showed repeated declines in each of the three periods for which we had data were Electricity, gas, water and waste services (from 67.5 per cent in 2008 to 60.7 per cent in 2014) and Health care and social assistance (from 64.5 per cent to 57.9 per cent). On the other hand, repeated increases in CA density were seen in Information media and telecommunications (from 31.1 per cent to 35.7 per cent).

**Figure 6: CA coverage density by industry, EEH, 2008–2014**



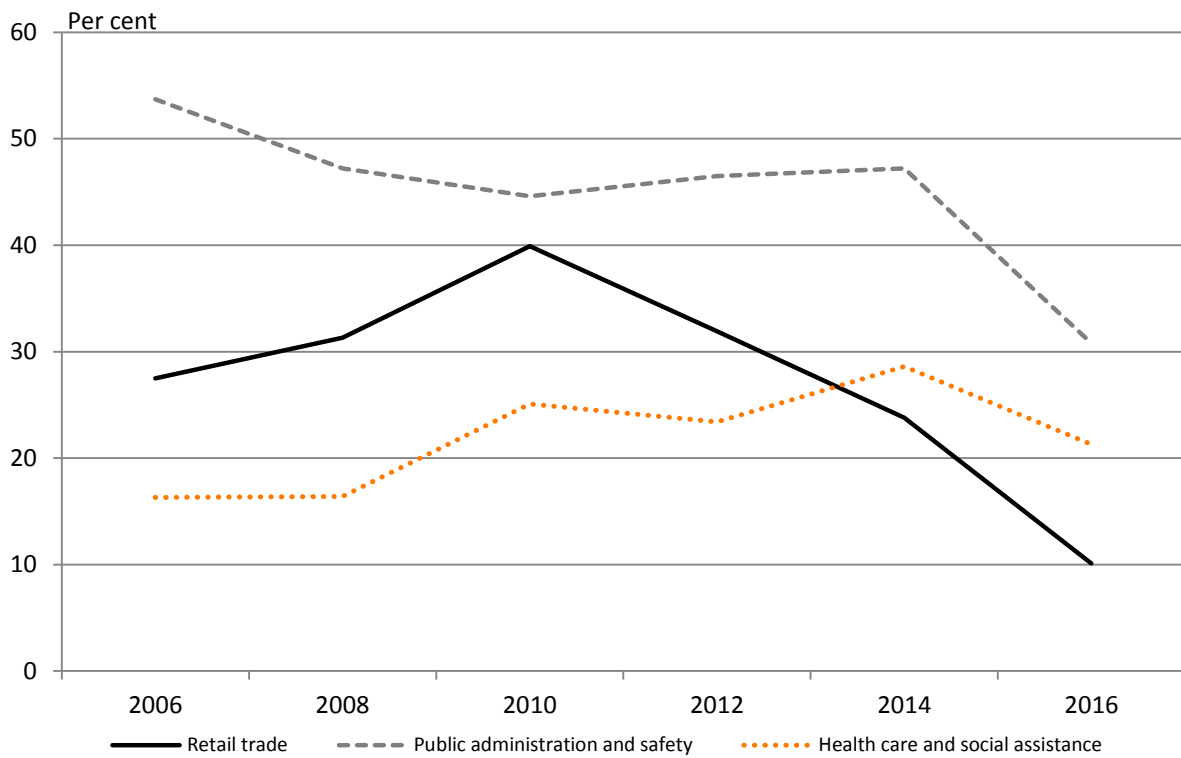
Source: ABS, *Employment, Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Figure 7 shows selected industry patterns in current federal award coverage from WAD. Coverage density is again highest in Education and training, Public administration and safety, and Electricity gas and water but Health care and social assistance scored lower than some other industries. It was again lowest in Rental and real estate services, Professional, scientific and technical services, Wholesale trade, and Other services, very low in Agriculture, forestry and fishing, but not so low in Administration and support services.

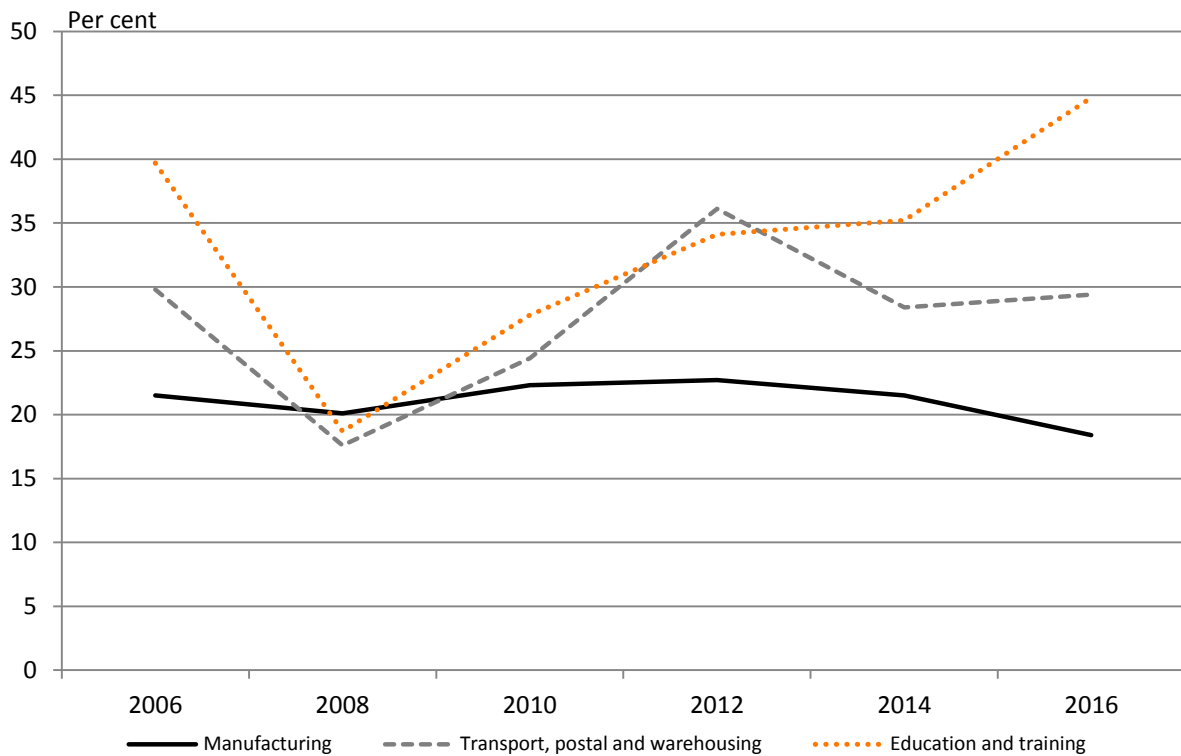
<sup>17</sup> As an example, in 2014, there was a 5 per cent chance that the ‘true’ number of employees on collective agreements in the mining industry was outside the confidence interval of between 46,000 and 67,600 employees. The reported figure based on the survey was 56,800 employees.

**Figure 7: Current federal award coverage, selected industries, 2006–2016**

**Panel A**



**Panel B**



Source: Department of Employment, *Trends in Federal Enterprise Bargaining*, September 2016

There was little similarity between the industry-level movements in CA coverage density between 2012 and 2014 in the two series ( $r=.00$ ); for example, Public administration and safety increased slightly in coverage density in WAD but it had fallen heavily in EEH (from 539 500 to 497 500), though many state public servants would be outside the federal system. As in EEH, however, the decline in coverage density in Manufacturing (1.1 percentage points) was close to the overall change.

That said, WAD is likely to provide better indications of industry patterns than EEH, for two reasons. First, WAD is a census, whereas EEH is a sample, and although WAD is a census of only a sub-set of CAs, the effects of sampling error on EEH estimates increase as one gets to smaller cells, and there are many industries that fall into this category. Second, at a more practical level, at the time of writing the ABS had not released industry-level CA coverage estimates from EEH for 2016. So WAD is the only source of industry CA coverage in 2016.

Several things stand out from a close examination of the WAD industry data. First, nearly half of the drop in current federal coverage numbers in WAD between 2014 and 2016 was due to one industry: Retail trade, owing to the expiry of the Woolworths and Coles agreements. Current federal CA coverage in Retail trade fell by 168 300 (57 per cent), and this accounted for 46 per cent of the overall fall in numbers covered by current federal CAs. Yet Retail trade represented only 12 per cent of currently covered employees in WAD in 2014. The special circumstances in retail, including the circumstances of some major agreements, are important in understanding the decline in current federal CA coverage.

Second, two other industries, between them, account for another 50 per cent of the drop in numbers covered: Public administration and safety, where bargaining has experienced some difficulties, and in which coverage by current federal agreements fell by 111 300 (32 per cent), and Health care and social assistance, a larger industry, in which coverage by current agreements fell by 69 200 (17 per cent). In the former, a long-running dispute in the Australian Public Service has led to many federal agreements expiring.

Third, while the above industries accounted for most of the decline, there were small declines in many other industries, with only six industries showing any increase, while twelve showed a decline. With two exceptions, the industries showing growth were mostly small in terms of coverage— other than Transport, postal and warehousing, in which current federal CA coverage grew by 15 500 (9 per cent) and, more substantially, Education and training, in which coverage grew by 97 700 (31 per cent).

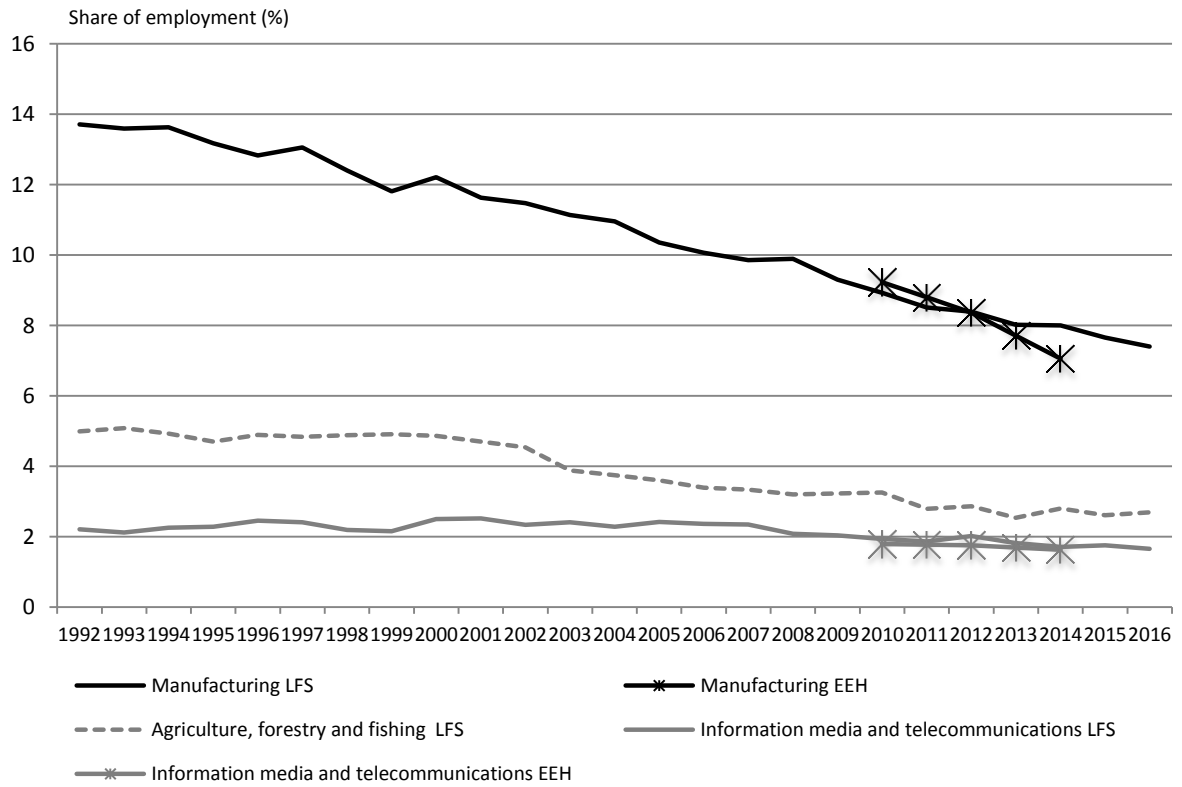
Fourth, Manufacturing was again not an outlier; its decline in current federal agreement coverage (35,900 or 18 per cent) was above average but then so too was the decline in its employment share (mentioned below). It accounted for 10 per cent of the overall decline but 8 per cent of employees under current federal agreements in 2014.

Figure 8 illustrates how the structure of the labour market by industry has changed over the period 1992–2016. Panel A shows selected industries in relative decline, while Panel B shows selected industries experiencing relative growth, using ABS trend estimates of employed persons from the LFS. Panel A shows the long term declines in Manufacturing and in Agriculture, forestry and fishing (in both of which the shares of employment nearly halved over the period), as well as Information media and communications, while there have also been declines in Wholesale trade, Electricity gas and water, though for the last two the change over 24 years accounted for less than 1 per cent of total Australian employment. Panel B also shows increases in the employment shares (each of which accounted for more than 1 per cent of total Australian employment) in Health care and social assistance, Professional, scientific and technical services, Construction, and Administrative and support services. Mining (shown) and Arts and recreation services (not shown) also grew substantially but had a small impact due to their small initial size. We wished to investigate the possibility as to

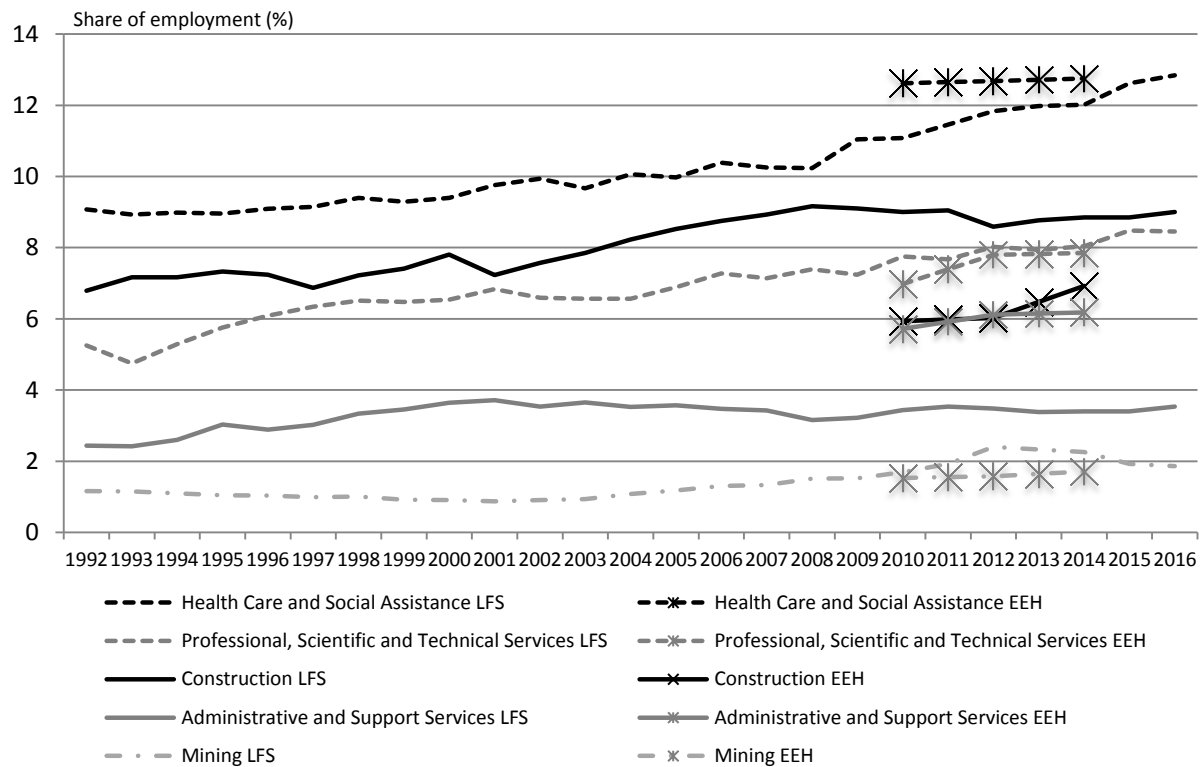
whether these changes in the composition of employment have affected the overall coverage density of CAs.

**Figure 8: Changing employment shares of industries, LFS and EEH, 1992–2016**

**Panel A: Selected declining industries**



**Panel B: Selected growing industries**



Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employment, Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

We can also see, in Figure 8, aspects of the industry employment composition in EEH. It is apparent that, compared to the LFS, EEH substantially understates employment in Construction, and overstates employment in Administrative and support services. The more detailed numbers behind these charts are in Appendix Table A4. The reason may partially relate to methodological differences between LFS and EEH. For example, an employer identified in EEH as engaged in Administrative and support services may provide labour hire contractors who individually identify as working in Construction. On the other hand, some Construction workers might report in the LFS as working in Mining, which may understate construction employment in LFS and explain its apparent overstatement of Mining employment.<sup>18</sup> We should thus be a little cautious of both EEH and LFS as sources of industry employment data, though *movements* in the LFS industry estimates are probably more reliable than movements in EEH industry estimates. While there is some correlation between movements over 2012–2014 in the LFS and EEH series ( $r=.40$ ), there are also some other differences between them; for example, employment in Transport, postal and warehousing and Public administration and safety rose in the LFS between 2012 and 2014 but it fell in EEH, while the reverse occurred for Finance and insurance services and Arts and recreation services, and the decline in Manufacturing’s employment share was three times larger in EEH than in the LFS. The EEH employment series is also, as would be expected, more erratic than the LFS trend employment series (there is a bigger average absolute difference between the 2010–2012 movement and the 2012–2014 movement in employment shares in EEH than in the LFS). Overall, for reasons mentioned earlier, the LFS is the preferred source of employment data, so it is worth investigating whether that part of the

<sup>18</sup> Peetz D (2016), ‘Employment in the Australian Black Coal Industry’, Matter No AM2014/67, Fair Work Commission, pp. 21–22.

pattern we see in EEH CA coverage density reflects the peculiar industry composition of the survey when compared to the LFS.

Table 5 estimates the impact of structural change in the industry composition of employment on CA coverage estimates. We estimated what the overall CA coverage density would have been in each year, if coverage density in each industry had been the same as in 2014 but the industry composition of employment (that is, the share of each industry) had actually been the same as it was in that year. We do this, first of all using EEH coverage density estimates (data columns 1 and 2), applying LFS employment weights (column 1) and EEH employment weights (column 2) for each industry in those years, and then, second, using WAD coverage density estimates for current federal agreements and LFS employment weights (column 3). Thus in 2000, if each industry had the EEH coverage density it had in 2014, with the LFS industry composition of employment that year (2000), overall density would have been 39.69 per cent. That is 1.21 percentage points less than the 2014 density of 40.90 per cent, and so the structural effect is 1.21 per cent, as shown in the top left hand data cell in Table 8. In other words, between 2000 and 2014, structural change in the industry composition of employment (according to the LFS) would have *boosted* CA coverage by 1.21 percentage points—not a large effect, but still noticeable. That works out at about 0.09 percentage points per year. After 2002 the structural effect slowed and eventually reversed. This small trend continued to 2016: the changes in the industry composition of employment in the LFS between 2014 and 2016 would have added about 0.13 percentage points to CA coverage density, for a total structural effect of 1.34 percentage points over 16 years.

**Table 5: Structural effects of changes in trend industry composition measured by simulated effect of retaining 2014 EEH incidence values, LFS and EEH structural weights**

Year	Structural effect from year shown to 2014		
	On EEH CA estimates		On WAD Federal CA estimates
	using LFS weights	using EEH weights	using LFS weights
	(%)	(%)	(%)
2000 to 2014	1.21		−0.73
2002 to 2014	0.72		−0.51
2004 to 2014	0.53		−0.31
2006 to 2014	0.65		−0.35
2008 to 2014	0.62		−0.29
2010 to 2014	0.28	0.65	−0.25
2012 to 2014	0.15	0.16	−0.02
2014 (baseline)	0.00	0.00	0.00
2014 to 2016	0.13		0.00

Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

According to EEH weights (column 2), however, structural change in the industry composition of employment had the opposite effect—it would have *reduced* CA coverage by 0.16 percentage points. While the LFS industry weights probably give us a better idea of what was actually happening in the labour market, the EEH industry weights tell us how much of the change *in EEH estimates* can be attributed to compositional change. That is, of the 0.89 percentage point fall in CA density in EEH between 2012 and 2014, a bit under one fifth (0.16 percentage points) is attributable to compositional change between industries within EEH over that period.



The discrepancy between EEH and LFS industry weights also increases the possibility that the peculiar industry employment structure of the EEH sample may have influenced the movement in the coverage estimate between 2012 and 2014.

Interestingly, structural change in the industry composition of employment in the LFS had no effect at all in the movement in the WAD coverage density estimate for current federal agreements between 2012 and 2014 (column 3).

Table 6 assesses the impact of the differences between the LFS and EEH industry employment compositions on overall coverage density. The first data column shows the actual CA coverage density estimate, using the EEH employment weights, in each year; the second shows what CA coverage density would have been if LFS industry employment weights had instead been used (we exclude agriculture, forestry and fishing from this calculation). For example, in 2008 the published estimate was 39.8 per cent (top, left hand cell) but CA coverage density would have been 38.6 per cent in EEH if LFS weights had been used. In each of the four years shown, LFS industry shares would have produced lower CA density estimates than were published in EEH. More important, however, is the impact this had on estimated movements between observations. In particular, between 2010 and 2012, estimated CA density in EEH fell by 1.41 percentage points; but if LFS industry employment weights had been used instead, the decline would have been a percentage point less, at 0.44 percentage points. Likewise, between 2012 and 2014, EEH estimated that CA density fell by a further 0.87 percentage points, but if LFS industry employment weights had been used, the decline would have been only 0.35 percentage points. Over the four year period 2010 to 2014, nearly two thirds of the decline in CA coverage in EEH was due to the use of the possibly less reliable EEH industry employment weights rather than the preferred (but still imperfect) LFS weights. Use of the LFS would have had a smaller impact on the estimated movement between 2008 and 2010 (when CA coverage density rose) but, in each period considered, the greater variability in the EEH industry employment weights meant that the change in CA density would have been less if LFS weights had been used instead of EEH weights.

This is not to argue that the ABS has been in any way delinquent. It is an inevitable outcome of the different sampling approaches (employer-based versus household-based) used in the two sources. It would not be appropriate for the ABS to reweight EEH to incorporate LFS weights (not just in industry but other variables as well), and the issues here helps explain why the ABS prefers the LFS as the source of employment data. The ABS is to be applauded for releasing industry level data that allow these calculations to be made. However, they point to some limitations of EEH data.

**Table 6: Effects of differences between LFS and EEH industry composition**

	Published EEH estimate (%)	Simulated estimate using LFS weights (%)	Difference (ppt change)
2008	39.80	38.55	1.25
2010	43.40	41.69	1.71
2012	41.99	41.25	0.74
2014	41.12	40.90	0.22
change 2008–2010	3.60	3.14	0.46
change 2010–2012	–1.41	–0.44	–0.97
change 2012–2014	–0.87	–0.35	–0.53

Source: ABS, *Employee Earnings and Hours Australia*, various, Catalogue No. 6306.0; ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003.

A final qualifier should be added here. We have used industry at the one-digit level (there are 18 industry categories in EEH and 19 industry categories, including agriculture, forestry and fishing, in the LFS). This is the level at which EEH CA coverage estimates are published. It is possible that a more accurate analysis could be undertaken of the impacts of structural change and the use of different industry weighting systems if more fine-grained industry categories (at the 2 or 3 digit level) were used. We cannot do this with EEH data on CA coverage but we may get an idea of the potential magnitude of this effect by looking at union density data (some of which are published at this more fine-grained level) later in the report.

## 5.2 Sectoral changes

Table 7 shows the sectoral coverage of CAs in EEH (that is, the coverage between the public and private sectors). The data are only available from 2012. Coverage density is higher in the public sector than in the private sector, although it dropped from 89.8 per cent to 87.2 per cent between 2012 and 2014. Coverage density remains substantially lower in the private sector, where just under a third (30.4 per cent) of employees were covered by CAs in 2014, and unchanged from 2012. The large difference in CA coverage density between the public and private sectors means that sectoral shifts can have quite an impact on overall CA coverage estimates.

**Table 7: Coverage of agreements in EEH, by sector, incidence, numbers of employees and percentage of employees, 2012–2014**

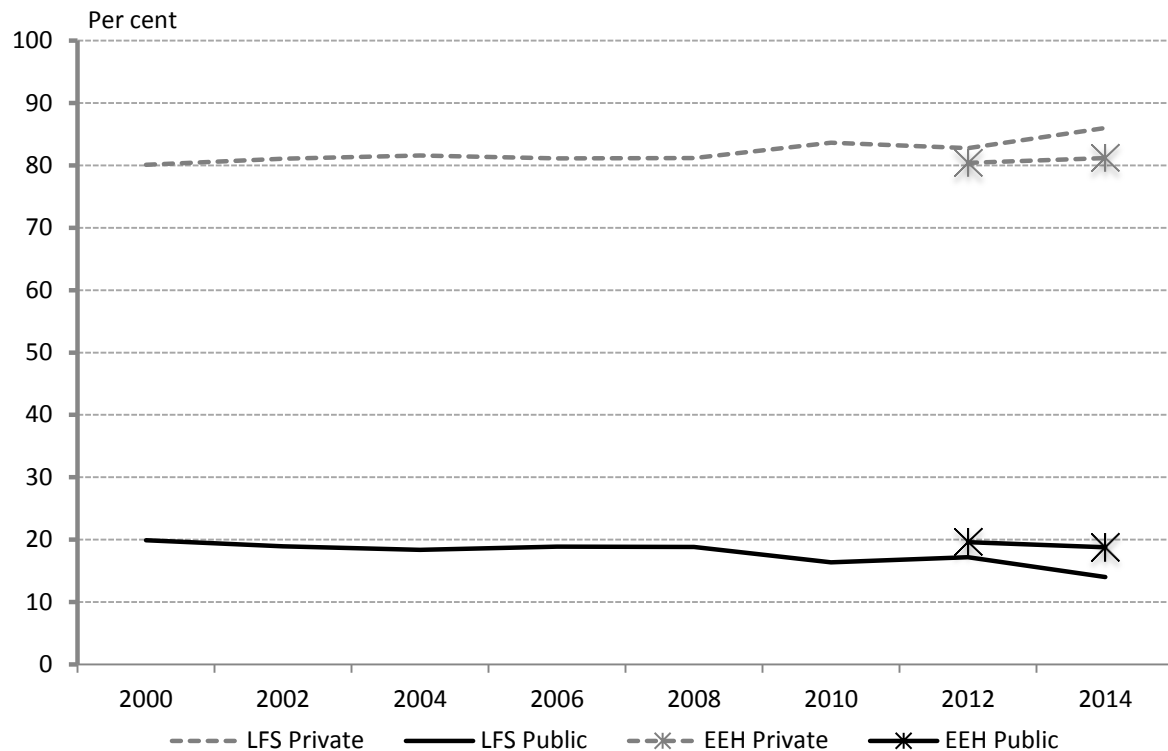
Number of employees	Private (‘000s)	Public (‘000s)	Total (‘000s)
2012	2346.5	1687.1	4033.6
2014	2443.5	1626.6	4070.1

Percentage of employees	Private (%)	Public (%)	Total (%)
2012	30.4	89.8	42.0
2014	30.4	87.2	41.1

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Figure 9 shows how the structure of the labour market by sector has changed over the period 2000–2014. The data for pre-August 2014 are extracted from catalogue number 6310.0, and from Catalogue number 6333.0 thereafter. Both sources are derived from the LFS annually, and are reported on a detrended basis (i.e. we have used original data values). The data shows a long term, slow decline in the share of public sector employment, down from 19.9 per cent in 2000 to 17.2 per cent in 2012, and then a very sudden large drop to 14.0 per cent in 2014. The drop of 3.2 percentage points from 2012 to 2014 is surprising given its estimated magnitude over a short period, being equivalent to 330 000 jobs. Data for 2015 from the quarterly LFS itself (not reported as there was a change in scope from 2014) suggest a rebound, albeit only slight. There was a much smaller drop of 0.72 percentage points between 2012 and 2014 in the public sector employment share according to the EEH, closer to the average biennial drop in the public sector share in LFS employment over the entire period (0.8 points per annum). If we had applied a Henderson 7-point trend function to the original LFS data (as calculated by the authors), the drop between 2012 and 2014 would have been from 16.8 per cent to 15.3 per cent, just 1.5 percentage points (though trending does tend to ameliorate movements in the last observation).

**Figure 9: Distribution of employees by sector (percentages), LFS (original) and EEH, 2000–2014**


Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0; ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia, various*, Catalogue No. 6310.0; ABS, *Characteristics of Employment, Australia, August 2015*, Catalogue No. 6333.0.

Table 8 estimates the impact of structural change in the sector composition of employment on CA coverage estimates. Note that changes from 2014 to 2016 have not been included, as LFS estimates of sectoral employment have not been released for 2016. Recall that we are estimating what the overall CA coverage density would have been in each year if coverage density was fixed at the values observed in 2014 and only the sector shares of employment changed. Applying the original LFS employment weights (column 1), trend LFS employment weights (column 2) and EEH employment weights (column 3) for each sector in the years 2000 to 2014, we observe the following. The structural effect of changes in the sector composition of employment—according to the original LFS—has been strongly negative, detracting 3.36 percentage points from CA coverage density between 2000 and 2014 (top left hand data cell in Table 8). That is, if each sector had the same CA coverage in 2000 as it had in 2014, CA density would have been 3.36 percentage points higher than was the case in 2014. This effect is about 0.24 percentage points per year. Most notably, between 2012 and 2014, apparent structural change in the composition of employment reduced CA coverage density in EEH by 1.84 percentage points. The trend LFS effect<sup>19</sup> is considerably less, though still substantial. Over the period from 2000 to 2014, the drop of 2.38 percentage points is equivalent to about 0.17 percentage points per year, but there is still a major drop of 0.86 percentage points between 2012 and 2014. That is, structural shifts between public and private sector employment in themselves caused a drop of 0.86 percentage points in CA density between 2012 and 2014. The magnitude of this is similar to the total fall in CA coverage density over that period.

<sup>19</sup> Based on trend estimates calculated by the authors.

**Table 8: Structural effects of changes in sectoral composition measured by simulated effect of retaining 2014 EEH incidence values, using LFS and EEH structural weights**

From year	On EEH CA estimates		
	using LFS original weights	using LFS trended weights	using EEH weights
	(%)	(%)	(%)
2000 to 2014	-3.36	-2.38	
2002 to 2014	-2.83	-1.93	
2004 to 2014	-2.51	-1.83	
2006 to 2014	-2.79	-1.98	
2008 to 2014	-2.77	-1.87	
2010 to 2014	-1.36	-1.01	
2012 to 2014	-1.84	-0.86	-0.41

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0; ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia, August 2013*, Catalogue No. 6310.0; ABS, *Characteristics of Employment, August 2015*, Catalogue No. 6333.0.

By comparison, according to the EEH, (column 3), structural change in the sector composition of employment only reduced CA coverage by 0.41 percentage points. That is, the EEH estimate itself of the decline in CA coverage density would have been little more than half of what it was if it were not for the changing sectoral composition of employment.

Results for the structural effects of changes in the sector composition of employment should be interpreted with caution. When estimating how much of the drop in the EEH figures is due to structural change, *this* estimate from EEH data is the figure we need to focus on, even if the LFS trend estimate might give us a better understanding of the structural effects actually happening in the economy.

While LFS employment data are accepted as being more reliable than those from the EEH, it is not immediately evident why there was such a substantial drop in the public sector share of employment between 2012 and 2014 in the original LFS data (most of which occurred between 2013 and 2014). Without such a pronounced decline, the structural effects reported in the first column of data in Table 8 would be significantly lower, and this is partly reflected in the lower effect apparent in the trend estimate. The latest observations in that trend estimate, it should be noted, will be subject to revision as data for subsequent years are released.<sup>20</sup>

Table 9 assesses the impact of the differences between the LFS and EEH sector employment compositions on overall coverage density, and again shows estimates derived from both original LFS data and trend LFS data. The actual CA coverage density values are in column 1 (using the EEH employment weights), and are compared to estimates using LFS sector employment weights (column 2). For example, in 2014 the EEH reported CA coverage of 41.12 per cent, however CA coverage density would have been 38.36 per cent if original LFS weights had been used. The LFS sector employment weights produced a similarly lower figure for 2012, due to the lower estimated incidence of public sector employment in the LFS compared to EEH. Between 2012 and 2014, while EEH estimated that CA density fell by 0.87 percentage points, the decline would have been 2.24 percentage points if LFS sector employment weights had been used. These results are different to those reported above for effects arising from the change in industry employment, however they arise

<sup>20</sup> The trend estimates are based on original data points only to 2014.

due to the substantial drop in public sector employment share between 2012 and 2014 in the original LFS, rather than any greater reliability of the EEH data. For reasons discussed, we are sceptical that the original LFS weights on this variable would give a better indicator than EEH of the movement in CA coverage. That said, the trend LFS data, reported in the last two columns of Table 9, still suggest that the actual decline in CA density would have been greater (at about 1.25 percentage points) if LFS weights had been used—though recall that, of that fall, over two thirds (0.86 percentage points) would simply have been a compositional effect arising from the changing public sector share of employment.

**Table 9: Effects of differences between LFS and EEH sectoral composition**

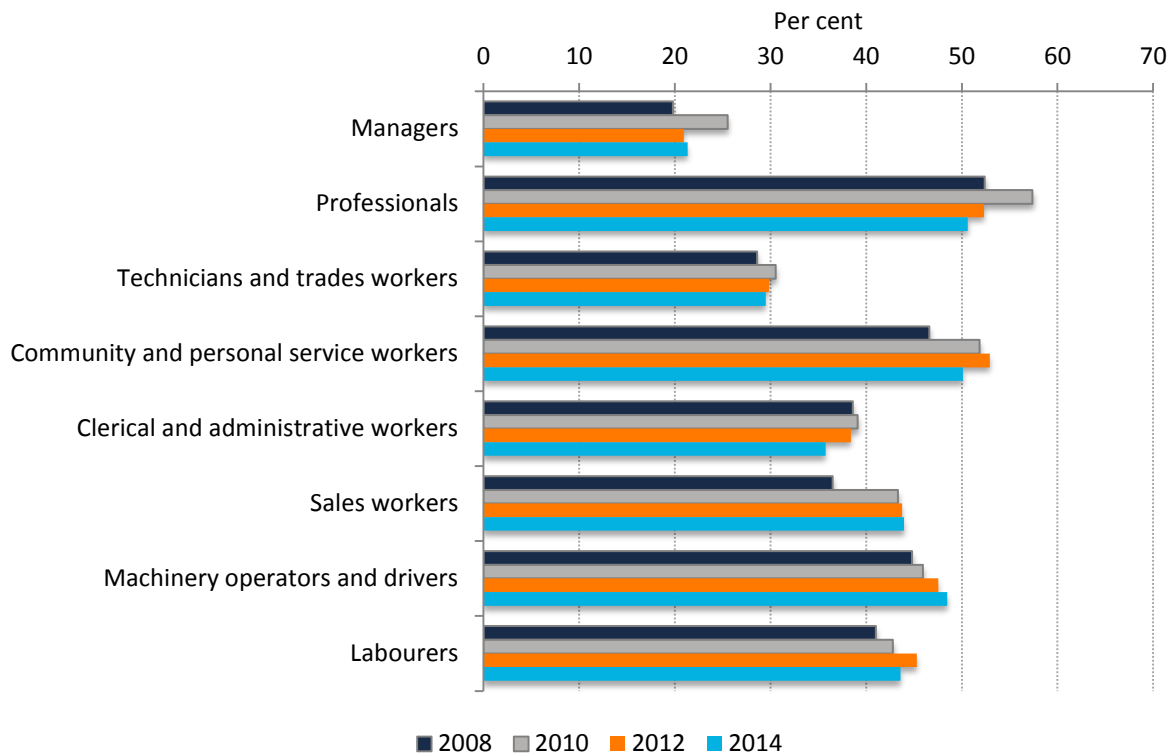
	Published EEH estimate  (%)	Using original LFS weights		Using trend LFS weights	
		Simulated estimate using LFS weights  (%)	Difference with EEH estimate  (ppt change)	Simulated estimate using LFS weights  (%)	Difference with EEH estimate  (ppt change)
2012	41.99	40.60	1.39	40.37	1.62
2014	41.12	38.36	2.76	39.12	2.00
Change 2012–2014 (ppt)	–0.87	–2.24	1.37	–1.25	0.38

Source: ABS, *Employee Earnings and Hours, Australia*, Catalogue No. 6306.0; ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia, August 2013*, Catalogue No. 6310.0; ABS, *Characteristics of Employment, August 2015*, Catalogue No. 6333.0.

### 5.3 Occupational changes

Figure 10 shows the coverage of CAs in EEH by occupation over four observations from 2008 to 2014. Full data are in Appendix Table A6. The data are only available from 2008. Coverage density is relatively high across all years amongst Professionals, Community and personal service workers, and Machinery operators and drivers. It is comparatively low amongst Managers, Technicians and trades workers. Compared to 2008, changes in CA coverage have varied, however there have been overall declines amongst Professionals and Clerical and administrative workers. Sales workers showed small, repeated increases in CA coverage density from 2008 to 2014, as did Machinery operators and drivers. CA coverage was higher in 2014 than 2008 for Sales workers, Community and personal service workers, and to a lesser extent, Managers and Technicians and trades workers. Patterns in other occupations were more inconsistent. For example, for Professionals there was a notable drop in CA coverage density between 2010 and 2014, but this was after a notable rise between 2008 and 2010.

**Figure 10: Coverage of agreements in EEH, by occupation, incidence, numbers of employees and percentage of employees, 2000–2014**

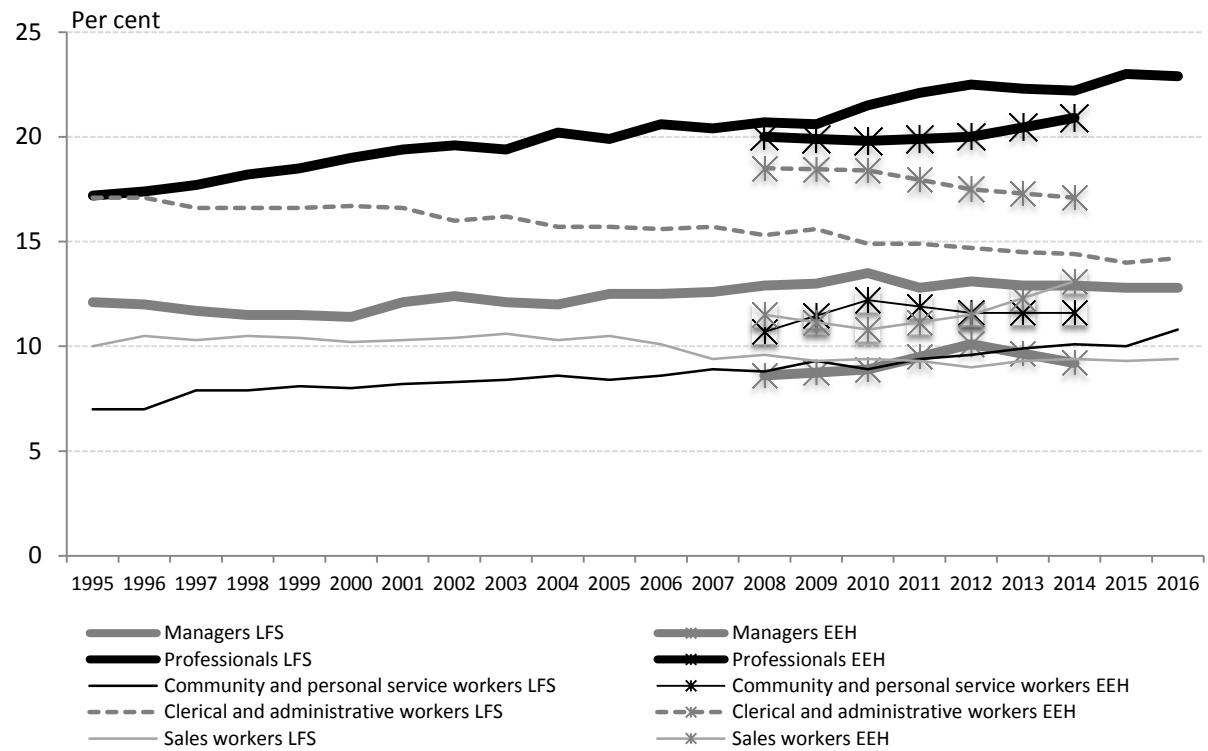


Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

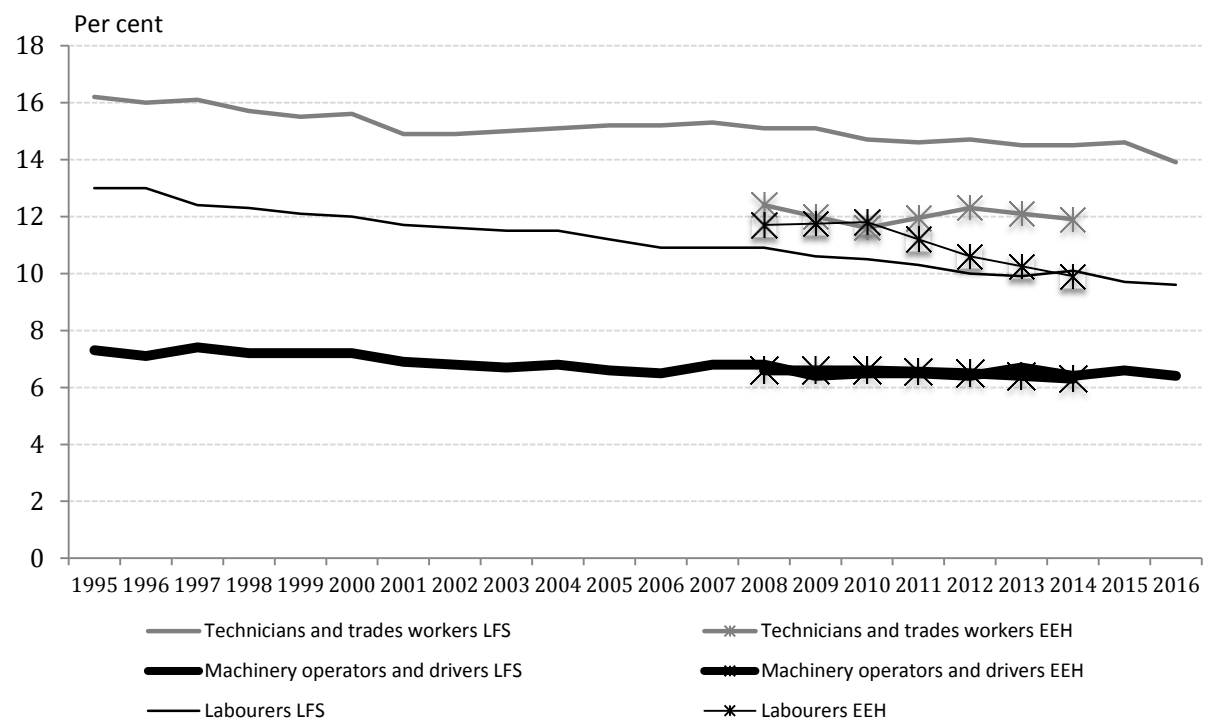
Figure 11 shows how the structure of the labour market by occupation has changed over the period 1992–2016. Full data are in Appendix Table A7. Panel A of Figure 15 has data for ‘white collar’ occupations, most of which have been growing, while Panel B has data for ‘blue collar’ occupations, all of which have been in decline. The LFS data shows a long-term increase in the share of employment for Professionals and Community and personal service workers, while a decline is observed for Technicians and trades workers, Clerical and administrative workers, and Labourers. The shorter period reported for EEH does not show such pronounced movements, though there is a larger increase observed for sales workers over that two-year period in EEH than in the LFS. By comparison with LFS, EEH overstates the incidence of Clerical and administrative workers, Sales workers, and Community and personal service workers and understates the incidence of Professionals, Managers, and Technicians and trade workers.

**Figure 11: Distribution of employees by occupation (percentages), LFS (original) and EEH, 1995–2014**

**Panel A: 'White collar' occupations**



**Panel B: 'Blue collar' occupations**



Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Table 10 estimates the impact of structural change in the occupational composition of employment on CA coverage estimates. Assuming CA coverage for each occupation is fixed for each occupation, applying the LFS employment weights resulted in a very small positive structural effect up to 2014 (column 1). The 2000 occupational employment structure would lead to CA coverage density some 0.32 percentage points lower than the CA density in 2014, even if each occupation had the same density as in 2014. This small positive effect owing to changes in the occupational composition of employment is fairly consistent with 2014 as compared with most of the 2000s. The results were of similar direction (but over a smaller period) using EEH employment weights, with a small positive effect also observed. The small positive effect in LFS continued after 2014.

**Table 10: Structural effects of changes in occupational composition measured by simulated effect of retaining 2014 EEH incidence values, LFS and EEH structural weights**

	Structural effect compared to 2014; on EEH CA estimates	
	Using LFS weights (%)	Using EEH weights (%)
2000 to 2014	0.32	
2002 to 2014	0.35	
2004 to 2014	0.22	
2006 to 2014	0.31	
2008 to 2014	0.31	0.16
2010 to 2014	0.33	0.03
2012 to 2014	0.11	0.35
2014 (baseline)	0.00	0.00
2014 to 2016	0.21	

Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003, ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Table 11 assesses the impact of the differences between the LFS and EEH occupational employment weights on overall coverage density. The CA coverage density values reported in EEH are generally higher than those estimated using LFS weights, consistent with the earlier results for industry and sector. For example, in 2014, the EEH CA coverage density was 41.12 per cent, compared to 40.13 per cent using LFS employment weights. However, the choice of weights appears to have less effect here on *changes* in CA coverage density. Between 2012 and 2014, EEH estimated that CA density fell by 0.87 percentage points, while using LFS weights would produce a decline of about 1.02 percentage points. These estimated changes are broadly similar, and were also similar for the periods 2008 to 2010, and 2010 to 2012.



**Table 11: Effects of differences between LFS and EEH occupational composition**

	Published EEH estimate (%)	Simulated estimate using LFS weights (%)	Difference (ppt change)
2008	39.80	38.72	1.08
2010	43.40	42.31	1.09
2012	41.99	41.15	0.84
2014	41.12	40.13	0.99
Change 2008–2010	3.60	3.59	0.01
Change 2010–2012	–1.41	–1.16	–0.25
Change 2012–2014	–0.87	–1.02	0.15

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0, ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003.

#### 5.4 The influence of casual/permanent status

Table 12 shows the coverage of CAs in EEH by employee casual/permanent status ('employment type'). The data are reported from 2008. CA coverage density is higher amongst permanent employees across all years, although it has declined from 45.9 per cent in 2008 to 42.65 per cent in 2014. Conversely amongst casual employees, it has risen from under a third of employees in 2008 to 35.52 per cent in 2014. A couple of possible explanations might be that a disproportionate number of positions covered by CAs were casualised over that period, or that CAs came to cover an increasing number of casual jobs (such as under labour hire arrangements) compared to what was possible before 2008.

**Table 12: Coverage of agreements in EEH, by casual/permanent status, numbers of employees and percentage incidence of employees, 2000–2014**

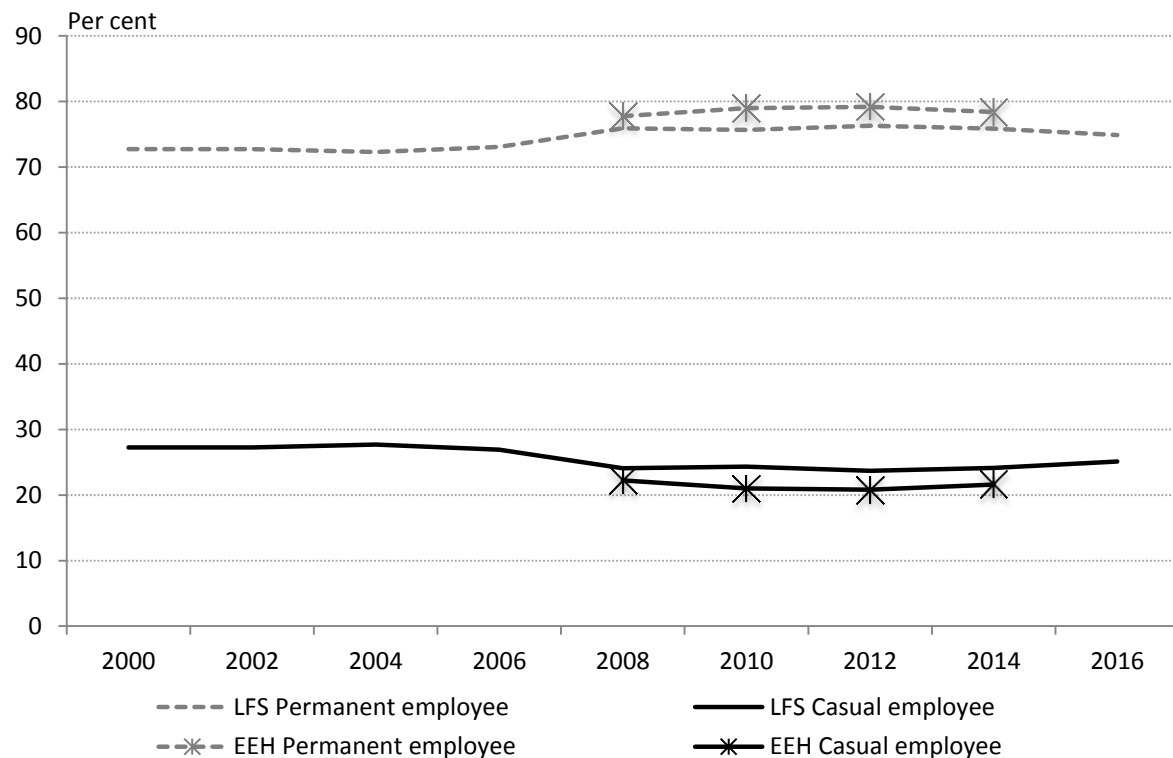
Number of employees	Permanent employees (‘000s)	Casual employees (‘000s)	Total (‘000s)
2008	2879.6	574.9	3454.5
2010	3197.4	694.5	3891.9
2012	3300.2	733.3	4033.6
2014	3312.2	757.9	4070.1
Percentage of employees	Permanent employees (%)	Casual employees (%)	Total (%)
2008	45.90	32.04	42.82
2010	45.13	36.87	43.40
2012	43.38	36.71	41.99
2014	42.65	35.52	41.12

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Figure 12 shows how the structure of the labour market by employment type has changed over the period 2000–2016. Data from catalogue number 6310.0, derived annually from the LFS, has been used prior to 2014. These LFS data show that around three-quarters of employees are employed on a permanent basis, while around one quarter are casual employees. There had been some decline in the proportion of casual employees, however this has again risen since 2012.

The 2014 EEH data showed a slightly higher share of permanent employees, around 78 per cent. Casual employees comprise around 22 per cent of workers in EEH. These shares have been relatively stable between 2008 and 2014. The change between 2012 and 2014 in both the LFS and EEH surveys is for a slight increase in the proportion of casual employees, but in the case of LFS it still leads to a casual employment share that is lower than was the case through the period from 2000 to 2006.

**Figure 12: Distribution of employees by casual/permanent status (percentages), LFS (original) and EEH, 2000–2014**



Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia, August 2013*, Catalogue No. 6310.0; ABS, *Employee Earnings and Hours Australia, various*, Catalogue No. 6306.0.

Table 13 estimates the impact of structural change in the composition of employment type on CA coverage estimates. Applying the LFS employment weights to fixed CA coverage values results in small, positive structural effects. Between 2000 and 2014 changes in the casual/permanent composition of employment had a small positive impact (about 0.2 percentage points) on CA density. This equates to only 0.02 percentage points annually. This structural effect owing to changes in the proportion of permanent versus casual employees generally remained small and positive over time, with a brief and small reversal in 2012.

These results were difficult to corroborate using EEH employment weights, which saw a small positive effect in 2008 reversed in 2010, resulting in a small negative effect from 2010. A small portion (barely one-twentieth) of the decline in CA coverage density between 2012 and 2014 was due to the growth of casual employment in EEH. The effect is very small because the growth in the share of casual employment was small and the difference in CA coverage density between casuals and permanents is also small.

**Table 13: Structural effects of changes in casual/permanent composition measured by simulated effect of retaining 2014 EEH incidence values and EEH structural weights**

From year	Structural effect compared to 2014, on EEH CA estimates	
	using LFS weights (%)	using EEH weights (%)
2000 to 2014	0.22	
2002 to 2014	0.22	
2004 to 2014	0.26	
2006 to 2014	0.20	
2008 to 2014	0.00	0.05
2010 to 2014	0.02	-0.04
2012 to 2014	-0.03	-0.05
2014 (baseline)	0.00	
2014 to 2016	0.10	

Note: August LFS employment weights have been used with May EEH CA coverage values.

Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia, August 2013*, Catalogue No. 6310.0; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Table 14 assesses the impact of the differences between the LFS and EEH composition of employment type on overall coverage density. The CA coverage density values reported in EEH do not differ substantially from those estimated using LFS employment weights. Importantly, the choice of weights makes minimal difference when considering estimated *changes* in CA density.

**Table 14: Effects of differences between LFS and EEH casual/permanent composition**

Year	Published EEH estimate	Simulated estimate using LFS weights	Difference
	(%)	(%)	(ppt change)
2008	42.82	42.56	0.26
2010	43.40	43.12	0.28
2012	41.99	41.80	0.19
2014	41.12	40.93	0.19
change 2008–2010 (ppt change)	0.58	0.56	0.02
change 2010–2012 (ppt change)	-1.41	-1.32	-0.09
change 2012–2014 (ppt change)	-0.87	-0.87	0.00

Note: August LFS employment weights have been used with May EEH CA coverage values.

Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings, Benefits and Trade Union Membership, Australia, August 2013*, Catalogue No. 6310.0; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

## 5.5 Full-time and part-time employment

Table 15 shows the coverage of CAs in EEH for full-time and part-time workers. The data are available from 2010. Table 15 shows that CA coverage density amongst part-time employees is slightly higher than for full-time employees, although CA coverage density for both employee groups

has been falling over time. CA coverage density for full-time employees has fallen below 40 per cent (38.03 per cent in 2014), while for part-time employees it has fallen 1.32 percentage points to 45.75 per cent.

**Table 15: Coverage of agreements in EEH, by full-time/part-time employment status, numbers of employees and percentage incidence of employees, 2010–2014**

<b>Number of employees</b>	<b>Employed full-time (‘000s)</b>	<b>Employed part-time (‘000s)</b>	<b>Total (‘000s)</b>
2010	2340.5	1551.4	3891.9
2012	2399.6	1634.0	4033.6
2014	2258.7	1811.4	4070.1
<b>Percentage of employees</b>	<b>Employed full-time (%)</b>	<b>Employed part-time (%)</b>	<b>Total (%)</b>
2010	41.26	47.08	43.40
2012	39.60	46.07	41.99
2014	38.03	45.75	41.12

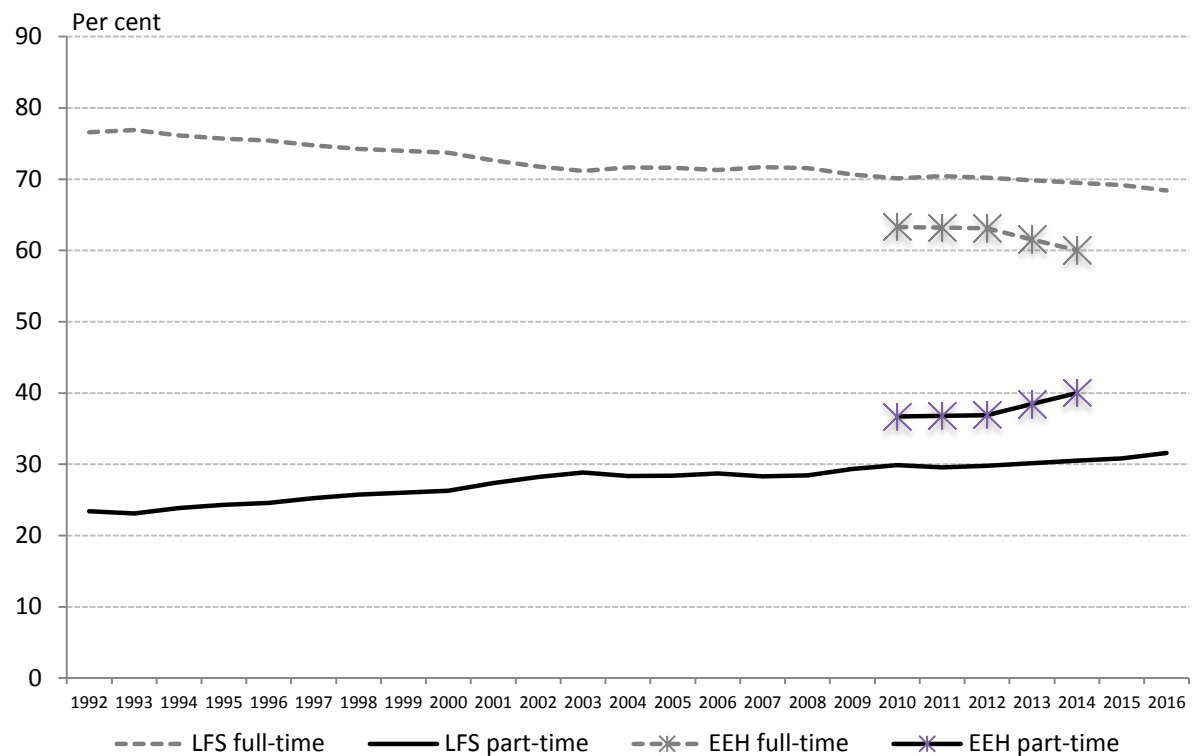
Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Figure 13 shows how the structure of the labour market by full-time/part-time status has changed over the period 1992 to 2016. The LFS trend data shows that the share of part-time employment has steadily increased, from 23.43 per cent in 1992 to almost one third of workers (31.57 per cent) in 2016. Full-time work has seen an equivalent decline. Unlike the casual employment share, which has plateaued for some time, the part-time share continues to increase.

The share of part-time work reported in EEH is significantly higher, and rises by over 3 percentage points from 2010 to 40 per cent in 2014. The share of full-time employment has fallen accordingly to 60 per cent. Between the LFS and EEH, the composition of employment by full-time and part-time status therefore varies significantly, both in the levels, and in the changes observed. We would expect EEH to have a higher incidence of part-time employment than LFS, as a person holding multiple part-time jobs would be observed once in LFS but multiple times in EEH. In addition, EEH calculates full-time/part-time status based on an employee’s usual working hours, whereas the LFS uses both actual and usual hours. This difference in methodology may contribute to the difference, however the extent of the overall discrepancy is greater than would be expected.<sup>21</sup>

<sup>21</sup> For the difference to be fully explained by this, the number of normal full-timers who happen to be working part-time hours in the survey week due to illness, injury, disputation or shortage of work, would have to exceed the number of normal part-timers who happen to be working part-time hours in the survey week due to overtime or shift arrangements, by a factor of 7 to 10 percentage points of the employed labour force (that is, up to about a quarter of part-time workers in 2014). It would be surprising if that were the case.

**Figure 13: Distribution of employees by full-time/part-time status (percentages), LFS (trend) and EEH, 1992–2014**



Source: ABS, *Labour Force, Australia, Dec 2016*, Catalogue No. 6202.0; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Table 16 estimates the impact of structural change in the composition of full-time and part-time employment on CA coverage estimates. Using fixed CA coverage values from 2014 with LFS employment weights, Table 16 shows small, positive, and diminishing structural effects, of 0.33 percentage points from 2000 to 2014. This equates to only 0.02 percentage points annually.

This structural effect owing to changes in the proportion of full-time versus part-time employees was also observed (albeit more strongly) when using EEH employment weights for 2010 and 2012. That is, CA coverage would have been about 0.25 percentage points higher in both 2010 and 2012, compared to 2014 (because the share of part-time employment has been growing, and part-timers have higher CA coverage than full-timers). Between 2014 and 2016 these small structural effects continued.

**Table 16: Structural effects of changes in full-time/part-time composition measured by simulated effect of retaining 2014 EEH incidence values, LFS and EEH structural weights**

From year	Structural effect compared to 2014, on EEH CA estimates	
	using LFS weights (%)	using EEH weights (%)
2000 to 2014	0.33	
2002 to 2014	0.18	
2004 to 2014	0.17	
2006 to 2014	0.14	
2008 to 2014	0.16	
2010 to 2014	0.05	0.25
2012 to 2014	0.06	0.24
2014 (benchmark)	0.00	0.00
2014 to 2016	0.08	

Source: ABS, *Labour Force, Australia, Monthly, Dec 2016*, Catalogue No. 6202.0; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Table 17 assesses the impact of the differences between the LFS and EEH structure of full-time and part-time employment on overall coverage density. Importantly, the CA coverage density values reported in EEH do not vary significantly from those estimated using LFS employment weights— as shown in data column 3 in Table 17, the difference between EEH and LFS-based estimates is relatively small. Accordingly, the estimated changes in CA coverage are broadly similar between EEH and LFS.

**Table 17: Effects of differences between LFS and EEH full-time/part-time composition**

Year	Published EEH estimate (%)	Simulated estimate using LFS weights (%)	Difference (ppt change)
2010	43.40	43.00	0.40
2012	41.99	41.53	0.46
2014	41.12	40.38	0.73
Change 2010–2012 (ppt change)	–1.41	–1.47	0.06
Change 2012–2014 (ppt change)	–0.87	–1.14	0.27

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0; ABS, *Labour Force, Australia, Dec 2016*, Catalogue No. 6202.0.

## 5.6 Employer size

Table 18 shows the coverage of CAs in EEH by employer size. The data are reported from 2010. The data shows that CA coverage density increases with employer size generally, with small businesses (less than 20 employees) having around 5 per cent coverage, compared to around 80 per cent coverage for large businesses of over 1000 employees. Medium-size businesses have between 15 per cent (20–49 employees) to 50 per cent (100–999 employees) coverage. Overall however, for employers of 50 or more employees, CA coverage density has been falling between 2012 and 2014. Unfortunately, LFS data are not released based on employer size, so we do not examine the structural effects of these changes in employer size on CA coverage.

**Table 18: Coverage of agreements in EEH, by employer size incidence, numbers of employees and percentage of employees, 2000–2014**

Number of employees	Less than 20 employees ('000s)	20–49 employees ('000s)	50–99 employees ('000s)	100–999 employees ('000s)	1000 or more employees ('000s)	Total ('000s)
2010	109.9	149.4	222.8	1164.3	2245.5	3891.9
2012	101.5	119.3	225.2	1329.2	2258.3	4033.6
2014	126.7	203.8	201.8	1289	2248.8	4070.1
Percentage of employees	Less than 20 employees (%)	20–49 employees (%)	50–99 employees (%)	100–999 employees (%)	1000 or more employees (%)	Total (%)
2010	4.5	15.2	30.8	52.6	86.1	43.4
2012	4.7	11.3	30.2	52.1	81.4	43.4
2014	5.7	16.8	27.7	50.6	79.0	42.6

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

## 5.7 Industry patterns of union density

We are interested in compositional effects on union density because of the potential impact this may have on CA coverage density. Industry patterns are particularly interesting because they enable us to assess the impact of moving from one-digit industry analysis to two-digit analysis. Whereas EEH data on CA coverage is only available at the one-digit level, data drawn from the ABS, *Characteristics of Employment, Australia*, Catalogue No. 6333.0<sup>22</sup> on union density is also available at the two digit level. That said, for a number of observations at the two digit level over the past nine years, the ABS has declined to publish estimates, so some merging of categories has been necessary. Thus the 'two-digit' analysis here comprises 46 industry categories, compared to 19 for which analysis at the one-digit level has been undertaken.

Table 19 shows the impact of structural change in the industry composition of the labour market on trend union density over the 2006–2014 period. The first three data columns include agriculture in the data, the last three exclude it, as is the case in EEH. At the one-digit level, structural change in the labour market appears to have been a slight benefit to union density. For example, between 2006 and 2014, union density rose by about 0.4 percentage points simply because of the changing industry composition of employment, as measured at the one-digit level. This is in stark contrast to the 1980s and 1990s in Australia, when changes in the industry composition of employment acted against union density.<sup>23</sup> However, when a more fine-grained analysis is undertaken of industry effects, the pattern is not so positive for union density. Positive compositional effects upon union density only appeared to have occurred between 2006 and 2008; after that, the trend is reversed. So, from 2010 to 2014, union density fell by over 0.2 percentage points simply because of the changing industry composition of employment measured at the two-digit level.

<sup>22</sup> In turn, drawn essentially from part of the August LFS.

<sup>23</sup> Peetz D (1998), *Unions in a Contrary World: The Future of the Australian Trade Union Movement, Reshaping Australian Institutions*, Cambridge: Cambridge University Press.

**Table 19: Structural effects of changes in industry composition on union density**

	Including Agriculture, forestry and fishing			Excluding Agriculture, forestry and fishing		
	1-digit (%)	2-digit (%)	Difference (ppt change)	1-digit (%)	2-digit (%)	Difference (ppt change)
2006 to 2014	0.39	0.20	-0.20	0.37	0.17	-0.20
2007 to 2014	0.27	0.07	-0.21	0.24	0.03	-0.21
2008 to 2014	0.22	-0.04	-0.26	0.21	-0.05	-0.26
2009 to 2014	0.10	-0.15	-0.25	0.08	-0.18	-0.25
2010 to 2014	0.04	-0.22	-0.26	0.02	-0.25	-0.26
2011 to 2014	0.04	-0.22	-0.26	0.01	-0.25	-0.27
2012 to 2014	0.04	-0.15	-0.19	0.03	-0.17	-0.19
2013 to 2014	0.03	-0.05	-0.07	0.02	-0.06	-0.08
2014 (baseline)	0.00	0.00	0.00	0.00	0.00	0.00

Source: Calculated from ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003: Workplace Agreements Database.

The net effect of moving from one-digit to two-digit analysis has been to increase the estimate of negative effects of compositional industry change on union density, by around 0.2 percentage points. This suggests the need for some caution in concluding that changes in the industry composition of employment, as measured in the LFS, have been beneficial for CA coverage density (Table 8). Those changes in the industry composition of employment were measured at the one-digit level and it is feasible that, if they were measured at the two-digit level, the apparent compositional effect could have been milder or even negative. That said, the effects of the changing industry composition of employment upon either union density or CA coverage density do not appear to have been large.

## 6 Projections of future coverage

The DE each year makes projections of the composition of employment five years ahead, in terms of industry, occupation and geographic region. The most recent projections cover the period from 2015 to 2020. DE only publishes estimates for the start and end of the period (so the most recent estimates cover employment in 2020). DE's method essentially involves quite fine-grained projections at the three-digit industry level, using regression techniques based on previous employment patterns. It is in the nature of such projections that they are uncertain and indeed are subject to more caveats than even the survey estimates of historical employment—for example, while DE forecast a 20 per cent *decline* in employment in the coal industry by 2020 (compared with growth of 8.3 per cent for Australian employment as a whole),<sup>24</sup> industry body Ibis World in 2015 forecast 9 per cent growth in employment in black coal over the period from 2015–16 to 2020–21—though by April 2016, Ibis World had revised its 2020–21 employment forecast downwards by 5.5 per cent, to growth of just 2.8 per cent.<sup>25</sup> Coal is an extreme example—employment levels at any time are highly sensitive to coal prices and there are divergent views on the future levels of coal prices—but it illustrates the limitations on employment projections.

Bearing those caveats in mind, Figure 14 shows DE projections for employment by industry at the 1-digit level to November 2020. The estimated impacts this would have on CA coverage density and

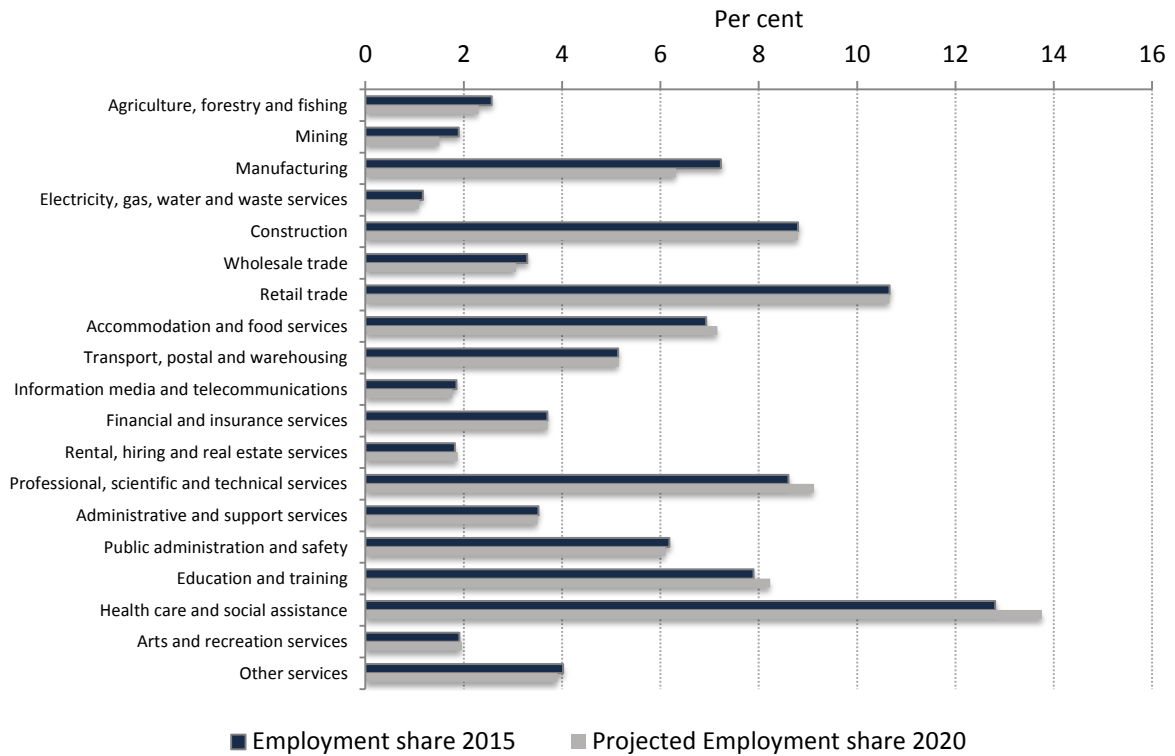
<sup>24</sup> Department of Employment, *Employment Projection*, 2016, <http://lmip.gov.au/default.aspx?LMIP/EmploymentProjections>.

<sup>25</sup> Ibis World (2016), *Black Coal Mining in Australia*, IBISWorld Industry Report B0601.



union density are expected to be small but positive on both: it would be expected to lead to a 0.29 percentage point increase in CA coverage density, and a 0.39 percentage point increase in union density, over five years if other things remain unchanged. Bear in mind, however, that this analysis at the 1-digit level could, based on past experience with industry-level data, underestimate the impact of compositional change if industry were measured at the two-digit level.

**Figure 14: Projected employment shares, 2015 and 2020**



Source: Calculations from Department of Employment data, EEH and LFS. ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003, ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0; Department of Employment, *Workplace Agreements Database*, June 2016.

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## 7 Conclusions

The key points from this analysis appear to be as follows.

First, the decline in CA coverage between 2010 and 2014 appears mostly or entirely due to declines in non-union agreement coverage, which was perhaps returning to more historically 'normal' levels after the unusual levels reached during and immediately after the WorkChoices era. However, since 2014 there has been a decline in union agreement coverage while non-union agreement coverage appears to have stabilised. The drop between 2014 and 2016 was sharper than in previous periods and is most likely related to the longer-term decline in union density that has occurred, as the vast majority of employees on CAs are on union CAs. As CA coverage has gone up, award coverage has gone down and vice versa.

There is no indication that non-union agreements rise to fill a void created by any decline in union agreements. Indeed, it is noteworthy that the drop in CA coverage density has been substantially less than the drop in union density. This may be partly due to an increase in 'free riding', and reluctance by employers to switch established bargaining arrangements due to employee resistance, employer fears of union organising campaigns and /or efficiency benefits of collective negotiation through existing institutions. The arithmetic increase in the number of people on union CAs who are not themselves union members has either exacerbated the decline in union density, or ameliorated the impact on CA coverage, or both.

Second, structural change in the labour market has had a mixed influence on changing CA coverage. If anything, some structural changes in the labour market have facilitated slight increases, rather than decreases, in CA coverage to 2016, though the possible positive effects of industry compositional change may be exaggerated by restricting industry analysis to the one-digit level and it may be the case that two-digit analysis would give a different finding. Either way, the effect of industry change does not appear to have been large. The same cannot be said of sectoral change. It seems likely that declining public sector employment has put downward pressure on CA coverage density, and it probably accounts for half of the decline in CA coverage density in EEH between 2012 and 2014. Unfortunately, we cannot estimate how much of the change in CA coverage density in EEH between 2014 and 2016 is due to compositional factors.

Third, industry level factors have played some role. For example, the decline in coverage of current federal CAs has been exaggerated by developments in the Retail trade industry, where some CAs are under challenge from some employees. There has also been a decline in agreements approved for Public administration and safety, where bargaining has experienced some difficulties, and this has led to a drop in estimated coverage by current federal agreements. Indeed, those two industries, along with Health care and social assistance, account for most of the drop in current federal agreement coverage between 2014 and 2016. On the other hand, changes within individual industries like Manufacturing (where CA coverage fell in 2014, but only after rising well in 2012) or individual occupations do not appear to account for much of the change. Indeed, in EEH it was difficult to discern consistent industry patterns because changes in CA coverage in one year in an industry or occupation were often followed by movements in the opposite direction the next year. This is partly a reflection of sample size effects at the industry level.

In the last couple of years measured CA coverage density fell amongst both full-timers and part-timers, and amongst permanent workers but not, curiously, amongst casual workers, amongst whom CA coverage appeared to increase slightly. Whether this was because of higher rates of casualisation of employment in CA-covered work, higher CA coverage of casualised labour or other factors is hard to tell.

Fourth, the use of EEH industry weights rather than LFS weights might have exaggerated any downward movement in EEH CA density between 2010 and 2014, accounting for roughly two thirds of the movement. The changing sectoral composition of employment (between public and private) evident in recent EEH data appears to reflect the longer-term *trend* decline in public sector employment evident in the LFS. Roughly half of the decline in CA coverage density between 2012 and 2014 in the EEH publication appears to have been due to this sectoral change. Other weights (eg. occupation, gender) do not appear to have been consistently important. It is not yet possible to estimate what proportion of the decline between 2014 and 2016 can be attributed to such factors.

Finally, projections of industry employment patterns over the period to 2020 suggest a minor structural impact on CA coverage density and union density, one that does not appear likely to be large. It is probable that the trajectories of public and private sector employment would have a bigger impact on CA coverage than the industry or occupational composition of future employment.

In summary, declining CA coverage density has to be seen in the context of declining union density and changes in award coverage. The measured decline to 2014 may have been exaggerated by the industry composition of employment in the employer survey used, but we do not know if that affected the decline afterwards, which appeared sharper. Other factors appear to be, before 2014, a decline in non-union agreement-making and, more recently, developments in particular industries including Retail trade and Public administration and safety. Structural change in the labour market has only had a small impact on coverage estimates, with the main negative factor being the shift away from public employment, while industry change has worked in the opposite direction.

## Appendix A: Tables

Table A1: Comparison of union density in LFS and CA coverage density in EEH, 2000–2014

Year	Union membership		Coverage density	CAs	
	Original estimate (%)	Trend estimate (%)		Points (%)	Membership-CA gap <sup>a</sup> Ratio of CA (%)
2000	24.7	24.8	36.8	12.0	32.6
2002	23.1	23.5	38.2	14.7	38.6
2004	22.7	22.7	40.9	18.2	44.4
2006	20.3	20.5	41.2	20.7	50.3
2008	18.9	19.0	39.8	20.8	52.3
2010	18.3	18.8	43.4	24.6	56.7
2012	18.2	17.7	42.0	24.2	57.7
2014	15.1	16.1	41.1	25.0	60.9

Notes: a All comparisons between CA coverage and union density are comparisons with the trend, not the original, estimate.

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0; ABS, *Labour Force, Australia, Detailed, Quarterly*, Nov 2016, Catalogue No. 6291.0.55.003; Department of Employment, *Workplace Agreements Database*, June 2016; ABS, *Employment Benefits and Trade Union Membership, Australia, various years*, Catalogue Number 6310.0; ABS *Characteristics of Employment, Australia, August 2015*, Catalogue Number 6311.0; See text for calculations.

Table A2: Coverage of agreements in EEH, by industry, numbers of employees and percentage incidence of employees, 2008–2014

	Mining	Manufacturing	Electricity, Gas, Water and Waste Services	Construction	Wholesale Trade	Retail Trade	Accommodation and Food Services	Transport, Postal and Warehousing	Information Media and Telecommunications	Financial and Insurance Services	Rental, Hiring and Real Estate Services	Professional, Scientific and Technical Services	Administrative and Support Services	Public Administration and Safety	Education and Training	Health Care and Social Assistance	Arts and Recreation Services	Other Services	Total
<b>Number of employees</b>																			
2010	56.9	218.2	65.3	123.3	51.4	376.3	194	214	50.1	164.1	16.8	74.3	139.4	607.1	710.1	725.6	73.4	31.7	3891.9
2012	64.2	276.1	72	135.5	53.7	458.2	163.9	261.2	55.6	162.4	16.5	65	136.8	539.5	734.2	741.1	67.5	30.1	4033.6
2014	56.8	230.4	69.3	179.7	52	469.5	236.9	229.7	57.5	166.3	17.6	87.4	85.1	497.5	788.5	730.7	69.7	45.6	4070.1
<b>Percentage of employees</b>																			
2008	30.9%	29.9%	67.5%	25.6%	10.1%	36.2%	19.3%	48.9%	31.1%	38.9%	11.9%	8.6%	15.7%	88.2%	81.2%	64.5%	37.9%	7.3%	39.8%
2010	41.5%	26.4%	67.0%	23.1%	12.3%	41.0%	30.1%	52.2%	31.3%	42.6%	9.5%	11.9%	27.2%	92.3%	84.1%	64.1%	46.0%	9.8%	43.4%
2012	42.3%	34.3%	65.6%	23.4%	12.3%	42.1%	23.8%	56.3%	32.9%	44.8%	10.4%	8.7%	23.3%	85.9%	81.9%	60.9%	43.9%	8.3%	42.0%
2014	33.6%	33.0%	60.7%	26.2%	11.7%	41.8%	32.0%	52.4%	35.7%	41.5%	9.9%	11.2%	13.9%	79.9%	84.1%	57.9%	40.8%	12.6%	41.1%

Sources: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

Table A3: Coverage of agreements in WAD, by industry, numbers of employees and percentage incidence of employees, 1992–2016

	Agriculture, Forestry and Fishing	Mining	Manufact- uring	Electricity, Gas, Water and Waste Services	Construction	Wholesale Trade	Retail Trade	Accomm- odation and Food Services	Transport, Postal and Warehousing	Information Media and Telecommuni- cations	Financial and Insurance Services	Rental, Hiring and Real Estate Services	Professional, Scientific and Technical Services	Administrative and Support Services	Public Administration and Safety	Education and Training	Health Care and Social Assistance	Arts and Recreation Services	Other Services	Total
1992	-	-	17.1	-	0.1	-	-	-	39.7	-	79.0	0.0	-	-	0.4	-	0.3	0.4	-	137.1
1993	-	1.6	57.3	16.6	3.6	0.2	37.1	0.1	116.8	76.9	21.0	-	0.9	2.1	176.7	16.3	0.4	2.8	0.3	530.8
1994	0.1	4.3	123.7	18.8	11.0	1.0	98.4	7.8	55.5	80.4	146.0	0.0	8.6	4.1	229.3	88.8	3.6	1.7	0.8	884.0
1995	0.3	3.0	139.1	12.9	14.8	3.0	157.4	7.2	137.9	77.3	163.4	0.6	3.9	2.8	452.8	16.9	26.6	6.0	0.9	1,226.7
1996	0.2	9.0	182.1	23.2	19.0	4.7	152.7	9.8	144.6	88.4	132.7	0.3	11.5	7.3	223.1	103.3	130.4	8.8	5.2	1,256.1
1997	1.1	16.5	196.9	17.7	26.2	3.4	171.3	6.2	118.7	105.8	162.3	0.5	19.7	2.9	113.5	77.5	93.1	18.3	5.6	1,157.3
1998	0.9	16.0	207.8	21.7	37.4	4.4	227.7	27.4	107.6	40.9	117.3	0.6	11.2	5.2	193.0	156.2	59.9	20.3	5.8	1,261.3
1999	2.5	17.1	213.5	17.8	68.6	4.5	214.3	40.2	139.2	111.9	141.2	0.9	15.7	10.6	244.2	99.8	144.9	21.2	2.7	1,510.8
2000	4.6	14.2	214.0	21.1	43.2	4.8	259.0	38.0	129.2	110.1	116.2	1.3	16.8	13.0	199.5	65.0	118.5	21.0	4.1	1,393.5
2001	6.3	11.9	210.7	22.6	74.8	5.9	253.1	31.8	155.7	59.9	69.9	8.7	15.5	12.6	225.6	227.8	90.4	29.1	6.8	1,519.2
2002	5.1	16.9	207.0	22.0	87.8	6.1	303.5	44.0	128.3	70.6	59.1	2.0	17.1	16.9	222.9	253.8	107.0	26.1	5.7	1,602.0
2003	3.2	15.8	189.7	27.6	67.3	7.2	296.0	60.3	140.4	73.3	114.6	1.7	23.2	12.3	271.8	211.3	142.4	30.5	7.4	1,695.9
2004	3.9	17.6	202.1	21.5	101.1	6.4	299.7	57.5	103.8	79.8	102.8	2.6	29.0	14.5	259.0	100.5	116.2	23.2	7.8	1,549.0
2005	3.6	20.5	203.2	21.7	113.3	7.2	368.8	52.5	131.9	57.5	83.5	2.9	25.0	15.6	267.6	227.5	179.2	22.8	8.5	1,812.7
2006	5.0	23.6	218.4	25.2	95.9	7.1	318.2	55.3	148.7	55.4	80.8	8.7	9.4	19.5	333.0	292.0	170.9	24.7	12.4	1,904.1
2007	6.6	26.5	226.1	25.8	123.0	10.5	357.6	67.4	123.7	54.9	97.1	10.1	11.7	30.9	277.0	295.2	201.5	38.2	15.3	1,998.9
2008	8.5	29.3	212.7	25.4	112.5	12.5	382.9	61.3	97.7	53.4	92.2	4.8	15.4	39.8	301.5	151.4	179.9	40.2	18.5	1,839.8
2009	11.9	41.6	240.8	38.4	147.0	15.2	389.1	55.4	148.3	41.4	61.3	5.0	25.8	58.4	310.6	175.3	215.5	47.0	18.9	2,046.8
2010	13.7	38.9	218.0	45.6	153.6	14.0	470.7	186.9	139.0	40.1	85.5	6.8	27.7	70.2	308.9	232.9	305.4	59.7	22.4	2,440.0
2011	16.0	44.4	229.9	49.4	125.9	42.7	314.4	193.2	173.6	54.6	165.8	8.7	23.9	73.9	332.4	390.4	315.3	63.5	28.2	2,646.1
2012	16.5	49.9	215.2	62.0	130.2	49.0	381.1	189.5	197.3	48.0	175.7	9.0	35.8	65.1	329.5	297.3	312.9	55.1	34.9	2,654.3
2013	14.9	61.6	204.9	62.1	143.0	52.6	385.3	72.4	201.5	59.7	146.6	10.8	40.6	66.8	346.5	160.8	356.1	46.3	37.3	2,469.6
2014	7.6	57.9	198.4	59.3	135.4	33.0	294.9	147.8	166.8	56.3	136.9	9.2	37.3	52.3	345.6	318.4	395.8	41.3	39.8	2,533.8
2015	7.5	56.8	184.6	52.8	106.0	38.9	284.2	163.6	183.6	44.7	143.1	9.5	41.1	51.7	171.4	379.0	421.1	42.8	39.8	2,422.3
2016	10.0	50.0	162.8	50.4	102.5	36.4	126.6	145.0	182.7	42.8	101.4	8.1	37.5	44.9	234.4	416.0	326.6	44.1	48.6	2,170.6

Table A4: Coverage of agreements in WAD, by industry, percentage incidence amongst employed persons, 1992–2016

	Agriculture, Forestry and Fishing	Mining	Manufact- uring	Electricity, Gas, Water and Waste Services	Construction	Wholesale Trade	Retail Trade	Accom- modation and Food Services	Transport, Postal and Warehousing	Information Media and Telecommuni- cations	Financial and Insurance Services	Rental, Hiring and Real Estate Services	Professional, Scientific and Technical Services	Administrative and Support Services	Public Administration and Safety	Education and Training	Health Care and Social Assistance	Arts and Recreation Services	Other Services	Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1992	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	10.0	0.0	24.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	1.8
1993	0.0	1.8	5.6	15.4	0.7	0.0	4.3	0.0	30.1	47.7	6.8	0.0	0.3	1.1	37.3	2.9	0.1	2.8	0.1	7.0
1994	0.0	4.9	11.6	18.0	2.0	0.2	11.2	1.6	13.9	45.3	45.7	0.0	2.1	2.0	50.2	15.8	0.5	1.6	0.2	11.3
1995	0.1	3.5	13.0	13.5	2.5	0.7	17.7	1.3	33.3	41.7	51.8	0.5	0.8	1.1	96.3	2.9	3.6	4.8	0.2	15.1
1996	0.0	10.4	17.1	26.8	3.2	1.1	16.3	1.8	33.6	43.4	41.9	0.2	2.3	3.1	47.2	17.2	17.3	7.4	1.3	15.2
1997	0.3	20.1	18.1	22.2	4.6	0.8	18.7	1.1	27.6	52.7	51.2	0.4	3.7	1.2	24.2	13.0	12.2	14.0	1.4	13.9
1998	0.2	18.6	19.8	27.5	6.1	1.0	24.0	4.8	25.3	22.0	37.1	0.5	2.0	1.8	42.9	25.7	7.5	15.6	1.4	14.9
1999	0.6	21.6	21.0	22.5	10.7	1.1	21.8	6.9	31.2	60.1	46.1	0.7	2.8	3.5	51.0	15.8	18.1	15.2	0.7	17.5
2000	1.1	17.5	19.8	26.7	6.2	1.3	26.3	6.2	28.7	49.7	35.0	0.9	2.9	4.0	41.5	10.3	14.2	14.9	1.0	15.7
2001	1.5	15.0	20.2	27.6	11.5	1.7	24.8	5.1	33.5	26.5	20.5	6.1	2.5	3.8	44.2	35.4	10.3	21.4	1.7	16.9
2002	1.2	20.4	19.7	27.3	12.7	1.7	29.0	6.9	29.0	33.0	17.5	1.3	2.8	5.2	41.2	37.8	11.8	16.8	1.4	17.5
2003	0.9	17.9	18.2	29.4	9.1	1.9	26.4	9.4	30.5	32.4	33.3	1.0	3.8	3.6	46.6	30.1	15.7	20.9	1.7	18.1
2004	1.1	17.3	19.5	24.2	13.0	1.7	27.5	8.8	21.7	37.0	29.9	1.5	4.7	4.3	43.8	14.2	12.2	15.0	1.9	16.3
2005	1.0	17.6	19.9	22.2	13.5	1.9	31.5	7.6	26.6	24.2	22.5	1.7	3.7	4.4	43.7	32.4	18.3	13.1	2.1	18.4
2006	1.5	17.8	21.5	23.7	10.9	1.8	27.5	8.4	29.8	23.2	21.4	4.5	1.3	5.6	53.7	39.7	16.3	13.9	3.0	18.9
2007	1.9	19.3	22.1	25.3	13.3	2.7	30.1	9.6	23.3	22.5	23.9	5.1	1.6	8.7	43.1	38.9	18.9	19.8	3.6	19.3
2008	2.5	18.1	20.1	21.3	11.5	3.1	31.3	8.7	17.6	24.0	22.7	2.4	1.9	11.8	47.2	18.7	16.4	21.7	4.0	17.2
2009	3.4	25.4	24.0	29.6	15.0	3.8	32.5	7.6	25.2	18.8	15.6	2.7	3.3	16.8	46.3	21.9	18.1	22.8	4.3	19.0
2010	3.8	21.0	22.3	33.0	15.6	3.4	39.9	25.4	24.4	18.9	21.6	3.6	3.3	18.6	44.6	27.8	25.1	30.8	4.9	22.3
2011	5.1	20.5	24.1	33.9	12.4	10.6	26.0	24.7	29.9	26.1	39.7	4.4	2.8	18.7	46.5	46.3	24.6	29.7	6.4	23.7
2012	5.1	18.4	22.7	40.5	13.4	12.2	31.9	25.0	36.1	20.9	41.6	4.2	3.9	16.5	46.5	34.1	23.4	25.8	7.8	23.5
2013	5.1	23.1	22.3	43.1	14.3	12.3	31.6	9.2	33.9	28.6	34.9	5.6	4.5	17.3	46.6	18.0	26.0	21.7	8.2	21.6
2014	2.4	22.2	21.5	41.2	13.3	8.5	23.8	19.0	28.4	28.6	33.7	4.1	4.0	13.4	47.2	35.2	28.6	20.6	8.2	22.0
2015	2.4	25.1	20.5	37.6	10.2	9.9	23.1	19.8	30.4	21.7	35.0	4.5	4.1	12.9	23.3	41.1	28.5	18.6	8.3	20.7
2016	3.1	22.6	18.4	37.9	9.5	9.6	10.1	17.2	29.4	21.5	23.3	3.7	3.7	10.6	30.8	44.8	21.3	19.0	10.2	18.2

Source: Department of Employment, *Workplace Agreements Database*, June 2016.

Table A5: Distribution of employees by industry (percentages), LFS (trend) and EEH, 1992–2016

	Agriculture, Forestry and Fishing	Mining	Manufact- uring	Electricity, Gas, Water and Waste Services	Construction	Wholesale Trade	Retail Trade	Accom- modation and Food Services	Transport, Postal and Warehousing	Information Media and Telecommuni- cations	Financial and Insurance Services	Rental, Hiring and Real Estate Services	Professional, Scientific and Technical Services	Administrative and Support Services	Public Administration and Safety	Education and Training	Health Care and Social Assistance	Arts and Recreation Services	Other Services	Total
<b>LFS</b>																				
1992	4.99	1.16	13.71	1.57	6.79	5.35	11.07	6.19	5.22	2.21	4.31	1.46	5.25	2.44	5.76	7.25	9.07	1.33	4.86	100.0
1993	5.08	1.15	13.59	1.42	7.17	5.45	11.25	6.13	5.12	2.12	4.07	1.58	4.75	2.42	6.25	7.44	8.93	1.31	4.78	100.0
1994	4.93	1.10	13.63	1.33	7.17	5.37	11.21	6.34	5.10	2.26	4.08	1.49	5.29	2.60	5.82	7.19	8.98	1.43	4.69	100.0
1995	4.70	1.05	13.18	1.17	7.33	5.21	10.95	6.67	5.08	2.28	3.87	1.50	5.76	3.03	5.77	7.15	8.96	1.54	4.80	100.0
1996	4.89	1.04	12.83	1.04	7.24	4.95	11.32	6.41	5.19	2.46	3.82	1.34	6.09	2.89	5.71	7.24	9.09	1.44	5.01	100.0
1997	4.84	0.99	13.06	0.96	6.87	4.87	11.04	6.80	5.16	2.41	3.81	1.48	6.34	3.02	5.65	7.15	9.15	1.58	4.82	100.0
1998	4.88	1.01	12.40	0.93	7.22	4.99	11.20	6.73	5.03	2.19	3.73	1.56	6.51	3.34	5.31	7.17	9.40	1.54	4.87	100.0
1999	4.91	0.92	11.81	0.91	7.41	4.88	11.42	6.77	5.18	2.16	3.55	1.52	6.48	3.46	5.56	7.34	9.29	1.61	4.80	100.0
2000	4.87	0.91	12.21	0.89	7.81	4.14	11.13	6.94	5.08	2.50	3.75	1.58	6.54	3.64	5.43	7.10	9.40	1.59	4.47	100.0
2001	4.70	0.88	11.63	0.91	7.23	3.91	11.37	7.01	5.19	2.52	3.80	1.59	6.84	3.72	5.68	7.17	9.76	1.52	4.58	100.0
2002	4.54	0.91	11.48	0.89	7.57	4.01	11.47	6.97	4.84	2.34	3.69	1.69	6.59	3.54	5.92	7.35	9.94	1.71	4.56	100.0
2003	3.88	0.94	11.14	1.00	7.85	4.00	11.93	6.84	4.90	2.41	3.67	1.79	6.57	3.65	6.22	7.48	9.67	1.56	4.51	100.0
2004	3.75	1.08	10.96	0.94	8.23	3.98	11.50	6.88	5.04	2.28	3.63	1.85	6.57	3.53	6.24	7.46	10.06	1.64	4.39	100.0
2005	3.60	1.18	10.36	0.99	8.53	3.77	11.90	7.03	5.03	2.42	3.76	1.77	6.89	3.57	6.22	7.14	9.97	1.77	4.09	100.0
2006	3.39	1.31	10.07	1.06	8.75	3.85	11.51	6.53	4.96	2.37	3.76	1.91	7.28	3.47	6.16	7.31	10.39	1.77	4.14	100.0
2007	3.34	1.33	9.86	0.98	8.93	3.76	11.42	6.78	5.11	2.35	3.91	1.93	7.14	3.43	6.20	7.32	10.25	1.86	4.13	100.0
2008	3.20	1.51	9.89	1.11	9.16	3.79	11.42	6.62	5.20	2.08	3.80	1.90	7.39	3.16	5.97	7.57	10.23	1.73	4.27	100.0
2009	3.23	1.52	9.30	1.20	9.10	3.71	11.13	6.74	5.47	2.04	3.65	1.70	7.24	3.22	6.23	7.44	11.04	1.92	4.09	100.0
2010	<b>3.26</b>	<b>1.69</b>	<b>8.93</b>	<b>1.26</b>	<b>9.00</b>	<b>3.77</b>	<b>10.75</b>	<b>6.72</b>	<b>5.20</b>	<b>1.94</b>	<b>3.61</b>	<b>1.71</b>	<b>7.75</b>	<b>3.44</b>	<b>6.32</b>	<b>7.64</b>	<b>11.08</b>	<b>1.77</b>	<b>4.15</b>	<b>100.0</b>
2011	2.79	1.93	8.51	1.30	9.05	3.61	10.81	6.98	5.20	1.87	3.74	1.75	7.67	3.54	6.39	7.53	11.46	1.91	3.94	100.0
2012	<b>2.87</b>	<b>2.40</b>	<b>8.39</b>	<b>1.35</b>	<b>8.59</b>	<b>3.55</b>	<b>10.54</b>	<b>6.69</b>	<b>4.83</b>	<b>2.02</b>	<b>3.73</b>	<b>1.89</b>	<b>8.02</b>	<b>3.48</b>	<b>6.25</b>	<b>7.71</b>	<b>11.83</b>	<b>1.89</b>	<b>3.98</b>	<b>100.0</b>
2013	2.54	2.33	8.02	1.26	8.77	3.75	10.65	6.91	5.19	1.82	3.66	1.68	7.94	3.38	6.49	7.79	11.98	1.87	3.97	100.0
2014	<b>2.80</b>	<b>2.26</b>	<b>8.00</b>	<b>1.25</b>	<b>8.85</b>	<b>3.36</b>	<b>10.77</b>	<b>6.76</b>	<b>5.11</b>	<b>1.71</b>	<b>3.53</b>	<b>1.93</b>	<b>8.04</b>	<b>3.40</b>	<b>6.36</b>	<b>7.86</b>	<b>12.01</b>	<b>1.74</b>	<b>4.24</b>	<b>100.0</b>
2015	2.61	1.93	7.66	1.20	8.85	3.36	10.48	7.03	5.16	1.76	3.49	1.79	8.48	3.40	6.27	7.86	12.62	1.96	4.09	100.0
2016	2.69	1.86	7.40	1.11	9.00	3.16	10.47	7.06	5.21	1.66	3.65	1.83	8.45	3.54	6.37	7.78	12.84	1.94	3.98	100.0
<b>EEH</b>																				
2010		1.53	9.23	1.09	5.94	4.68	10.24	7.19	4.57	1.79	4.30	1.97	6.98	5.72	7.34	9.41	12.62	1.78	3.62	100.0
2012		1.58	8.37	1.14	6.03	4.56	11.33	7.16	4.83	1.76	3.77	1.65	7.80	6.12	6.54	9.33	12.68	1.60	3.77	100.0
2014		1.71	7.06	1.15	6.93	4.50	11.34	7.47	4.43	1.63	4.05	1.80	7.85	6.18	6.29	9.48	12.75	1.73	3.67	100.0

Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.



Table A6: Coverage of agreements in EEH, by occupation, incidence , numbers of employees and percentage of employees, 2000–2014

	Managers (‘000s)	Professionals (‘000s)	Technicians and Trades Workers (‘000s)	Community and Personal Service Workers (‘000s)	Clerical and Administrative Workers (‘000s)	Sales Workers (‘000s)	Machinery Operators and Drivers (‘000s)	Labourers (‘000s)	Total (‘000s)
<b>Number of employees</b>									
2008	150.4	922.0	312.7	440.5	628.1	369.2	260.8	423.9	3507.3
2010	204.5	1018.1	317.3	564.9	645	419.2	270.8	452.2	3891.9
2012	203.2	1005	353.1	587.4	645.6	481.5	297.1	460.7	4033.6
2014	195.4	1049.8	347	577.3	604.2	569.7	300.6	426.2	4070.1
	Managers (%)	Professionals (%)	Technicians and Trades Workers (%)	Community and Personal Service Workers (%)	Clerical and Administrative Workers (%)	Sales Workers (%)	Machinery Operators and Drivers (%)	Labourers (%)	Total (%)
<b>Percentage of employees</b>									
2008	19.80	52.40	28.60	46.60	38.60	36.50	44.80	41.00	39.80
2010	25.53	57.38	30.54	51.84	39.10	43.33	45.92	42.79	43.40
2012	20.96	52.31	29.86	52.92	38.41	43.76	47.55	45.30	41.99
2014	21.35	50.63	29.51	50.12	35.77	43.97	48.48	43.60	41.12

Source: ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

**Table A7: Distribution of employees by occupation (percentages), LFS (original) and EEH, 1995–2016**

LFS (original)	Managers (%)	Professionals (%)	Technicians and trades workers (%)	Community and personal service workers (%)	Clerical and administrative workers (%)	Sales workers (%)	Machinery operators and Drivers (%)	Labourers (%)
1995	12.1	17.2	16.2	7.0	17.1	10.0	7.3	13.0
1996	12.0	17.4	16.0	7.0	17.1	10.5	7.1	13.0
1997	11.7	17.7	16.1	7.9	16.6	10.3	7.4	12.4
1998	11.5	18.2	15.7	7.9	16.6	10.5	7.2	12.3
1999	11.5	18.5	15.5	8.1	16.6	10.4	7.2	12.1
2000	11.4	19.0	15.6	8.0	16.7	10.2	7.2	12.0
2001	12.1	19.4	14.9	8.2	16.6	10.3	6.9	11.7
2002	12.4	19.6	14.9	8.3	16.0	10.4	6.8	11.6
2003	12.1	19.4	15.0	8.4	16.2	10.6	6.7	11.5
2004	12.0	20.2	15.1	8.6	15.7	10.3	6.8	11.5
2005	12.5	19.9	15.2	8.4	15.7	10.5	6.6	11.2
2006	12.5	20.6	15.2	8.6	15.6	10.1	6.5	10.9
2007	12.6	20.4	15.3	8.9	15.7	9.4	6.8	10.9
2008	12.9	20.7	15.1	8.8	15.3	9.6	6.8	10.9
2009	13.0	20.6	15.1	9.3	15.6	9.3	6.4	10.6
2010	13.5	21.5	14.7	8.9	14.9	9.4	6.5	10.5
2011	12.8	22.1	14.6	9.4	14.9	9.3	6.5	10.3
2012	13.1	22.5	14.7	9.6	14.7	9.0	6.4	10.0
2013	12.9	22.3	14.5	9.9	14.5	9.3	6.7	9.9
2014	12.9	22.2	14.5	10.1	14.4	9.4	6.4	10.1
2015	12.8	23.0	14.6	10.0	14.0	9.3	6.6	9.7
2016	12.8	22.9	13.9	10.8	14.2	9.4	6.4	9.6
<b>EEH</b>								
2008	8.6	20.0	12.4	10.7	18.5	11.5	6.6	11.7
2010	8.9	19.8	11.6	12.2	18.4	10.8	6.6	11.8
2012	10.1	20.0	12.3	11.6	17.5	11.5	6.5	10.6
2014	9.2	20.9	11.9	11.6	17.1	13.1	6.3	9.9

Source: ABS, *Labour Force, Australia, Detailed, Quarterly, Nov 2016*, Catalogue No. 6291.0.55.003; ABS, *Employee Earnings and Hours, Australia, various*, Catalogue No. 6306.0.

## Appendix B: Technical appendix

We define the following:

For a given set of categories (eg. industries), we have category  $k = 1, 2 \dots K$  (eg.  $k= 1$  to 18 industries)

To calculate CA coverage in a given period, say May 2014:

$$\text{LFS category } (k)\text{weight} = w_k^{LFS} = \text{Number of employed persons in industry } k \quad (1)$$

$$\text{Such that } \frac{\sum_{k=1}^K w_k^{LFS}}{\text{Total number of employed persons}} = 1$$

$$\text{EEH category } (k)\text{weight} = w_k^{EEH} = \text{Number of employees in category } k \quad (2)$$

$$\text{Such that } \frac{\sum_{k=1}^K w_k^{EEH}}{\text{Total number of employees}} = 1$$

$$\text{EEH CA incidence in industry } (k) = CA_k^{EEH} = \frac{\text{Number of employees covered by CAs in category } k}{\text{Total number of employees in category } k} \quad (3)$$

Equation (1) is sourced from the LFS. Equations (2) and (3) is sourced from the EEH.

In order to estimate the changes in CA coverage assuming structural changes in the labour market only, we calculate the following (again for say May 2014)

Using LFS weights:

$$\text{Number of employees covered by CAs in category } (k) = CA_k^{EEH} \cdot w_k^{LFS} \quad (4)$$

$$\text{CA coverage } (\%) - \text{all categories } (1 \text{ to } K) = CA_K^{LFS} = \frac{\sum_{k=1}^K CA_k^{EEH} \cdot w_k^{LFS}}{\sum_{k=1}^K w_k^{LFS}} \quad (5)$$

Equations (4) and (5) were calculated for each period of an EEH release (ie May 2000, May 2002 ... May 2016).

The estimated structural effect between, for example, May 2000 and May 2014, is calculated as follows:

$$\text{Structural effect} = CA_K^{LFS(2014)} - CA_K^{LFS(2000)}$$

(6)

The same exercise was undertaken using EEH employment weights. That is

$$\text{Number of employees covered by CAs in category } (k) = CA_k^{EEH} \cdot w_k^{EEH}$$

(7)

$$\text{CA coverage (\%)} - \text{all categories (1 to K)} = \frac{\sum_{k=1}^K CA_k^{EEH} \cdot w_k^{EEH}}{\sum_{k=1}^K w_k^{EEH}}$$

(8)

Then the estimated structural effect between May 2000 and May 2014 using EEH weights is calculated as follows:

$$\text{Structural effect} = CA_k^{EEH(2014)} - CA_k^{EEH(2000)}$$

(9)

Equations (6) and (9) were used to compare the effects of LFS versus EEH weights on the estimated structural effects.

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