

Insights into Low Wage Growth in Australia

James Bishop and Natasha Cassidy*

Recent low wage growth in Australia appears to be only partly explained by spare capacity in the labour market, the decline in inflation outcomes and the decline in the terms of trade from its 2011 peak. In this article, we present some tentative evidence that the relationship between wage growth and labour market conditions may have changed, and that this may help to explain recent low wage growth. Using job-level micro wage data, we also find that, since 2012, wage increases have been less frequent and wage growth outcomes have become much more similar across jobs.

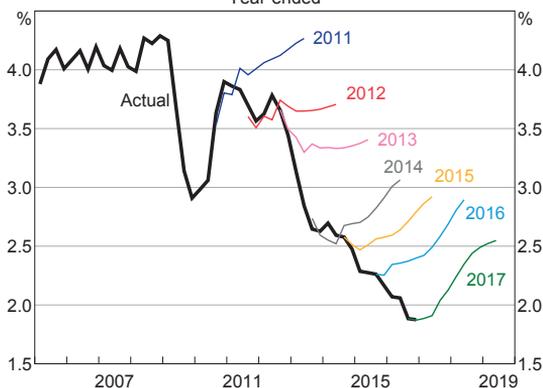
Introduction

Over recent years, Bank forecasts for wage growth have been persistently too strong (Graph 1). The forecast errors have been largely the result of there being more slack in the labour market than anticipated and the decline in the terms of trade being sharper than expected.¹ However, even after taking these factors into consideration, wage growth has been surprisingly low. This raises the possibility that the relationship between wage growth and its determinants has changed, or that there are other structural or cyclical factors weighing on wage growth. Understanding the drivers of recent wage outcomes is important for assessing labour market conditions and inflationary pressures in the economy. As wages are the largest component of business costs, the decline in wage growth has also contributed to lower inflation outcomes over recent years than expected.

* James Bishop completed this work in Economic Research Department and Natasha Cassidy is from Economic Analysis Department. The authors would like to thank David Rodgers for his assistance, as well as the Prices Branch at the Australian Bureau of Statistics.

1 The Reserve Bank periodically reviews their economic forecasts. The outcomes of the most recent forecast review are outlined in Kent C (2016).

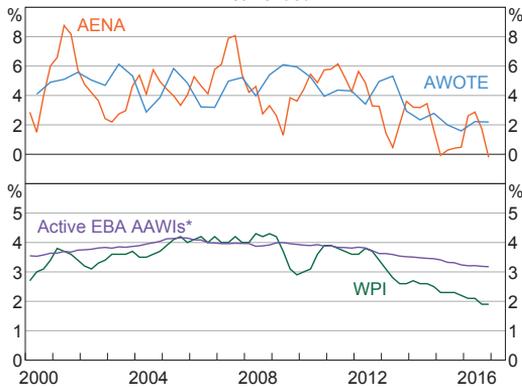
Graph 1
Wage Price Index Forecasts*
Year-ended



* February SMP forecasts
Sources: ABS; RBA

The analysis in this article will mainly focus on wage growth as measured by the wage price index (WPI). However, the Bank assesses a range of available measures of labour costs to provide insights into labour market conditions and inflationary pressures in the economy. Each measure captures a slightly different concept of labour costs, although importantly they all point to a slowing of earnings growth in recent years (Graph 2). The main measures that the Bank

Graph 2
Labour Costs Growth
Year-ended



* Average annualised wage increases

Sources: ABS; Department of Employment; RBA

follows are the WPI and average earnings from the national accounts (AENA).

The WPI, which began in 1997, is designed to measure changes in wage rates for a given quantity and quality of labour. The index is constructed by the Australian Bureau of Statistics (ABS) by comparing the wage for a given job to the previous quarter; adjustments are made to exclude any changes in wages resulting from changes in the nature of the job or the quality of the work performed.² It is constructed for a fixed basket of jobs, so by design it should be unaffected by changes to the composition of the labour force.

AENA is a better indicator of inflationary pressures in the economy than the WPI. This is because it is wider in scope as it includes non-wage costs, such as superannuation and redundancy payments, and the impact of any changes to the composition of the workforce. This may include changes to the type of jobs workers hold or slower-moving demographic changes to the labour force. In practice, the volatility in the AENA series can sometimes make

2 Although the WPI abstracts from pay increases due to improvements in labour quality, it will be influenced by productivity improvements arising from capital investment or technological innovation.

it difficult to separate out noise from signal. Other measures of labour costs include the semiannual average weekly ordinary-time earnings (AWOTE) and wage increases in enterprise bargaining agreements (EBAs).

The Bank has widely discussed the likely determinants of the recent slowing in wage growth. Jacobs and Rush (2015) argue that spare capacity in the labour market, a decline in inflation expectations, lower profitability following the decline in the terms of trade, and the need for the real exchange rate to adjust to improve international competitiveness have all contributed to lower wage growth. Firstly, there has been more slack in the labour market since 2008 and employees may be more willing to accept lower wage growth given concerns about future employment. The decline in inflation outcomes and expectations in recent years may have also contained wage growth. Some employees are effectively bargaining over 'real' wages, with some wages either indexed or heavily influenced by CPI outcomes.

The sharp rise and subsequent fall in the terms of trade has also had a significant effect on wage growth over the past decade. During the run-up in the terms of trade, many firms' output prices rose sharply, meaning they could afford to pay higher wages while profits also increased. Mining and mining-exposed firms needed to pay higher wages to attract labour to increase output. Since the peak in the terms of trade in 2011, firms' output prices have not grown as quickly and wage growth has subsequently slowed. Finally, the strong growth in wages during the large run-up in the terms of trade outpaced that in many comparable economies, resulting in a decline in the international competitiveness of Australian labour. However, since the terms of trade have been declining, low growth of wages has played the reverse role of improving

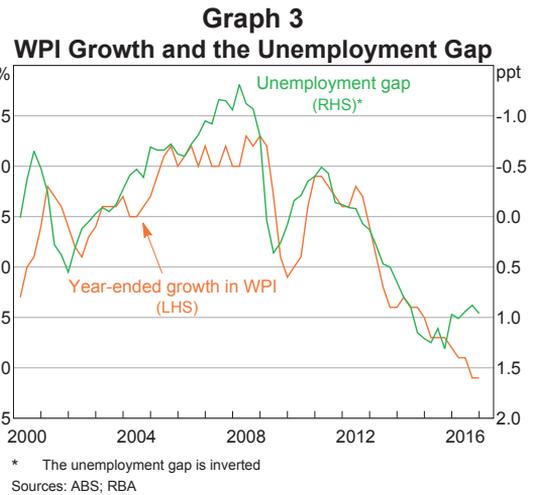
international competitiveness, in conjunction with the depreciation of the exchange rate.

A wage model which includes labour market spare capacity, inflation expectations, a measure of firms' output prices and a lag of wage growth, cannot fully explain the decline in wage growth over recent years.³ There are many possible explanations for this. For example, it may be that there is more slack in the labour market than the unemployment rate would suggest, or that the relationship between labour market slack and wage growth has changed.

Spare Capacity in the Labour Market

In this section, we delve further into the role of spare capacity in the labour market. The typical measure used in the Bank's Phillip Curve models of wage inflation is the unemployment rate gap – that is, the difference between the unemployment rate and the rate of unemployment that is consistent with the economy producing near its potential. The latter unemployment rate, which is not observed directly and has to be estimated, is associated with a stable rate of inflation and is referred to as the non-accelerating inflation rate of unemployment (NAIRU). The estimate of the NAIRU has fallen over recent years as a result of weakness in unit labour costs (which is AENA adjusted for productivity) and inflation.

The Bank's estimate of the unemployment gap suggests that spare capacity in the labour market has declined a little more recently as the unemployment rate has declined by more than the estimate of the NAIRU; however, wage growth has continued to moderate (Graph 3). This is consistent with the experience



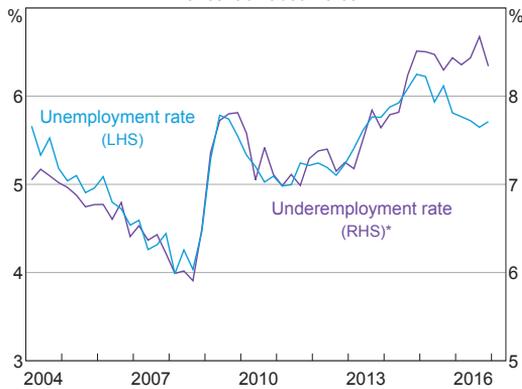
of other advanced economies in recent years that also have experienced modest wage growth despite labour market conditions tightening. This lends itself to a question of whether there is more slack in the labour market than the unemployment gap would suggest or whether the relationship between wage growth and the labour market has changed.

Another measure of spare capacity in the labour market is the level of underutilisation in the economy – which, in addition to the level of unemployment, also captures the level of *underemployment* in the economy. The underemployment rate measures the number of employed people who would like and are available to work additional hours, expressed as a share of the labour force. Between 2004 and 2014 the underemployment rate tended to move fairly closely with the unemployment rate. However, over recent years it has remained elevated while the unemployment rate has declined (Graph 4). Underemployment measured in terms of extra hours of work desired has diverged by less than this heads-based measure (RBA 2017).

Recent Bank analysis provides some information on the characteristics of the pool of underemployed workers. The bulk of

³ The Bank has recently modified the specification of the wages Phillips Curve model that was outlined in Jacobs and Rush (2015). See Appendix A for details of the model.

Graph 4
Labour Underutilisation
 Per cent of labour force



* Full-time workers on reduced hours for economic reasons and part-time workers who would like, and are available, to work more hours
 Source: ABS

underemployed workers are part-time workers who would like to work additional hours (around 8 per cent of the labour force). The second category of underemployed workers are those who usually work full time, but are working part time for economic reasons (less than 1 per cent of the labour force). There are a number of reasons for the elevated level of the underemployment rate: the changing composition of employment growth towards industries with higher rates of part-time employment and underemployment, along with firms responding to economic conditions by adjusting workers' hours.

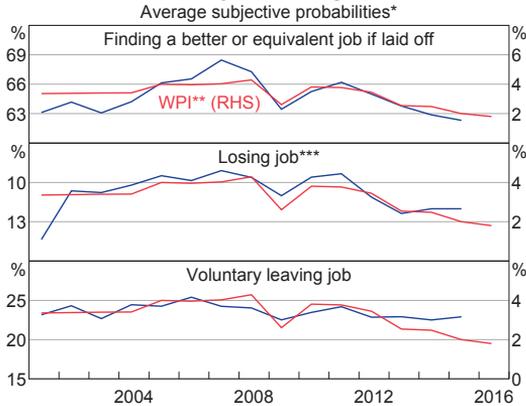
It is not clear how much labour underutilisation might weigh on wage growth. The presence of underemployed workers could dampen wage growth given they offer additional labour supply or may be more concerned about their job security and have less bargaining power to achieve higher wages.⁴ Unsurprisingly, given the tight historical relationship between unemployment and underemployment, we have found little empirical evidence to suggest

that the level of underemployment in Australia has affected wage growth separately to unemployment. More recently, the divergent trends in underemployment and unemployment could account somewhat for wage growth slowing by more than what is suggested by the unemployment gap. As a result, trends in the underemployment rate and other measures of underutilisation will continue to be monitored.

It may also be the case that the relationship between wage growth and spare capacity in the labour market may be changing due to structural changes in the labour market. It has been posited in the international literature that low wage growth may reflect a decline in workers' bargaining power. For example, new arrangements, such as a restructuring of work processes due to technological progress, an increase in contract work, and increased competitive pressure from growing internationalisation of services trade, may be weighing on wage growth. These factors, alongside spare capacity in the labour market, may be making workers feel less secure about their jobs and, in turn, they may be less inclined to push for larger wage increases. Such changes to bargaining power are difficult to observe and, as a result, the evidence of this occurring in Australia is limited. Measures of job security, as measured by households' perceived probability of losing their job in 12 months' time or their overall satisfaction with job security, are at low levels (Graph 5). However, it appears these indicators have tracked labour market conditions fairly closely, suggesting that these job security measures are not measuring anything separate to traditional labour market indicators such as unemployment.

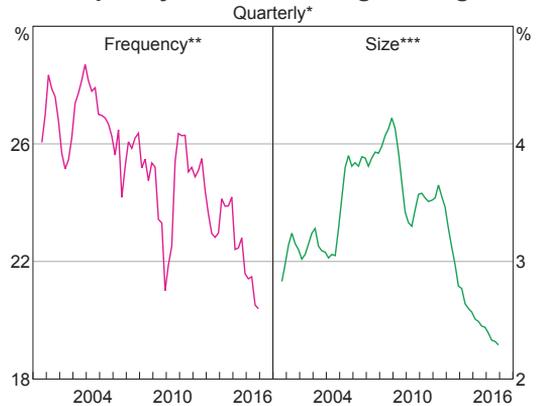
⁴ It may also be the case that low wage growth may lead to higher underemployment in that workers may desire more hours than otherwise in order to boost income growth.

Graph 5
Job Security and Wage Growth



* Within the next 12 months
** Year-ended private sector wage price index growth
*** Indicator has been inverted
Sources: ABS; HILDA Release 15.0; RBA

Graph 6
Frequency and Size of Wage Changes



* Smoothed using a four-quarter trailing average
** Share of jobs with a wage change
*** Average percentage wage change, conditional on a wage change
Sources: ABS; RBA

Trends in Wage Growth at the Micro Level

Job-level WPI data can provide further evidence on the determinants of wage growth. This analysis is the result of a recent collaboration between the Reserve Bank and the ABS using data on wage growth for around 18 000 jobs (Bishop 2016). Using these job-level data, it is possible to decompose aggregate wage growth into the frequency and average size of wage changes. Since 2012, both the average frequency and the average size of wage changes have declined (Graph 6). Overall, the declining size of wage increases has contributed more than two-thirds of the overall fall in wage growth since 2012, and the reduction in the frequency of wage adjustments has contributed the remainder. This pattern is similar across public and private sector wages.

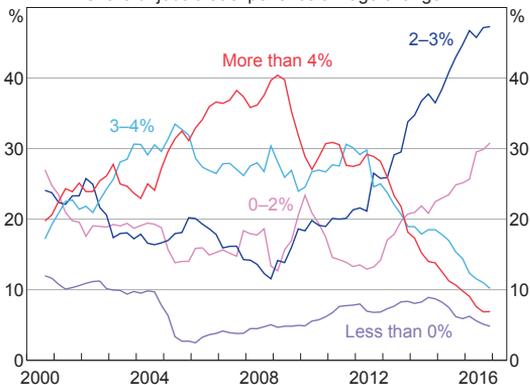
The frequency of wage adjustments is currently at a low level; around one fifth of all wages are adjusted each quarter compared to around one quarter of all wages in 2012. This fall in the average frequency could reflect more wage freezes or longer delays in renegotiating wage contracts, as wages are often frozen during the

negotiation period. It is also likely to reflect an inability of many firms to cut wages. The fall in the average frequency of wage adjustment was also quite pronounced during the global financial crisis; in part, this reflected the Australian Fair Pay Commission's decision to freeze the Federal Minimum Wage and award wages in 2009. The steady decline in the frequency of wage changes since the early 2000s may reflect a longer-run shift towards contracts that make less frequent wage adjustments.

The average size of wage changes (conditional on there being a wage change) has also fallen since 2012. This is largely due to a reduction in 'large' wage rises (more than 4 per cent); in fact, this has had a very significant effect on overall wage growth. The share of jobs that experienced a wage change of over 4 per cent has fallen from over one-third in the late 2000s to less than 10 per cent of jobs in 2016 (Graph 7). In addition, the average size of these large wage changes has declined to a little less than 6 per cent.

The declining share of large wage rises since 2012 has been apparent across all industries, though the shift has been largest in mining and industries

Graph 7
Wage Changes of Different Sizes
 Share of jobs that experience a wage change*

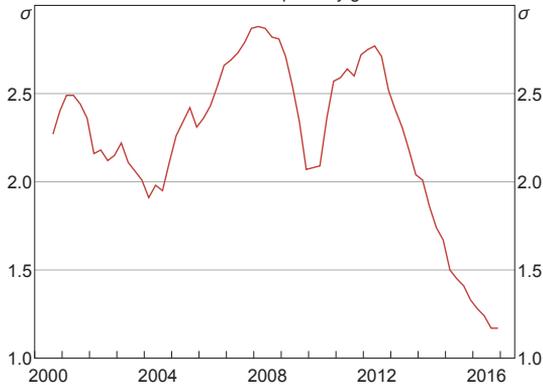


* Smoothed using a four-quarter trailing average
 Sources: ABS; RBA

exposed to mining, such as construction and professional services (Graph 8). At the peak of the mining investment boom in 2012, well over half of mining jobs received a wage increase of more than 4 per cent. These large wage increases were required for labour to shift to the mining (and mining-related) sector, and accordingly, there was a high dispersion of wage growth across jobs during that period (Graph 9).

The current low level of wage growth dispersion might also suggest that the labour market

Graph 9
Dispersion in Wage Growth Across Jobs
 Standard deviation of quarterly growth rate*

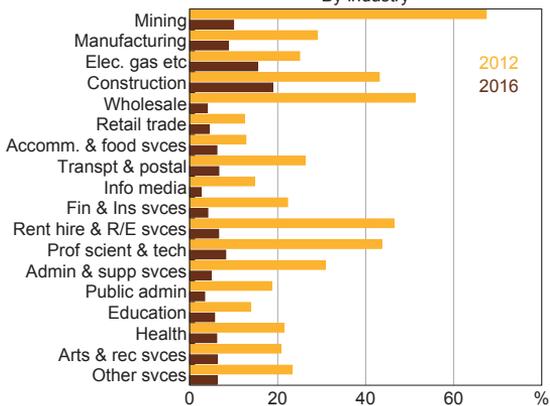


* Smoothed using a four-quarter trailing average
 Sources: ABS; RBA

adjustment following the end of the mining boom has run its course. However, relative wages in the mining industry and mining-exposed states are still significantly higher than they were pre-boom, suggesting there may be more adjustment to come (Graph 10). It is likely that the adjustment to lower relative wages in mining will be slower than during the run-up to the peak in the terms of trade. This is because most firms tend to be unwilling or unable to cut nominal wages (known as 'downward nominal wage rigidity'). Indeed, real wages have been fairly unchanged over recent years (Graph 11).

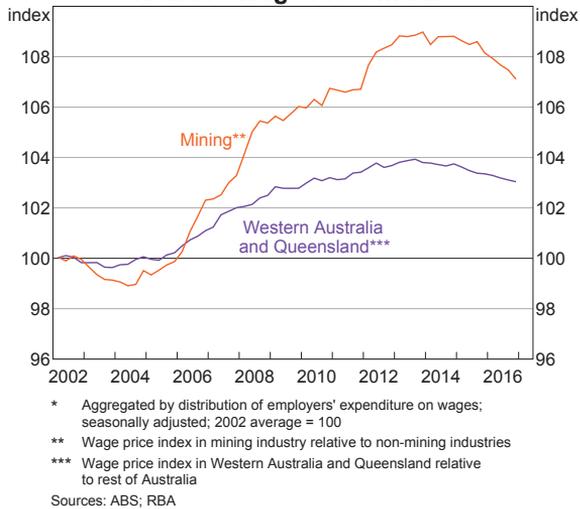
The share of wage rises between 2–3 per cent has increased to now account for almost half of all wage changes (Graph 7). This may indicate some degree of anchoring to CPI outcomes and/or the Bank's inflation target. Decisions by the Fair Work Commission, which sets awards and minimum wage outcomes, are heavily influenced by the CPI. A little over 20 per cent of employees have their pay determined directly by awards, and it is estimated pay outcomes for a further 10–15 per cent of employees (covered by either enterprise agreements or individual contracts) are indirectly influenced by awards. Information from the Department of

Graph 8
Share of Wage Rises Larger than 4 Per cent
 By industry

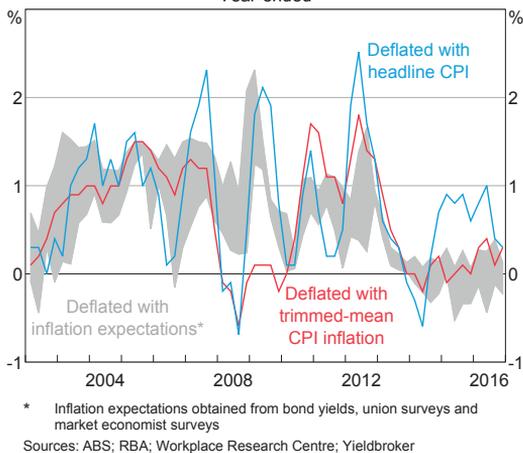


Sources: ABS; RBA

Graph 10
Relative Wage Price Index*



Graph 11
Real Wage Price Index Growth
Year-ended



Employment's EBA database suggests around 7 per cent of employees covered by EBAs have wage outcomes linked to the CPI, while two-fifths of a selection of firms in the Bank's liaison program indicated the CPI was a primary determinant of wage-setting. Furthermore, survey evidence from unions also suggests that inflation outcomes and expectations are an important consideration. This evidence suggests the indexing or anchoring of wage outcomes to

CPI may be an important dynamic in explaining current wage outcomes.

Wage growth across all pay-setting methods has declined. Wage growth in industries that have a higher prevalence of individual agreements has declined most significantly over recent years, following strong growth in the previous few years. This may reflect the fact these industries have been influenced by the large terms of trade movements, but may also indicate that wages set by individual contract can respond most quickly to changes in economic conditions. Wage growth in industries with a higher share of enterprise bargaining agreements have the lowest wage volatility, as the typical length of an agreement is around two and a half years. While changes in wage growth and labour market outcomes by pay-setting may reflect differences in wage flexibility or bargaining power, these can be difficult to distinguish from a wide range of other determinants of wages, including variation in industry performance, the balance of demand and supply for different skills, and productivity.

Conclusion

The job-level micro WPI data provides further insights into the slowing of wage growth in Australia over recent years. Following the decline in the terms of trade, there has been a reduction in the average size of wage increases. This has been particularly pronounced in mining and mining-related wage industries. The increasing share of wage outcomes around 2–3 per cent also provides further support for the hypothesis that inflation outcomes and inflation expectations influence wage-setting. The Bank's expectation is that wage growth will gradually pick up over the next few years, as the adjustment following the end of the mining boom runs its course. The extent of the recovery will, in large part, depend on

how wage growth will respond to improving labour market conditions, including the level of underutilisation. While it is difficult to identify if structural changes are partly driving recent wage outcomes, these factors will continue to be monitored. ✎

Appendix A: Wages Model

The Bank has recently made some modifications to the wages Phillips Curve model that was presented in Jacobs and Rush (2015). The baseline model is below:

$$\begin{aligned} \% \Delta WPI_t = & \alpha + \beta_1 UnemGap_{t-1} + \beta_2 InfExp_{t-1} \\ & + \beta_3 GDPdef_{t-1} + \beta_4 \Delta UR_{t-1} \\ & + \beta_5 \% \Delta WPI_{t-1} + e_t \end{aligned} \quad (A1)$$

Where:

- $\% \Delta WPI$ is the quarterly percentage change in seasonally adjusted private sector WPI
- $UnemGap$ is the 'unemployment gap' (difference between the unemployment rate and the estimated NAIRU)
- $InfExp$ is 'trend' inflation expectations
- $GDPdef$ is the two year-ended percentage change in the non-farm GDP deflator
- ΔUR is the quarterly change in the unemployment rate

Inflation expectations are captured using a 'trend' measure, which combines a mix of long-term survey and financial market measures of inflation expectations; long-term inflation expectations measures had a slightly better fit than shorter-term inflation expectations. The GDP deflator is included to capture changes to growth in firms' output prices. This is motivated by the fact that labour demand is a function of labour productivity and the producer real wage (that is, the cost of wages with respect to firms' output prices). The use of the GDP deflator

rather than the gross national expenditure (GNE) deflator as a proxy for output prices incorporates a potential role for changes to commodity export prices to influence wage outcomes. The change in the unemployment rate is included to capture the wage growth pressure from quick changes to the rate of unemployment, for example, during the global financial crisis. The lag of the private sector WPI is included to capture persistent factors affecting wage growth.

The coefficients in the model have the expected sign and the fit of the model is an improvement on the Jacobs and Rush model. This model suggests that the current low levels of wage growth can be mostly explained by weak output prices and spare capacity in the labour market. However, there is still some unexplained weakness in wage growth. There is evidence of structural breaks in the model which provides some evidence that the relationship between wage growth and the labour market has changed. We also allow for the possibility that recent negative shocks may be persistent by estimating a model that has time-varying coefficients. Although the baseline model remains the Bank's main wage model, the suite of wage models will continue to be monitored.

References

- Bishop J (2016)**, 'Feature Article: The Size and Frequency of Wage Changes' Wage Price Index, Australia, September 2016, November. Available at <<http://www.abs.gov.au/ausstats/abs@.nsf/3d68c56307742d8fca257090002029cd/d04bd311916d748dca25806c001408a8!OpenDocument>>.
- Jacobs D and A Rush (2015)**, 'Why is Wage Growth So Low?', *RBA Bulletin*, June, pp 9–18.
- Kent C (2016)**, 'After the Boom', Address to a Bloomberg Breakfast, Sydney, 13 September.
- Reserve Bank of Australia (2017)**, 'Box B: Underemployment and Labour Market Spare Capacity', *Statement on Monetary Policy*, February pp 38–40.