Monitoring Strategy for Wage-Setting Decisions

Access Economics
July 2007

Report commissioned by the
Australian Fair Pay Commission, 2006
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Executive summary

The Australian Fair Pay Commission Secretariat (the Secretariat) has commissioned Access Economics to develop a monitoring strategy for the purpose of monitoring the impact of its wage-setting decisions. We have identified five components to the monitoring strategy which this report recommends to the Commission:

- Monitoring the impacts of AFPC decisions on labour demand
- Monitoring impacts on labour supply
- Monitoring impacts on the wider economy
- Monitoring impacts on the safety net
- Monitoring the pace at which new bargains are being struck

Each of these categories is discussed in turn below.

In summary, the ranking of the usefulness or otherwise of the monitoring strategies discussed in this report is clearly and closely affected by the available data:

- Where data is readily and rapidly available and contains little or no errors, then monitoring is more likely to usefully inform the Commission. An example is where a particular government benefit changes, thereby affecting an outcome in the cameo models discussed here.
- At the other end of the spectrum, some data is subject to greater levels of measurement error (for example, the transformations required to estimate participation by occupation), while other data is only available with a significant lag (such as that used in estimating changes in the distribution of income). Both measurement error and delays necessarily dilute the potential usefulness of related monitoring strategies.
- Similarly, some data becomes an input to a modelling process (such as the simple linear regression models suggested here), and the outputs of that modelling still need to be assessed for their usefulness – a process not without value judgements. Again, that necessarily dilutes the potential usefulness of related monitoring strategies.

Monitoring impacts on labour demand

A strategy for monitoring the impact of wage decisions on the competitiveness of the unemployed, low paid workers, junior employees, employees in training, and workers with disabilities.

In brief, this report finds that wage decisions can affect employment levels via their effect on labour demand. Having reviewed the literature and the available evidence, we recommend that the Commission monitor for such an effect by concentrating its analysis on occupational effects using a statistical model – preferably a simple linear regression model.

Such a linear model assumes that industries, occupations and age types respond in a similar way to economy-wide shocks. If occupations and ages have different sensitivities to economy-wide fluctuations, then this could potentially show up as an occupation and age effect, even though there are no occupation- or age-specific shocks to the economy.
For example, Access Economics estimated occupation effects for a low paid group which includes elementary clerical, sales and services workers and labourers and related workers. We found that, other things equal, employment growth among this group of low paid workers tended to be relatively weaker in the 3rd and 4th quarters, particularly in 1997, 1999, 2001 and 2004.

The decisions of the Safety Net Reviews (SNR) were announced in April/May, with the resultant change in award wages occurring in the 3rd and 4th quarters. Based on the occupation effects estimated here, a possible inference is therefore that many of these earlier wage decisions may have had an additional negative impact on labour demand for this group of low paid workers. This might suggest some SNR wage decisions raised the wages of low paid workers relative to their productivity several times over the past decade.

That said, it is not clear from an examination of the timing and size of past safety net review decisions that this linear regression model monitoring strategy offers more than a moderate degree of guidance at best.

The Commission could adopt such a statistical modelling approach as an element of its monitoring strategy for assessing whether its decisions are having any effect on labour demand. That said, such an approach provides only a moderate degree of guidance.

Monitoring impacts on labour supply

A strategy for monitoring the capacity for unemployed and low paid workers to seek and remain in employment.

This report finds that modelling cameo 'replacement rates' is important because incentive effects differ notably by family type. (Many benefits are related to family income rather than individual income.)

We recommend that nine cameo types be monitored by the Commission, with the focus on workers 'on the margin' such as those considering a shift from (1) not-working to part-time (50 per cent of the FMW), (2) not working to full-time (100 per cent of the FMW), and (3) part-time (50 per cent of the FMW) to full-time work (100 per cent of the FMW).

The Commission appears to have some of the modelling elements to undertake this work. In particular, the AFPC has the capacity to model in-work income for the marginal worker types identified above (see Table 5.2 of AFPC wage-setting decision No 1, 2006).

To implement this monitoring strategy, the AFPC would also need to monitor changes in the welfare system (including NewStart Allowances, Family Tax Benefits, Parenting Payment, and Youth Allowances).

The major advantages of using replacement rates to measure incentives are that:

- the policy drivers (tax transfer system, FMW) can be updated instantly;
- the cameo demographic weights won't change much over short time periods, giving a degree of robustness and stability to the calculations;
- the impact of proposed FMW changes under consideration could be modelled for the Commission before it finalises its decision.
NATSEM’s work suggests that, on average, low paid workers faced low EMTRs, but estimates vary across cameos, with single parents facing the highest EMTRs.

In addition, and using the same approach as with the earlier analysis of labour demand, it is possible to use simple statistical models to track the participation rates of low paid workers.

We show a worked example here which suggests that low paid participation declined significantly since the SNR of 2005. However, this does not appear to be due to incentive effects. Rather, the ABS labour mobility data suggest that an important part of this fall was due to a shift among low paid workers (elementary clerical, sales and service workers) into higher paid occupations (intermediate clerical and service workers).

**Monitoring impacts on the wider economy**

A strategy for monitoring the overall impact of wage decisions on the Australian economy, both in promoting the prosperity of Australians and with regard to impact on employment and competitiveness across the economy.

Economic theory suggests that the distribution of the macroeconomic effects resulting from changes in unit labour costs across industry sectors will depend on the industry-specific factors of skills, cost and trade:

- **The AFPC factor**: Industries which employ workers whose wages are determined or affected by AFPC decisions see larger and more rapid linkages between wages relative to productivity (that is, ‘unit labour costs’) and jobs than sectors with few such workers. A related effect here is that workers on AFPC-determined wages tend to be those with lower skills, and it is easier to substitute machines for low skill than high skill workers.

- **The labour cost factor**: Labour costs have more of an impact on jobs where wages account for a larger share of all costs (and so of final retail prices).

- **The trade exposure factor**: Industries which face notable import competition or who sell into competitive export markets are more likely to be affected by higher labour costs, as such industries sell to markets with prices determined globally – so they can’t pass on higher costs. A rise in costs tends to lead straight to a fall in profits.

These sectoral effects mean that, no matter the direct incidence of AFPC wage effects, overall effects are more diffused across industries. The vulnerability of jobs to changes in unit labour costs may be summarised in an index. The higher the index, the more vulnerable are jobs in that industry to a rise in labour costs.

Figure 1 shows this index across industries. For example, accommodation, cafés and restaurants and retail trade are both shown as relatively exposed to AFPC-determined wage rises. These industries have a high proportion of workers on AFPC-determined wages (and with relatively low skill levels), a relatively high reliance on labour (rather than equipment), with wages making up a much larger share of total costs than in the average industry.

In contrast, industries which are more domestic-focused are generally less vulnerable, as is true of the likes of electrical, gas and water utilities, communications, the finance sector and the public sector. (That said, it remains a fundamental tenet of economics that ‘somebody pays’. If wages in these sectors rise faster than productivity, then employment in these sectors may be little affected, but consumers will have to pay higher prices.)
For the Commission, the implication is that an index such as this can be used as a ready yardstick to help to monitor conditions in those sectors seen as potentially more sensitive to its decisions.

Monitoring impacts on the safety net

A strategy for monitoring the impact of wage decisions on the provision of a safety net for the low paid.

Arguably the best relative measure of equity – a key component of a national safety net – is the final outcome: how low income workers and low income families are faring. In turn, the best summary measure of that is the ABS estimate for the Gini coefficient.

The Gini is a widely recognised summary measure of income inequality. The chief advantage of this measure it that it is appropriately broad. It takes into account a wide variety of private incomes, including wage incomes (such as FMW incomes), the impact of all government taxes and social welfare transfers, and family composition (as part of the ‘equivalisation’ calculations).
Access Economics therefore recommends the Commission monitor Australia’s Gini coefficient as a measure of equity. That said, the chief disadvantages of monitoring the Gini coefficient is that it is based on the Survey of Income and Housing (SIH), which is only conducted every two years, and released with a notable lag.

An alternative is that the Commission monitor the Household, Income and Labour Dynamics in Australia (HILDA) survey. HILDA could provide the basis for an annual assessment. It also contains more variables than the SIH and therefore provides the basis for a greater breadth of findings, though it has the disadvantage of a smaller sample size.

**Monitoring methods of setting pay**

A strategy for monitoring the extent to which the Commission’s decisions may have affected the method of pay-setting adopted (by affecting the incentives of employers and employees to adopt different methods of setting pay).

As elsewhere in this report, Access Economics recommends the use of a simple linear regression model to keep tabs on that eventuality.

That said, the data on pay-setting methods is limited at best in its usefulness for the Commission. That is partly because the data are only published every two years, with a lag of almost one year, and partly because the splits within that data lack detail (and hence contain only a limited range of information potentially useful to the Commission).
1. **Introduction**

The Australian Fair Pay Commission Secretariat (the Secretariat) has commissioned Access Economics to develop a monitoring strategy for the purpose of monitoring the impact of its wage-setting decisions. The proposed monitoring strategy must include consideration of the AFPC’s legislative wage-setting parameters in Section 23 of the *Workplace Relations Act 1996*.

That Act provides that the objective of the Commission in performing its wage setting function is to promote the economic prosperity of the people of Australia having regard to:

- the capacity for the unemployed and low paid to obtain and remain in employment;
- employment and competitiveness across the economy;
- providing a safety net for the low paid; and
- providing a minimum wage for junior employees, employees to whom training arrangements apply and employees with disabilities that ensure those employees are competitive in the labour market.

The proposed monitoring strategy developed here aims to provide the Secretariat with a robust approach to the monitoring of wage decisions. It draws on existing data, identifies the gaps in data necessary to monitor wage decisions and proposes solutions to fill any identified gaps. The proposed monitoring strategy developed in this report is intended to provide one component of advice to the AFPC for its consideration in finalising a monitoring strategy.

This report outlines the monitoring strategy developed for the Secretariat. The rest of the report is structured around the Commission’s objectives as follows:

- **Section 2** outlines a strategy for monitoring the impact of wage decisions on the competitiveness of the unemployed, low paid workers, junior employees, employees in training, and workers with disabilities.
- **Section 3** outlines a strategy for monitoring the capacity for unemployed and low paid workers to seek and remain in employment.
- **Section 4** outlines a strategy for monitoring the overall impact of wage decisions on the Australian economy, both in promoting the prosperity of Australians and with regard to the impact on employment and competitiveness across the economy.
- **Section 5** outlines a strategy for monitoring the impact of wage decisions on the provision of a safety net for the low paid.
- **Section 6** outlines a strategy for monitoring the impact of wage decisions on bargaining in the workplace.
- **Appendix A** provides additional detail on the statistical models used in the proposed monitoring strategies.
- **Appendix B** provides additional technical detail on aspects of the safety net.
2. Impact of wage decisions on labour demand

The Commission must have regard to the competitiveness of the unemployed, low paid workers, junior employees, employees in training, and workers with disabilities.

The demand for workers arises because businesses need workers to produce – that is, because labour is an input to production.

Different types of labour compete with one another and potentially other factors of production (for example, sometimes workers can be replaced with machines).

In general, the demand for a factor (such as labour) depends on its relative cost and the relative value of its output.

AFPC wage decisions can have a direct effect on the demand for low paid workers because wage decisions have an impact on the relative cost of low paid workers.

A significant component of monitoring the impact of AFPC wage decisions therefore lies in measuring the effect that wage decisions have had on the employment of low paid workers.

This chapter addresses that issue. In brief, we find that wage decisions can affect employment levels by affecting labour demand. Having reviewed the literature and the available evidence, we recommend that the Commission monitor for such an effect by concentrating its analysis on occupation effects using a statistical model – preferably a simple linear regression model.

This linear model assumes that industries, occupations and age types respond in a similar way to economy-wide shocks. If occupations and ages have different sensitivities to economy-wide fluctuations, then this could potentially show up as an occupation and age effect, even though there are no occupation- or age-specific shocks to the economy.

For example, and as we show here, we estimated occupation effects for a low paid group which includes elementary clerical, sales and services workers and labourers and related workers. We found that, other things being equal, employment growth among this group of low paid workers tended to be relatively weaker in the 3rd and 4th quarters, particularly in 1997, 1999, 2001 and 2004.

The decisions of the Safety Net Reviews (SNR) were announced in April/May, with the resultant change in award wages occurring in the 3rd and 4th quarters. Based on the occupation effects estimated here, a possible inference is therefore that many of these earlier wage decisions may have had an additional negative impact on labour demand for this group of low paid workers. This might suggest some SNR wage decisions raised the wages of low paid workers relative to their productivity several times over the past decade.

The Commission could adopt such an approach as an element of its monitoring strategy for assessing whether its decisions are having any effect on labour demand. That said, it provides only a moderate degree of guidance.
2.1 Labour demand theory

Basic theory

The simplest theoretical model underlying the empirical analysis of the effects of minimum wage on employment is the model of labour demand. Labour demand is well captured by the logic of cost minimisation and profit maximisation.

From an employers’ standpoint, labour is an input to production. An employer’s demand for labour is determined by the cost of labour (real wages plus on costs), the cost of substitute inputs and the relative value of output produced by a unit of labour and substitute inputs.

Basic models assume one substitute input called capital, which is an aggregate of all other inputs.

An increase in real wage that is not supported by an improvement in labour’s productivity causes the employer to substitute away from labour toward the substitute input, since the value of labour’s output has not changed but the cost of labour has.

That is, wage levels can affect employment levels.

Minimum wage analysis typically relies on more general labour demand models that allow for different types of labour. To isolate the effects of changes in minimum wages in these models, labour is generally divided into skilled and unskilled. Unskilled workers earn the minimum wage, while skilled workers earn above the minimum wage.

The story does not change in this more complicated setting. An increase in the real wage of low-skilled workers that is not supported by an improvement in low-skilled labour’s productivity will cause the employer to substitute away from labour toward the substitute inputs (capital and high-skilled labour).

Relevance of international literature

The degree of sensitivity of labour demand to changes in real wages which are unsupported by improvements in productivity is called ‘the labour demand elasticity’.

Estimates of labour demand elasticity vary across studies.

The Government’s submission to the AFPC’s 2006 wage decision surveyed a large body of mostly international studies. Their survey argues that a large proportion of published international studies find a negative relationship between employment levels and minimum wage rises (where the latter are unsupported by improvements in productivity).

The relevance of this international analysis for Australia is not clear, as we have a number of labour market institutions and workplace practices that are not common to the other countries under study. Moreover, and relative to median wages, Australia’s minimum wages are the highest in the OECD.
That said, the OECD’s latest advice\(^1\) recommends that countries:

Ensure that minimum wages are set at levels that do not harm job creation significantly for low-productivity workers.

Results from partial equilibrium models

Another reason to place a modest weight on the usefulness of international studies for monitoring wage decisions is that the theoretical models underlying most of the international empirical analysis of minimum wages make a number of unrealistic assumptions in order to identify the impact of minimum wage shifts.

These models are generally referred to as partial equilibrium models of labour demand and supply, because wages and prices are determined outside the model. In contrast, aggregate models (also called general equilibrium models) determine the outcomes of employment but also the wages and prices underlying these labour market outcomes. (General equilibrium models are more typically used in Australian studies.)

The usefulness of a simple partial equilibrium framework is limited and potentially misleading for assessing the impact of wage decisions. For example, if all other prices and wages were flexible, a change in the exogenously determined minimum wage that changes the real wages of low-skilled workers could be completely undone by a change in the prices of goods and wages of other workers. In other words, wage decisions could have no effect on the economy, yet may still have an impact on the demand for low-skilled workers.

Monitoring Strategy for Wage Setting Decisions

Evidence from aggregate models suggests that reality may lie somewhere between partial equilibrium and a fully flexible outcome. The Treasury’s macroeconomic model (TRYM) finds that feedback mechanisms are important. Their analysis suggests that wage rises not supported by improvements in productivity flow more quickly into higher inflation (higher prices) than they do into lower employment. If true, this suggests that the results of partial equilibrium models may tend to overstate the employment response to wage increases.

Results from aggregate models

A feature of the Australian labour market is that there is not a single Federal Minimum Wage as in the US and UK. Rather, the Australian system has a menu of awards. Some researchers argue that this is the main reason why Australian studies have tended to be based on aggregate models of the economy.

By definition, aggregate studies estimate an aggregate labour demand elasticity. An obvious limitation of this approach is that it does not distinguish between the impacts of different types of workers or explicitly identify the effects of changes in award wages.

This would not be a problem if demand for workers was invariant to their skill or their industry of employment.

However, the work of labour market economists suggests that industries which employ low-skilled workers see larger and more rapid linkages between labour costs and jobs than those sectors with higher-skilled workers (see Hamermesh 1993 and 1999). The main reason for this differential is that low-skilled workers are more easily substituted by capital (that is, machines), while high-skilled workers tend to be complementary to capital.

This suggests that trying to capture the effects of a minimum wage rise with a uniform increase in wages may well understate the impact on employment for two reasons:

- the group directly affected by the change will have a higher sensitivity to wage changes; and
- the wages of low-skilled workers are typically lower than those of high-skilled workers, hence the average change in their wages will be higher than the average change in aggregate wages.

Moreover, the distribution across industries of workers directly affected by AFPC decisions is not uniform across industries. Other things equal, employment in industries with a high concentration of ‘AFPC workers’ will be more affected by changes in those wage rates.

As discussed in detail in Chapter 4 later, other things are not equal, because industries also face different labour costs as a share of total costs – that is, sectors where wages are a big part of total costs.

Empirical evidence suggests that those industries with a high concentration of labour to capital will see larger job losses following wage rises. Think of it this way – labour costs have more of an impact on jobs where labour accounts for a larger proportion of all costs (and therefore final retail prices).
Industries are also subject to different levels of foreign competition. High levels of import competition, or those which export a larger proportion of their product overseas, are more likely to be affected by higher labour costs, as such industries sell to markets with prices determined globally. Under these circumstances, an increase in costs tends to lead straight to a fall in profits.

Overcoming the limitations of existing research

To summarise, aggregate models of the Australian economy do not model the labour demand of low paid workers, while the partial equilibrium minimum wage models do not adequately take account of the interaction of prices and wages.

The limitations of these Australian and international models of labour demand mean that it is not possible to draw directly from existing research to develop a strategy for isolating the effects of wage decisions on the demand for low paid workers, junior employees, employees to whom training arrangements apply, and workers with disabilities.

In the discussion which follows we overcome this limitation by developing an empirical strategy for isolating the effects of AFPC wage decisions using timely labour market data. This approach relies on reasonable assumptions about the ‘true’ labour demand functions of low and high paid workers.

2.2 Measuring the effect on labour demand

Controlling for aggregate and industry trends and cycles

All economies are subject to persistent trends and cyclical fluctuations about those trends.

Many factors, including minimum wage decisions, cause these trends and cycles. In order to identify the impact of one of these factors on the economy we must control for all the other factors that influence the economy.

To control for all the sources of influence researchers typically estimate structural models.

This approach is used widely in other policy monitoring such as the impact of interest rates. These structural models allow the research to decompose the shifts of variables by a set of so-called identified shocks. This approach, while ideal, requires considerable effort in developing a model of the economy.

An alternative strategy relies on a partial identification strategy that controls for all factors that are not of interest. This approach does not require the development of a full-blown aggregate model of the economy, so it can be more readily applied to monitoring AFPC wage decisions.

Wage decisions are common shocks to labour demand of low paid workers

The key to our approach is to recognise that wage decisions are ‘common shocks’ to the labour demand of low paid workers across industries and ages.
If wage decisions have an effect on the labour demand of low paid workers, then they will show up as a significant shift in the employment of low paid workers after controlling for the economy-wide and industry-wide shocks that are common to all workers, not just the low paid.

The underlying structure of this identification strategy is as follows. Changes in employment of different worker types can be thought of (without loss of generality) as the sum of five different components:

- **Economy-wide** – common to all workers (includes aggregate business cycles and trends).
- **Industry-wide** – common to all workers in an industry, net of economy-wide component (includes industry-specific cycles and trends).
- **Occupation** – common to workers in an occupation, net of economy-wide and industry-wide components (includes occupation-specific cycles and trends).
- **Age** – common to all workers of the same age, net of economy-wide, industry-wide and occupation components (includes age-specific cycles and trends).
- **Idiosyncratic** – specific to a type of worker, net of all other components.

Only observe an effect if there is a shift in the relativity of wages and productivity

If wage decisions have an effect on labour demand, then there would be significantly different effects by occupation for high and low paid workers.

These differential responses would reflect differences in the changes in relative wages and productivity of workers of different types. For example:

- Other things constant, if low paid worker wages rise, then (other things equal) the low paid occupation component will be negative, reflecting the fact that low paid workers become less competitive relative to other workers.
- Other things constant, if low paid worker productivity rises then the low paid occupation component would be positive, reflecting the fact that low paid workers are more competitive relative to other workers.
- If the change in relative wages is supported by changes in productivity, these two effects cancel each other, so that there is no effect on the occupation component of low paid workers.
- Similar changes in occupation components across worker types following wage decisions imply no change in the competitiveness of workers.

The basic underlying assumption of this strategy is that high- and low-skilled workers face the same labour demand function, with the only difference being that high-skilled demand is tied to high-skill wages and productivity, while low-skill demand is tied to low-skill wages and productivity.

Differences in the growth rate of high- and low-skill employment will reflect differences in the growth rates of relative wages and relative productivity. Alternatively, shifts in relative wages that are not supported by shifts in the relative productivity will show up as differences in employment growth.
This approach effectively uses differences in employment outcomes of different types of workers as an indicator of the shifts in relative wages and productivities of different types of workers.

This would not be necessary if productivity could be measured by different worker types. (It can be measured by industry but not by occupation, as there is no measure of output by occupation.) If that were the case, then the AFPC could make its decisions with full knowledge of the impact on relative wages and productivity.

An obvious limitation of this identification strategy is that it assumes that wage decisions are the only common shock affecting the low paid.

In reality low paid workers are subject to a host of common shocks, some of which will coincide with the announcement of wage decisions.

Feasibility of the identification strategy

We can use this strategy to identify impact of wage decisions as long as low paid workers are distributed across industries.

Table 1 shows that AFPC award workers are indeed well distributed across industries.

Roughly 80 per cent of workers under AFPC awards are employed in five industries. The distribution of workers across these industries is fairly uniform, with the range extending from retail trade (which accounts for 23 per cent of award workers) to manufacturing (which accounts for 11 per cent of award workers). The remaining 20 per cent are scattered across the other 12 industries.

Table 1: Award-reliant employees in AFPC jurisdiction by industry, May 2004

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number (000s)</th>
<th>Award-reliant total (%)</th>
<th>Total employees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail trade</td>
<td>238.2</td>
<td>23.6</td>
<td>20.9</td>
</tr>
<tr>
<td>Accommodation, cafés &amp; restaurants</td>
<td>185.5</td>
<td>18.4</td>
<td>43.2</td>
</tr>
<tr>
<td>Property &amp; business services</td>
<td>146.9</td>
<td>14.6</td>
<td>14.5</td>
</tr>
<tr>
<td>Health &amp; community services</td>
<td>115.2</td>
<td>11.4</td>
<td>12.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>107.4</td>
<td>10.7</td>
<td>12.2</td>
</tr>
<tr>
<td>Construction</td>
<td>50.1</td>
<td>5.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>48.2</td>
<td>4.8</td>
<td>11.7</td>
</tr>
<tr>
<td>Transportation &amp; storage</td>
<td>34.4</td>
<td>3.4</td>
<td>11.8</td>
</tr>
<tr>
<td>Personal &amp; other services</td>
<td>30.7</td>
<td>3.0</td>
<td>10.3</td>
</tr>
<tr>
<td>Education</td>
<td>22.5</td>
<td>2.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Cultural &amp; recreational services</td>
<td>17.9</td>
<td>1.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td>8.4</td>
<td>0.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Electricity, gas &amp; water</td>
<td>0.5</td>
<td>0.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Mining</td>
<td>0.8</td>
<td>0.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Communication services</td>
<td>0.4</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Government administration</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>All industries</td>
<td>1,007.2</td>
<td>100.0</td>
<td>13.1</td>
</tr>
</tbody>
</table>

Source: Australian Fair Pay Commission, Wage Setting Decision and Reason for Decision, October 2006, Table 4.4 based on ABS employee earnings and hours, May 2004, (Cat. No. 6306) unpublished data.
Table 2 explores the distribution of junior workers subject to AFPC awards. Most junior workers (55 per cent) are employed in retail. The next biggest employer is the accommodation, café and restaurant sector, with 13.5 per cent of junior award workers. The remaining 32.5 per cent are fairly evenly spread across six other sectors. Although junior workers tend to be more concentrated in given sectors than adult workers, the identification strategy is still feasible for junior workers because it only relies on workers being spread across two or more industries.

Table 2: Junior award-reliant employees in AFPC jurisdiction by industry, May 2004

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number (000s)</th>
<th>Junior award-reliant total (%)</th>
<th>Total employees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail trade</td>
<td>89.2</td>
<td>55.0</td>
<td>7.8</td>
</tr>
<tr>
<td>Accommodation, cafés &amp; restaurants</td>
<td>21.9</td>
<td>13.5</td>
<td>5.1</td>
</tr>
<tr>
<td>Personal &amp; other services</td>
<td>9.9</td>
<td>6.1</td>
<td>3.3</td>
</tr>
<tr>
<td>Construction</td>
<td>6.3</td>
<td>3.9</td>
<td>1.5</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9.2</td>
<td>5.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Health &amp; community services</td>
<td>8.7</td>
<td>5.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Property &amp; business services</td>
<td>8.4</td>
<td>5.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Education</td>
<td>4.2</td>
<td>2.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td>2.1</td>
<td>1.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>2.0</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Cultural &amp; recreational services</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Communication services</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mining</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Electricity, gas &amp; water</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Transportation &amp; storage</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Government administration</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>All industries</strong></td>
<td><strong>162.2</strong></td>
<td><strong>100.0</strong></td>
<td><strong>2.1</strong></td>
</tr>
</tbody>
</table>

Source: Government Submission, Australian Fair Pay Commission, Wage Setting Decision and Reason for Decision, October 2006, Table 1.4 based on ABS employee earnings and hours, May 2004, (Cat. No. 6306) unpublished data.

Australian Bureau of Statistics employment data can be split by industry and occupation or industry and age, but not industry, occupation and age. This means that we can estimate occupation effects or age effects, but not age effects that control for occupation effect.

Estimated age effects will include occupation effects, which potentially limits their usefulness in monitoring the effects of wage decisions on junior workers.

Available ABS data provide the following information:

- Employment by industry and occupation is available at a quarterly frequency, limited to 1-digit ANZSCO (nine occupation types) and 1-digit ANZSIC (17 industry types).
- Employment by industry and age is available at a quarterly frequency, limited to 1-digit ANZSIC (17 industry types) and eight age types.
In both cases these data are too broad to separate out low paid workers from other worker types. Research commissioned by the AFPC identified the occupations of low paid workers by 1-digit ANZSCO. According to this analysis, low paid workers fall into two or three occupation types: labourers and related workers, elementary clerical, sales and service workers, and possibly a third type including intermediate clerical, sales and service workers.

Table 3 reveals these three occupations make up about 70 per cent of AFPC award-reliant workers.

**Table 3: Award-reliant employees in AFPC jurisdiction by occupation, May 2004**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number (000s)</th>
<th>Award-reliant total (%)</th>
<th>Total employees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labourers &amp; related workers</td>
<td>199.9</td>
<td>19.8</td>
<td>27.2</td>
</tr>
<tr>
<td>Elementary clerical, sales &amp; service workers</td>
<td>260.1</td>
<td>25.8</td>
<td>27.1</td>
</tr>
<tr>
<td>Intermediate clerical, sales &amp; service workers</td>
<td>252.3</td>
<td>25.0</td>
<td>15.9</td>
</tr>
<tr>
<td>Tradespersons &amp; related workers</td>
<td>116.3</td>
<td>11.5</td>
<td>15.4</td>
</tr>
<tr>
<td>Intermediate production &amp; transport workers</td>
<td>78.5</td>
<td>7.8</td>
<td>13.0</td>
</tr>
<tr>
<td>Advanced clerical &amp; service workers</td>
<td>11.5</td>
<td>1.1</td>
<td>5.0</td>
</tr>
<tr>
<td>Associate professionals</td>
<td>40.3</td>
<td>4.0</td>
<td>4.4</td>
</tr>
<tr>
<td>Professionals</td>
<td>50.3</td>
<td>5.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Managers &amp; administrators</td>
<td>0.4</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>All industries</strong></td>
<td><strong>1,007.2</strong></td>
<td><strong>100.0</strong></td>
<td><strong>13.1</strong></td>
</tr>
</tbody>
</table>

Source: Government Submission, Australian Fair Pay Commission, Wage Setting Decision and Reason for Decision, October 2006, Table 1.3 based on ABS employee earnings and hours, May 2004, (Cat. No. 6306) unpublished data.

**Identification strategy relies on a statistical model**

Estimating occupation effects requires a statistical model. There are essentially two types of model that can be used. The simplest approach is a linear regression model. This approach regresses job growth by industry and occupation on:

- a constant, which captures economy-wide effects,
- industry dummy variables ( = 1 if worker is in same industry, = 0 otherwise), which capture industry effects net of economy-wide effects, and
- occupation dummy variables ( = 1 if worker is in same occupation, = 0 otherwise), which capture occupation effects, net of economy-wide and industry effects.

A residual term captures the idiosyncratic effects.

The industry and age model replaces the occupation dummy variable with an age dummy variable ( = 1 if worker is in same age range, = 0 otherwise).

This linear model assumes that industries, occupations and age types respond in a similar way to economy-wide shocks. If occupations and ages have different sensitivities to economy-wide fluctuations, then this could potentially show up as an occupation and age effect, even though there are no occupation- or age-specific shocks to the economy.

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2 Characteristics of minimum wage employees, Melbourne Institute of Applied Economic and Social Research, commissioned research for wage decision 1, 2006.
One way of overcoming the limitations of linear models is to use unobserved component models. Unobserved component models allow for a richer specification of sensitivity of industries, occupations and ages to economy wide and industry shocks.

The main drawback of this approach is that these models are more difficult to estimate. They rely on non-linear methods, which are potentially sensitive to the starting values used to initiate the estimate. Successful implementation of this approach would be contingent on having access to suitable in-house expertise as these models can be sensitive to data revisions.

Estimates of occupation effects using November 2006 data

Figure 3 shows estimates of the occupation effect for a low paid group which includes elementary clerical, sales and services workers and labourers and related workers. The control group for these estimates are high paid workers, so negative values mean that the growth of employment of low paid workers was below that of high paid workers.

Figure 3: Occupation component for elementary service workers and labourers

This figure reveals that over the past decade (and after controlling for economy-wide and industry-wide effects), the employment of low paid workers has tended to grow at or below the rate of high paid workers (see the grey line).

Employment among low paid workers has tended to grow below the rate of high paid workers at regular intervals, although the pattern is seasonal. (Low paid employment growth tends to be below high paid employment growth in third and fourth quarters.) In fact, the blue lines, which show the statistical significance of the estimated occupation effect, suggest that statistically significant estimates below zero occur in the third and fourth quarters of 1997, 1999, 2001 and 2004.
The significance of this observation is that decisions of the Safety Net Reviews (SNR) under the previous wage-setting regime were announced in April/May, with the resultant change in award wages occurring in the third and fourth quarters.

As the data here uses year-to growth rates, this is not a difference that rises from different seasonal patterns in employment across different groups.

**Based on the occupation effects estimated here, a possible inference is that many of these earlier wage decisions may have had an additional negative impact on labour demand for this group of low paid workers.**

**According to our underlying theoretical model, this might suggest that SNR wage decisions in times past raised the wages of low paid workers relative to their productivity on a number of occasions over the past decade.**

That said, Table 4 shows past safety net review decisions. An examination of the timing of the negative and positive effects in the above chart against that table – with negative effects highlighted in grey and positive in blue – suggests that this linear regression model monitoring strategy offers a moderate degree of guidance at best.

**Table 4: Safety net review decisions, 1993 to 2005**

<table>
<thead>
<tr>
<th>Year</th>
<th>Per week ($)</th>
<th>Minimum wage ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>8.00</td>
<td>–</td>
</tr>
<tr>
<td>1994</td>
<td>8.00</td>
<td>–</td>
</tr>
<tr>
<td>1995</td>
<td>8.00</td>
<td>349.40</td>
</tr>
<tr>
<td>1996</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>1997</td>
<td>10.00</td>
<td>359.40</td>
</tr>
<tr>
<td>1998</td>
<td>14.00</td>
<td>373.40</td>
</tr>
<tr>
<td>1999</td>
<td>12.00</td>
<td>385.40</td>
</tr>
<tr>
<td>2000</td>
<td>15.00</td>
<td>400.40</td>
</tr>
<tr>
<td>2001</td>
<td>13.00</td>
<td>413.40</td>
</tr>
<tr>
<td>2002</td>
<td>18.00</td>
<td>431.40</td>
</tr>
<tr>
<td>2003</td>
<td>17.00</td>
<td>448.40</td>
</tr>
<tr>
<td>2004</td>
<td>19.00</td>
<td>467.40</td>
</tr>
<tr>
<td>2005</td>
<td>17.00</td>
<td>484.40</td>
</tr>
</tbody>
</table>
In the period since the last SNR and the first wage decision of the AFPC, employment growth of low paid workers relative to high paid has also been significantly below zero. Labour mobility data (published annually by the ABS) suggests that this is due to a shift in the supply of elementary clerical, sales and service workers, which has seen them moving into intermediate clerical, sales and service workers.

Figure 4 expands the low paid group to include intermediate clerical, sales and service workers. The addition of intermediate workers smooths fluctuations of the occupation effect of low paid workers.

Only some of the previously identified negative labour demand outcomes remain significant for this expanded group. This means that the earlier two-occupation low paid group and the intermediate clerical, sales and service workers have different occupation effects.

This is not surprising given that AFPC award workers account for only 16 per cent of intermediate clerical, sales and service workers, which is roughly half the share of award workers found in elementary clerical, sales and service workers and labourers.

This means that the impact of award changes on the intermediate clerical, sales and services workers employment is likely to be more muted.

In turn, that suggests the monitoring should be limited to the elementary clerical, sales and service workers and labourers.
3. Impact of wage decisions on labour supply

The Commission must have regard to the capacity for unemployed and low paid workers to seek and remain in employment.

Another important component of monitoring the impact of AFPC wage decisions is measuring the effects that those decisions have on the incentives of low paid workers and hence the impact of those effects on the labour force participation of low paid workers.

A worker's willingness to remain in or seek employment depends on the return he or she receives from 'working' versus 'not working'. AFPC wage decisions have a direct impact on the return from working for low paid workers, which may change the incentives of low paid workers to participate in the labour market. Government decisions affecting the tax/transfer system can also have a large impact on the return from 'working' versus 'not working'.

This chapter addresses labour supply. In brief, we find that modelling cameo 'replacement rates' is important as incentive effects differ notably by family type (many benefits are related to family income rather than individual income).

We recommend that nine cameos be monitored by the Commission, with the focus on workers 'on the margin' such as those considering a shift from (1) not-working to part-time (50 per cent of the FMW), (2) not working to full-time (100 per cent of the FMW), and (3) part-time (50 per cent of the FMW) to full-time work (100 per cent of the FMW).

The Commission appears to have some of the modelling elements to undertake this work. In particular, the AFPC has the capacity to model in-work income for the marginal worker types identified above (see Table 5.2 of AFPC wage-setting decision No 1, 2006). To implement this monitoring strategy, the AFPC would also need to monitor changes in the welfare system (including NewStart Allowances, Family Tax Benefits, Parenting Payment, and Youth Allowances).

The major advantages of using replacement rates to measure incentives are that:

- the policy drivers (tax transfer system, FMW) can be updated instantly;
- the cameo demographic weights won't change much over short time periods, giving a degree of robustness and stability to the calculations;
- the impact of proposed FMW changes under consideration could be modelled for the Commission before it finalises its decision.

NATSEM's work suggests that, on average, low paid workers faced low EMTRs, but estimates vary across cameos, with single parents facing the highest EMTRs.

In addition, and using the same approach as with the earlier analysis of labour demand, it is possible to use simple statistical models to track the participation rates of low paid workers. We show a worked example here which suggests that low paid participation declined significantly since the SNR of 2005.

However, this does not appear to be due to incentive effects. Rather, the ABS labour mobility data suggest that an important part of this fall was due to a shift among low paid workers (elementary clerical, sales and service workers) into higher paid occupations (intermediate clerical and service workers).
3.1 Labour supply theory

Basic theory (backward-bending supply)

A worker's willingness to participate in the labour force governs their labour supply. Labour force participation depends in part on the return from 'working' versus 'not working'.

In a simple textbook case, the return from working is the real wage.

However, higher real wages do not necessarily imply higher participation because higher real wages have opposing effects: an increased incentive to participate because the return from working has increased (a substitution effect), and an increased demand for leisure (lower participation) because the worker's income has increased (an income effect).

Incentives to work are also tied to the tax/transfer system

In reality labour supply is more difficult to model than this textbook case, because incentives to work are muddied by the complex interaction of taxes and transfers.

Higher nominal wages are potentially taxed at a higher rate, while higher nominal wages may also decrease the value of means-tested social security benefits, so it is possible that higher wages do little to increase a worker's real income.

Research commissioned for the AFPC's 2006 wage decision and the Government's submission to that decision shows that it is possible to model the complex interaction of wages, taxes and transfers to come up with measures of the incentive to work. These incentives are in general tied to the worker's family situation, because taxes and transfers are tied to the worker's family type rather than the worker's skill or individual level of income.

The costs of working

Assuming that the costs of working are small, a worker's decision to work will be tied to his or her 'in-work' disposable income (estimated as the level of private income plus net benefits the worker would receive if they were employed) and their 'out-of-work' disposable income (estimated by the level of net benefits available from the tax/transfer system they would receive if not employed). If a worker's in-work income is higher than their out-of-work income, then their return from working is higher than not working, so – subject to how they value their time – workers would tend to choose to work.

The return from not working is potentially greater than a worker's out-of-work income, while the return from work is smaller than a worker's in-work income. Those that are out-of-work have more leisure time, while those in work have less leisure time.

This means that ratios of in-work and out-of-work income may be a poor guide to the incentive to work for workers who particularly value their leisure.

And workers also face other costs. For example, in the case of parents with young children, the decision to go to work would also need to factor in the costs of childcare, as well as lost leisure time with the children.
The wage at which workers are adequately compensated for all the costs associated with employment is called their reservation wage. Workers will only seek or remain in work if their in-work wage at least exceeds their reservation wage.

It is therefore possible that workers who have high reservation wages may be unable to find employment that adequately compensates them for the cost of employment.

Encouraged worker and other effects

The return from work is also influenced by the cyclical nature of the economy for reasons that are not directly linked to higher real wages.

For example, a significant part of the cost of transitioning from unemployment to work is the cost of searching for a job. Research has shown that the expected return from job search is tied to the overall rate of unemployment.

In periods of low unemployment, workers can find jobs more easily. That lowers the cost of searching for a job. This in turn encourages greater job search and labour force participation: an ‘encouraged worker’ effect.

Similarly, a cyclically strong economy also tends to have higher interest rates. That is important because higher interest rates are also linked to higher participation for couples. This arises about because higher interest rates lower the real income of households. Lower real income lowers a worker’s demand for leisure through the ‘income effect’ and at the same time encourages greater effort.
Recent trends in labour supply

Participation is the share of those aged 15 and over who are in work or looking for it. When times are good, jobs grow fast and unemployment falls, so people are encouraged to try to work (and vice versa when times are bad). Social trends are relevant too (such as the move of women into the paid workforce in recent decades), as are economic factors (people want to 'keep up with the Joneses', so they take on larger mortgages, with the result that Mum decides to work when mortgage rates rise. People also respond to incentives such as taxes and benefits.

Those various ‘push’ and ‘pull’ effects on labour supply broadly offset for some years, leaving participation in the 63–64 per cent range. However, it has now moved out of that range, with excellent job growth providing an ‘encouraged worker effect’, and higher mortgage rates providing a ‘push’ effect into the workforce.

Figure 5: The participation rate (%)

The lift in participation has been notable among those aged 55–64, and among women aged 45–54. The first group are partly responding to fears over the adequacy of their retirement incomes, as well as the upside from the abolition of benefits tax on superannuation for those aged over 60. Although the overall participation rates of the second group – women aged 45–54 – have crept up over time, this group is more sensitive to mortgage rates. When the latter go up, Mum is more likely to work. With mortgage rates above their longer term average at the moment, that has pushed up participation of late. Not surprisingly, that lift in participation has been concentrated in NSW, where mortgages are largest.

There are some reasons to expect further gains in participation – interest rates and the abolition of taxes on super benefits may both ‘push’ participation up, although weaker job growth may eventually ‘pull’ it down. And, as the chart suggests, there will eventually be a downtrend in participation over the longer term as the baby boomers retire. That means there is a demographic-driven risk that participation rates start to fall more notably from about 2012 onwards.
3.2 Measuring incentives

The Commission has defined ‘incentive’ as the ‘gap between in-work and out-of-work disposable income’.\(^3\)

The replacement rate is a useful headline measure of job seeking incentives which makes use of the Commission’s concepts. The replacement rate divides A by B, where:

- A is ‘in-work’ disposable income, estimated as the level of private income plus net benefits for different household types who are employed under different assumptions.
- B is ‘out-of-work’ disposable income, estimated as the level of net benefits available from the tax/transfer system for different household types who are not employed.

Assuming the costs of working are low, replacement rates above 100 per cent imply that the return from working is greater than not working, which will tend to encourage greater participation.

Before examining replacement ratios in detail, two other considerations need consideration:

- The selection of cameos, because the interaction of private income and the tax/transfer system varies notably by household structure. A typical approach to identifying the impact on workers’ incentives is to explore the incentives of workers across a typical set of family structures (cameo family types).
- A definition of ‘low pay’. What is the level of in-work income that is best suited to assessing the incentives of workers contemplating the shift from not-working to working?

**Selection of cameos relevant to AFPC target groups**

The ‘different household types’ or ‘cameos’ help focus discussion and analysis. The nine cameos used by the Commission are as follows:

- single adult, no children
- single parent, one child
- single parent, two children
- single earner couple, no children
- single earner couple, one child
- single earner couple, two children
- dual earner couple (split 2:1:1), no children
- dual earner couple (split 2:1:1), one child
- dual earner couple (split 2:1:1), two children

This cameo classification has a proven track record, as it was the basis for the public presentation of the 2000 tax and social security reforms. (See *Tax Reform: Not a New Tax – a New Tax System*, Commonwealth of Australia, 1998.)

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Research commissioned by the AFPC identified the characteristics of the low paid. According to this analysis, workers are significantly more likely to be low paid if they are:

- employed casually;
- female (especially if a single parent or as a ‘partnered secondary earner’);
- single;
- educated to year 9 or less;
- in the ‘21–30 years’ or ‘older than 60 years’ age groups;
- working in smaller firms (firms with fewer than 50 employees);
- migrants from non-English-speaking countries;
- living in rural locations;
- employed on short-term contracts; and
- not members of a union.

Most of these specific characteristics are (with good reason) not significant features of the tax/transfer system, so they have no measurable impact on the tax/transfer system. The existing set of cameos could be expanded to include some of these characteristics, such as families in regional locations, since there is income tax support for people living in remote (including rural) locations.

What is ‘low pay’?

In calculating replacement ratios, another important consideration is what to assume for ‘in work’ income for the purposes of calculating ‘A’ in the replacement ratio.

As the Commission has put it:

The question remains as to where to draw the line on low pay. Above which level (in either weekly or hourly terms) should a worker no longer be considered low paid? There is a wide diversity of approaches to defining a specific monetary point above which an employee can no longer be said to be low paid. One approach is to select a benchmark classification from an award. Another approach commonly used by researchers is to adopt a relative definition of low pay. A definition used for cross-national comparisons (for example by the Organisation for Economic Co-operation and Development (OECD)) is two-thirds of median earnings for full-time workers. This can be converted into an hourly rate for the purposes of defining low paid part-time workers.

The Australian Government’s submission to the AFPC’s 2006 wage decision defined ‘low paid workers’ as those who fell ‘approximately at the mid-point between the Federal Minimum Wage (FMW) and two-thirds of the median wage, that is, $530 per week.’

The suggested rationale for this choice is that the typical low paid worker earns two-thirds of the median wage, and that new low paid entrants to the workforce make a relatively quick transition from entry-level FMW to this typical wage level.

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For the purposes of establishing a summary measure of incentives, the focus ought to be on those workers 'on the margin.' Workers on the margin would be those that are considering a shift from:

- not-working to part-time (50 per cent of the FMW)
- not working to full-time (100 per cent of the FMW)
- part-time (50 per cent of the FMW) to full-time work (100 per cent of the FMW).

**Replacement rate calculations**

The Commission appears to have some of the modelling elements to undertake this work. In particular, the AFPC has the capacity to model in-work income according to the marginal worker types identified above (see Table 5.2 of AFPC wage-setting decision No 1, 2006).

To implement this strategy, the AFPC would also need to model ‘out of work’ disposable income by cameo type. To inform these estimates, the AFPC will need to monitor changes in the welfare system. At present the most important welfare policy parameters are linked to NewStart Allowances, Family Tax Benefits, Parenting Payment, and Youth Allowances.

Outcomes for different cameo types provide information on the impact of wage decisions on various family types. To construct a single 'headline measure' of the replacement rate, the cameos must be weighted by an estimate of the number of FMW workers in each cameo.

(That said, any such ‘average cameo’ measure would lose much of the important information available in the detail.)

The major advantages of using replacement rates to measure incentives are that:

- the policy drivers (tax transfer system, FMW) can be update instantly;
- the cameo demographic weights won't change much over short time periods, giving a degree of robustness and stability to the calculations;
- the impact of proposed FMW changes under consideration could be modelled for the Commission before the Commission finalises its decision.

**Measuring reservation wages**

A disadvantage of the replacement rate as a measure of a worker's incentives to participate in the labour force is that it assumes that the cost of working is negligible.

Workers may have high reservation wages for various reasons, which limits the usefulness of replacement rates.

One way of overcoming this limitation is to use survey measures of reservation wages. As noted by the Government in its submission to the 2006 wage decision, the survey of Household Income and Labour Dynamics in Australia (HILDA) reports reservation wages.
That said, the HILDA reservation wage data are limited in that:

- only those who were either unemployed or not in the labour force and seeking employment were asked their reservation wage in the HILDA survey, so that provides an incomplete sample of reservation wages;
- data are published annually with a considerable time lag, which may make them a less-relevant guide to the current set of reservation wages of low paid workers.

Despite these limitations, these data (when combined with other characteristics of workers) can offer insight into the costs of working for various low paid workers.

The government's submission provided some preliminary analysis of the proportion of workers whose reservations wages were below the FMW. Their estimates suggest that the reservation wages of low-skilled workers tended to be below the FMW, though more work needs to be done to establish the threshold at which these estimates make replacement rates a reliable measure of the incentive to participate in the labour force.

Effective marginal tax rates

Another important measure influencing a worker's incentive to participate is the effective marginal tax rate (EMTR) faced by low paid workers.

EMTRs expand on the replacement rate concept of 'should I get a job or not?' to address the questions of 'how much of each extra dollar of wage income do I get to keep and how does this vary according to my circumstances?'

In other words, EMTRs measure how much of an FMW increase is received in the hand by the FMW worker after the tax/transfer effects have been applied.

EMTRs are also important in measuring the return from greater participation for workers with flexible working hours (casual and part-time workers or full-time workers with paid overtime).

NATSEM's study on the interaction of wages and the tax/transfer system commissioned by the AFPC provides a detailed analysis of EMTRs. According to their analysis, low paid workers on average face low EMTRs. However, estimates vary across cameo types, with single parents facing the highest EMTRs.

Changes in taxation and welfare policy can change EMTRs, so part of the AFPC’s monitoring of incentives should be devoted to measuring changes in EMTRs and the implications of these changes on wage decisions.

In light of the work that has already been undertaken, the AFPC appears to have all the modelling elements in place to undertake this part of the monitoring strategy.

3.3 Measuring the effect on labour supply

The analysis of NATSEM and the Government’s submission reveal that the incentives facing low paid workers are tied to family structure because of the interaction of wages and the tax/transfer system.

This means that common shocks to the labour supply decisions of low paid workers (such as AFPC wage decisions) are best identified using participation data split by a worker's family type, occupation and age.
Adapting the labour demand analysis (from the previous chapter) to labour supply, wage decisions can be seen as ‘common shocks’ to the labour supply of low paid workers across family-types and ages. If wage decisions have an effect on the labour supply of low paid workers, then they will show up as a significant shift in participation of low paid workers after controlling for economy-wide and family-type shocks that are common to all workers, not just the low paid.

The underlying structure of this identification strategy is as follows. Changes in participation of different worker types can be thought of as the sum of five different components:

- **Economy-wide**: common to all workers (includes aggregate business cycles and trends)
- **Family-type**: common to all workers in a family-type, net of economy-wide component (includes family-type cycles and trends)
- **Occupation**: common to workers in an occupation, net of economy-wide and family-type components (includes occupation-specific cycles and trends)
- **Age**: common to all workers of the same age, net of economy-wide, family-type and occupation components (includes age-specific cycles and trends)
- **Idiosyncratic**: specific to a type of worker net of all other components

If changes in AFPC awards affect the incentives of low paid workers, then there will be a differential change in the occupation and age components of low and high paid workers.

An obvious limitation of this strategy is that it does not control for specific common influences to low paid labour force participation, such as changes in the returns to schooling or the tax/transfer system.

**The feasibility of using this identification strategy**

Unfortunately timely data at quarterly frequency are limited to participation by occupation or participation by age, but not by a worker’s family type. This limits the possible identification of the impact of wage decisions to common shocks across occupation types or age types.

Available ABS data provide the following information:

- A limited measure of participation by occupation is available at a quarterly frequency. Estimates are limited to 1-digit ANZSCO (nine occupation types). These data are constructed using quarterly estimates of the number of employed persons by occupation and estimates of unemployed persons looking for full-time work by occupation of last job. The sample is limited to workers who have been unemployed for less than two years.
- Participation by age is available every quarter across various age groups (eight age groups). These data can be expanded to include estimates of underemployed workers and workers marginally attached to the labour force to get the broadest measure of participation by age. These extensions limit the usefulness of the data, as they are only available at annual frequency.

In both cases the data are too broad to separate out low paid workers from other worker types, so the estimates are much muddled by the participation of higher paid workers in these age or occupation types.
Estimating the impact on labour supply

Estimates of common occupation effects require a statistical model. There are essentially two types of model that can be used. The simplest approach is a variant of the linear regression model used in the labour demand analysis implemented above.

In this case, the linear model regresses growth rates of labour force by occupation on a constant, which captures the economy-wide effects and occupation dummy variables \((=1\text{ if low paid worker, }=0\text{ otherwise})\), and a residual term, which captures idiosyncratic effects.

As noted above, one way of overcoming the limitations of linear models is to use unobserved component models. Unobserved component models allow for a richer specification of sensitivity of industries to economy-wide shocks. However, this gain in quality of fit needs to balanced against the extra effort required in estimating these more complicated models.

Based on the earlier analysis of labour demand, low paid workers are measured in the occupation data as elementary clerical, sales and service workers, and labourers and related workers, while high paid workers are made up of the remaining seven occupation groups.

Preliminary estimates using November 2006 data suggest that low paid labour force participation declined significantly in the period since the SNR of 2005.

However, this shift does not appear to be the result of incentive effects. Rather, annual ABS labour mobility data suggest that an important part of this decline was due to a shift in low paid workers (elementary clerical, sales and service workers) into higher paid occupations (intermediate clerical, sales and service workers).
4. The economy-wide impact of wage decisions

The Commission must have regard to the overall impact of wage decisions on the Australian economy, both in its overarching objective of promoting prosperity, and with regard to impact on employment and competitiveness across the economy.

Economic theory suggests that the distribution of the macroeconomic effects resulting from changes in unit labour costs across industry sectors will depend on the industry-specific factors of skills, cost and trade:

- **The AFPC factor**: Industries which employ workers whose wages are determined or affected by AFPC decisions see larger and more rapid linkages between wages relative to productivity (that is, ‘unit labour costs’) and jobs than sectors with few such workers. A related effect here is that workers on AFPC-determined wages tend to be those with lower skills, and it is easier to substitute machines for low skill than high skill workers.

- **The labour cost factor**: Labour costs have more of an impact on jobs where wages account for a larger share of all costs (and so of final retail prices).

- **The trade exposure factor**: Industries which face notable import competition or who sell into competitive export markets are more likely to be affected by higher labour costs, as such industries sell to markets with prices determined globally – so they can’t pass on higher costs. A rise in costs tends to lead straight to a fall in profits.
Figure 6: Relative sensitivity index

Relative sensitivity index (%)
These sectoral effects mean that, no matter the direct incidence of AFPC wage effects, overall effects are more diffused across industries. The vulnerability of jobs to changes in unit labour costs may be summarised in an index. The higher the index, the more vulnerable are jobs in that industry to a rise in labour costs.

The chart shows this index across industries. For example, accommodation, cafés and restaurants and retail trade are both shown as relatively exposed to AFPC-determined wage rises. These industries have a high proportion of workers on AFPC-determined wages (and with relatively low skill levels), a relatively high reliance on labour (rather than equipment), with wages making up a much larger share of total costs than in the average industry.

In contrast, industries which are more domestic-focused are generally less vulnerable, as is true of the likes of electrical, gas and water utilities, communications, the finance sector and the public sector. (That said, it remains a fundamental tenet of economics that ‘somebody pays’. If wages in these sectors rise faster than productivity, then employment in these sectors may be little affected, but consumers will have to pay higher prices.)

For the Commission, the implication is that an index such as this can be used as a ready yardstick to help to monitor conditions in those sectors seen as potentially more sensitive to its decisions.

### 4.1 Identifying the economy-wide impact

In monitoring the economy-wide impact of other policies such as interest rates, the agency in charge (such as the Reserve Bank) might rely on a detailed structural model of the economy.

Such structural models allow the agency to decompose the shifts of all variables of interest (such as inflation rates) arising from a set of identified shocks.

This approach, while ideal, requires considerable effort in developing a model of the economy.

An alternative strategy – one within the monitoring capacity of the AFPC – is to identify the impact of a wage decision on the economy using the relative performance of industries (just as earlier chapters recommend using relative employment growth to monitor the effect on labour demand and relative participation growth to monitor the effect on labour supply).

This approach relies on the fact that some industries are more sensitive to wage decisions.

If these sensitive industries perform poorly relative to other industries then, other things being equal, this suggests that wage decisions have had a significant negative impact on economic prosperity, and employment and competitiveness across the Australian economy.
4.2 Industry sensitivity to wage decisions

The first step in this monitoring strategy is identifying the industries that may be most sensitive to wage decisions. Access Economics’ view is that there are three important factors underlying the sensitivity of industries to wage decisions:

- **The share of workers on AFPC awards**: Higher share of workers on AFPC-determined wages implies higher sensitivity to wage decisions. This merely states the obvious: AFPC decisions are rather more important to the retail sector than they are to the mining sector. This factor captures the direct effect of changes in award wages. The characteristics of these industries have been well documented in research commissioned by the AFPC for the 2006 wage decision.

- **Labour costs as share of total costs**: A higher share of labour costs to total costs implies the industry is more sensitive to fluctuations in wages, not just AFPC-determined wages. This captures both direct and indirect effects on the industry. Direct effects arise through higher AFPC-determined wages and indirect effects arise through any spill-over of award wages to other wages.

- **Trade exposure by industry**: Industries that cannot readily pass cost increases to customers. This factor captures indirect effects through changes in prices. The Treasury's Macroeconomic Model (TRYM) finds that this indirect mechanism is important. Their analysis showed that wage rises not supported by improvements in productivity flow more quickly into higher aggregate inflation than into lower aggregate employment, so any industry that faces relatively fixed prices (such as those competing with imports) will experience higher real labour costs leading to lower industry output. Industries subject to greater foreign competition are less able to adjust their prices.

4.3 Measuring industry sensitivity

There two possible approaches to measuring the sensitivity of industries. For the purpose of the AFPC’s monitoring strategy, Access Economics’ recommends using an index number approach, while other researchers have relied on the outcomes from simulation models.

The advantage of Access Economics’ recommended index approach is that the final index of sensitivity is both intuitive and transparent. A disadvantage is that it relies on subjective weighting of the three underlying factors. However, this weighting process can be disciplined by calibrating the weights so that they match the output from a model with a rich sectoral structure.

The disadvantage of results from simulation models is that they tend to be ‘black-boxes’ with limited intuitive appeal. The advantage of these simulations is that are capable of capturing interactions that are not possible using simple indexes.
Table 5: Industry sensitivity to AFPC wage decisions

<table>
<thead>
<tr>
<th>Sector</th>
<th>AFPC award coverage index</th>
<th>Labour cost index</th>
<th>Trade exposure index</th>
<th>All factor index</th>
<th>Econtech implied index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Accommodation, cafés &amp; restaurants</td>
<td>330</td>
<td>118</td>
<td>85</td>
<td>217</td>
<td>144</td>
</tr>
<tr>
<td>Health &amp; community services</td>
<td>98</td>
<td>284</td>
<td>8</td>
<td>136</td>
<td>189</td>
</tr>
<tr>
<td>Retail trade</td>
<td>153</td>
<td>141</td>
<td>19</td>
<td>123</td>
<td>156</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>93</td>
<td>54</td>
<td>297</td>
<td>122</td>
<td>44</td>
</tr>
<tr>
<td>Personal &amp; other services</td>
<td>79</td>
<td>241</td>
<td>6</td>
<td>113</td>
<td>167</td>
</tr>
<tr>
<td>Education</td>
<td>24</td>
<td>295</td>
<td>42</td>
<td>109</td>
<td>178</td>
</tr>
<tr>
<td>Transport &amp; storage</td>
<td>90</td>
<td>119</td>
<td>90</td>
<td>99</td>
<td>67</td>
</tr>
<tr>
<td>Property &amp; business services</td>
<td>111</td>
<td>121</td>
<td>27</td>
<td>97</td>
<td>233</td>
</tr>
<tr>
<td>Mining</td>
<td>8</td>
<td>52</td>
<td>375</td>
<td>95</td>
<td>1</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>89</td>
<td>119</td>
<td>52</td>
<td>91</td>
<td>100</td>
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<td>Cultural &amp; recreational services</td>
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<td>122</td>
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<td>92</td>
<td>67</td>
<td>2</td>
<td>66</td>
<td>33</td>
</tr>
<tr>
<td>Government admin &amp; defence</td>
<td>0</td>
<td>185</td>
<td>1</td>
<td>56</td>
<td>156</td>
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<td>Finance &amp; insurance</td>
<td>19</td>
<td>138</td>
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<td>55</td>
<td>89</td>
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<tr>
<td>Communication services</td>
<td>3</td>
<td>75</td>
<td>31</td>
<td>30</td>
<td>122</td>
</tr>
<tr>
<td>Electricity, gas &amp; water supply</td>
<td>9</td>
<td>63</td>
<td>1</td>
<td>24</td>
<td>78</td>
</tr>
<tr>
<td>Agriculture, forestry &amp; fishing</td>
<td>–</td>
<td>54</td>
<td>112</td>
<td>–</td>
<td>44</td>
</tr>
<tr>
<td>All industries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Access Economics

Table 5 reports the relative ranking of Access Economics’ index approach and that of Econtech’s model simulation analysis (as reported by the Government in their 2006 wage decision submission).

There are three factors used in the Access Economics approach:

- **AFPC award coverage** (column 1) is the normalised share of workers in an industry reliant on AFPC award wages. Industry shares are indexed to the national average. For example, the accommodation, cafés and restaurant industry share of award workers is more than three times that of the national average, so it has an index of over 300.

- **Labour cost index** (column 2) is the normalised share of labour costs to total costs of production. Industry shares are indexed to the national average. For example, the education industry’s share is roughly three times that of the national average, so it has an index of just under 300.

- **Trade exposure index** (column 3) is the normalised measured of openness to trade. Openness is captured by the ratio of exports plus imports to the total value of domestic output of an industry. Industry measures are indexed to the national average. For example, the manufacturing industry’s measure of openness is roughly three times that of the national average, so it has an index of just under 300.
The **all factor index** is based on weights of 50 per cent, 30 per cent and 20 per cent respectively. These come from a calibration to simulations from Access Economics’ aggregate macroeconomic model (AEM) augmented with industry flows using input-output analysis with fixed demands. Using all three factors (column 4), we find that the industries most sensitive to wage decisions are:

- accommodation, cafes and restaurants;
- health and community services;
- retail trade;
- manufacturing;
- personal and other services; and
- education.

The full picture is shown in Figure 7.

**Figure 7: Industry exposure to unit labour costs**

Econtech’s analysis uses the Murphy Model Regional (MMR) to identify the sensitivity of industries to wage decisions. MMR is a multi-sector computable general equilibrium (CGE) model. MMR also provides detailed information on regional employment and industries, with some 32 regions identified in the model.
The parameterisation of CGE models is somewhat different to the approach taken in other aggregate models of the Australian economy. CGE studies use key parameters based on other empirical studies or ratios calculated from historic data. This compares with models such as Access Economics’ AEM or the Federal Treasury’s TRYM in which all key equations are estimated using historic data.

Another difference between these modelling strategies is that CGE models typically do not have the rich structure that a model such as AEM or TRYM have in capturing the dynamics of inflation (prices), wages, employment, capital and components of GDP. Although the problem is less severe, these models essentially suffer from the same problem as partial equilibrium models in that they do not fully capture the feedback of wages through other variables in the economy. MMR for example imposes spillovers of award to non-award wages. According to documentation provided for MMR, the outcomes of that model describe the medium term impact of wage decisions.

According to Econtech’s analysis, the list of sensitive industries is somewhat longer that that identified by the index approach. Econtech’s approach sees the manufacturing industry as relatively less sensitive, but adds the following to Access Economics’ list of sensitive industries:

• property and business services;
• cultural and recreational services;
• government administration and defence; and
• communication services.

4.4 Measuring the effect on the economy

Wage decisions are ‘common shocks’ to the output of sensitive industries. If wage decisions have an effect on the output of ‘sensitive industries’, then they will show up as a significant shift in ‘sensitive industry’ output after controlling for economy-wide shocks that are common to all industries.

The underlying structure of this identification strategy is as follows. Changes in output of different industry types can be thought of as the sum of three different components:

• **Economy-wide**: common to all industries (includes aggregate business cycles and trends)
• **Industry-wage-sensitivity**: common to all industries with similar wage-decision sensitivity, net of economy-wide component (includes industry specific cycles and trends)
• **Idiosyncratic**: specific to a type of industry net of all other components

The Australian Bureau of Statistics publishes industry output data at a quarterly frequency for 1-digit ANZSIC (17 industry types).

Estimates of common industry effects require a statistical model. There are essentially two types of model that can be used. The simplest approach is a variant of the linear regression model used in the labour demand analysis implemented above. In this case, the linear model regresses industry output growth rates on a constant, which captures the economy-wide effects and industry dummy variables \( = 1 \) if industry has same wage-decision sensitivity, \( = 0 \) otherwise, and a residual term, which captures idiosyncratic effects.
This linear model assumes that industries respond in a similar way to economy-wide shocks. If industries have different sensitivities to economy-wide fluctuations this could potentially show up as a sensitive industry effect, even though there are no shocks to the economy. It also assumes that groups of industries have the same sensitivity to wage-decisions.

This assumption could be relaxed using additional information from model simulation analysis such as Econtech’s. In particular, the industry dummies could be weighted according to the precise relative sensitivity that comes out the simulation analysis. More sensitive industries would have a higher weight.

As noted before, one way of overcoming the limitations of linear models is to use unobserved component models. Unobserved component models allow for a richer specification of sensitivity of industries to economy-wide shocks. However, this gain in quality of fit needs to be balanced against the effort required in estimating these more complicated models.
5. Monitoring the safety net

The Commission must have regard to the provision of a safety net for the low paid.

Arguably, the best relative equity measure is the ABS estimate for the Gini coefficient. The Gini is a widely recognised summary measure of income inequality. The chief advantage of this measure is that it is appropriately broad. It takes into account a wide variety of private incomes, including wage incomes (such as FMW incomes), the impact of all Government taxes and social welfare transfers, and family composition (as part of the ‘equivalisation’ calculations).

Access Economics therefore recommends the Commission monitor Australia’s Gini coefficient as a measure of equity. That said, the chief disadvantages of monitoring the Gini coefficient is that it is based on the Survey of Income and Housing (SIH), which is only conducted every two years, and released with a notable lag.

An alternative is that the Commission monitor the Household, Income and Labour Dynamics in Australia (HILDA) survey. HILDA could provide the basis for an annual assessment. It also contains more variables than the SIH and therefore provides the basis for a greater breadth of findings, though it has the disadvantage of a smaller sample size.

5.1 What is the ‘safety net’?

In reviewing the safety net, the Commission noted that ‘fairness’ was a consistent theme in public submissions. The submissions to the Commission (as opposed to the Commission itself) tended to identify fairness as embodying the attributes of:

• Adequacy: the ability to enjoy a reasonable or ‘decent’ standard of living;
• Equity: the relativity with higher-paid workers; and
• Incentive: the gap between in-work and out-of-work disposable income.

Incentives are important in underpinning longer term economic growth – which provides the material basis for improving adequacy.

The Commission’s focus is on financial incentives, not non-measurable effects (interesting as they may be) such as job satisfaction, identity, self-esteem and desire for self reliance.

As incentives are a key part of the monitoring of the impact of wage decisions, they were discussed above in an earlier section on monitoring the impact on labour supply. The remainder of this section focuses on alternative measures of adequacy and equity.

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8 ‘Decisions regarding the setting of minimum wages should be mindful that improving the wages of the low paid in the short run can sometimes be at the expense of their longer term living standards’, Australian Government submission to Wage-Setting Decision No. 1 (2006), p5.
5.2 Complementary roles in administering the safety net

The Commission understands its role as ‘balancing a desire for minimum wages to promote employment opportunities for unemployed and low paid Australians with the need for minimum wages to play their part in maintaining a safety net’.10

For its part, the Commission is necessarily aware that minimum wages are part of a wider suite of policy instruments aimed at providing a safety net for Australian families.

In particular, the role of the income tax and social security system (or ‘tax/transfer’ system) in maintaining a safety net for Australian individuals and families is often cited.11

It could be argued that the tax/transfer system is the most appropriate instrument for achieving a safety net in the outcomes delivered to the economy as a whole. In calculating Government support for individuals and families, the tax/transfer system takes into account a large range of considerations, including:

- total household income including wages, capital gains, fringe benefits, capital income and capital gains;
- home ownership status and financial assets more generally;
- family composition including number of adults, partnership status and number of children;
- individual characteristics such as indigenous or disability status and age.

In terms of the tax/transfer system, there are well recognised policy trade-offs between ‘adequacy’, ‘equity’ and ‘incentive’. Much of this argument has parallels with FMW safety net considerations (see Appendix B).

In addition, as has been identified by research undertaken for the Commission, FMW workers (and ‘low wages’ more broadly) are not concentrated amongst the poorest households by family income.

- The poorest households are more likely to be unemployed or retired.
- Rather, FMW workers are spread throughout the household income rankings from poorest to richest, but especially among ‘middle income’ households (see Figure 4).

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That makes the task of the Commission in providing a ‘safety net’ difficult – first because only some FMW workers need the safety net (the ‘poor’), and second because the intended safety net impact of AFPC wage decisions can be unravelled in whole or part by the competing instrument of the tax/transfer system.

Furthermore, FMW increases could have an adverse affect on some low income households which are not dependent on FMWs:

- If FMW increases lead to higher consumer prices (inflation), then low income self-funded retiree households could potentially lose.
- As this one potential channel demonstrates, the general equilibrium effects of safety net increases can be complicated. It is possible that safety net increases may lead to less income for some low income households (‘adequacy’) and less compression in disposable income of all households (‘equity’).\(^\text{12}\)

In its Wage-Setting Decision No. 1, the Commission took the view that (the then recent) changes to taxes and transfers should not be explicitly discounted from the increase in the FMW in coming to its decision.\(^\text{13}\)

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\(^{12}\) A US study found this to be the case, cited in the Australian Government submission to Wage-Setting Decision No. 1, p105.

\(^{13}\) Australian Government submission to Wage-Setting Decision No. 1 (2006), p93.
There are some good (or potentially good) headline measures for the three dimensions of the safety net:

- These headline measures are appropriately broadly based and conceptually rigorous. Two measures (relating to ‘adequacy’ and ‘equity’) are inclusive of all households, not just households with low paid workers. There is no obvious alternative to these measures (because it would not make sense to consider the wellbeing of some households and not others, or to use methods that were not conceptually robust).
- FMW decisions contribute to these headline measures. However, given other policy instruments such as taxes and transfers, the contribution of FMW decisions towards ‘adequacy’ and ‘equity’ may be minor.
- The real value of monitoring these headline measures is that they give context for the Commission in framing its wage-setting decisions.

5.3 Adequacy

In its report accompanying Wage-Setting Decision No. 1, the AFPC noted that submissions had argued in favour of the following model of adequacy.

A. The Henderson Poverty Line (HPL) was defined for nine family ‘cameo’ types.\(^{14}\) The HPL is the most widely used measure for defining ‘absolute poverty’.\(^{15}\) It is adjusted for family structure and, interestingly, the HPL includes a ‘cost of work’ component (estimated at $62.56 per person in the workforce).

B. Disposable income was calculated for each cameo household type given three scenarios.\(^ {16}\)

- Household wage earner(s) earned 50 per cent of the FMW.
- Household wage earner(s) earned 100 per cent of the FMW.
- Household wage earner(s) earned 150 per cent of the FMW.

C. The ratio of (B) to (A) was calculated. The interpretation of this ratio is that if it is greater than 100 per cent, then it is clear that FMW was not a barrier to that cameo type meeting the goal of ‘adequacy’. Accordingly, if the ratio is greater than 100 per cent, the case for an increase in the FMW was weaker.

Estimates reported in the AFPC report accompanying the wage decision (see Table 5.2) found that the ratio was greater than 100 per cent in all of the modelled cases.

This approach has some advantages:

- it recognises the tax/transfer system’s role in providing households with an income guarantee; and
- it can be quickly updated to reflect changes to the tax/transfer system. Notably, such changes can be relatively rapid and large.\(^ {17}\)

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\(^{14}\) The calculations were sourced to the Melbourne Institute of Applied Economic and Social Research and were current as at March 2006.

\(^{15}\) Insofar as such a concept can be said to be relevant to developed economies such as Australia.

\(^{16}\) Estimates of household tax and transfer payments were based on official parameters sourced to July 2006.

\(^{17}\) The Commission summarised estimates of the large increases in family disposable income resulting from changes to the tax transfer system between July 2005 and October 2006 in its Wage-Setting Decision No.1 at Table 5.1, p93.
However, progress in the safety net over time is arguably better captured by movements in real income levels for lowly ranked households\textsuperscript{18} (equivalised for different household structures\textsuperscript{19}).

Recent movements in real household income levels for the bottom three deciles are shown in Figure 5. For the economy as a whole, real incomes have risen by around 20 per cent to 22 per cent for the nine years from 1994–95 to 2003–04 for those at the bottom.

Figure 9: Equivalised household disposable income over time (poorest deciles)

$ per week (real, equivalised)

\begin{tabular}{lcccccc}
\hline
\hline
Third lowest decile (21% to 30%) & & & & & & & & \\
Second lowest decile (11% to 20%) & & & & & & & & \\
Bottom decile (1% to 10%) & & & & & & & & \\
\hline
\end{tabular}

Source: Australian Government Submission to Wage-Setting Decision No. 1 (2006), ABS Household Income and Income Distribution, (Cat. 6523.0)

The advantages of this measure are that:

- it provides a longitudinal dimension to the safety net consideration – it helps identify whether, and how much, national progress is being made over time;
- it avoids endorsing or using the arbitrary definitions surrounding the HPL.

The chief disadvantage is that it is not timely, as discussed further below.

\textsuperscript{18} The HPL increases in real terms over time. In that sense, it is not an ideal proxy of the ‘safety net’ as progress in raising absolute income levels is not given its full due.

\textsuperscript{19} The ABS uses the ‘modified OECD’ equivalence scale. The first adult in each household has a weight of 1 point, each additional person who is 15 years or older is allocated 0.5 points, and each child under the age of 15 is allocated 0.3 points. In this scale, there is no adjustment for different expenditure patterns (including work-related transport costs). ABS cat. 6523.0, Appendix 3.
5.4 Equity

Arguably, the best relative equity measure is the ABS estimate for the Gini coefficient (see Figure 10). The Gini coefficient is a widely recognised summary measure of income inequality.\textsuperscript{20}

**Figure 10: Headline measure of equity (equivalised household disposable income)**

<table>
<thead>
<tr>
<th>Ratio of incomes at top of selected percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>0.9</td>
</tr>
<tr>
<td>0.8</td>
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<tr>
<td>0.7</td>
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<td>0.2</td>
</tr>
<tr>
<td>0.1</td>
</tr>
<tr>
<td>0.0</td>
</tr>
</tbody>
</table>

Source: ABS Household Income and Income Distribution, Various (Cat. No. 6523.0).

There has been no significant change in the Gini coefficient between 1994–95 and 2003–04:

- In broad terms, economic restructuring has generally favoured higher income households, but this has been broadly offset by changes to the tax/transfer system which has tended to favour lower income households, including the effects of the major taxation and welfare reforms which commenced on 1 July 2000.

The chief advantage of this measure is that it is appropriately broad. It takes into account:

- a wide variety of private incomes, including wage incomes (and as a subset of wage incomes, FMW income);
- the impact of all government taxes and social welfare transfers;
- Family composition as part of the ‘equivalisation’ calculations.

Other potential headline measures can be criticised as partial. The chief disadvantage of this measure is that it is not timely. It is based on the Survey of Income and Housing (SIH):

- The SIH was conducted continuously from 1994–95 to 1997–98, and then in 1999–2000, 2000–01, 2002–03 and 2003–04. (That is, 1998–99 and 2001–02 data points are missing.)
- In future, the SIH will be conducted every two years.\textsuperscript{21}


\textsuperscript{21} Explanatory Note 2 to ABS cat. 6523.0 which was released 3 December 2004.
In contrast, the Household, Income and Labour Dynamics in Australia (HILDA) survey could provide the basis for an annual assessment. The HILDA dataset contains more variables than the SIH and therefore provides the basis for a greater breadth of findings, though it has the disadvantage of a smaller sample size.

**Figure 11: Share of equivalised household disposable income by quintile**

Once we dig beneath the Gini measure, there are a variety of perspectives that can be taken on income rankings. For example, Figure 11 shows shares of equivalised income per quintile:

- If there was perfect equality (Gini equal to one) then each of the quintile shares would be equal.
- In fact, the top quintile of households (comprising the 81st percentile through to the 100th percentile) receives as much income as the bottom three quintiles (1st percentile though to the 60th percentile).

Income relativities can be summarised by taking ratios of the incomes of households in different percentiles – see Figure 12:

- The ratio of the well-off 90th percentile to the relatively poor 10th percentile has shown the most volatility over time.
Figure 12: Ratio of various percentiles of equivalised household disposable income

It is a matter of judgement as to which of these ratios is more important. This judgement could be formalised by making use of a summary Atkinson inequality measure (which places greater weight on a given portion of the income distribution via the user making a judgement as to the degree of ‘inequality aversion’).
6. Monitoring the impacts on bargaining

The Commission must have regard to:

- ensuring that, as far as possible, the primary responsibility for determining matters affecting the employment relationship rests with the employer and employees at the workplace or enterprise level; and
- enabling employers and employees to choose the most appropriate form of agreement for their particular circumstances; and
- ensuring that awards provide minimum safety net entitlements for award-reliant employees which are consistent with Australian Fair Pay Commission decisions and which avoid creating disincentives to bargain at the workplace level.

The final component of monitoring the impact of AFPC wage decisions is measuring the effects that those decisions may have on the method of setting pay. Wage decisions can have a direct impact on the incentives of award-reliant workers and their employers to bargain at the workplace level.

- If a change in award wages is not supported by the expected productivity of award workers, then workers will then have an incentive to have their pay set by the award, while employers will have an incentive to move the worker to an individual agreement that more closely ties their wage to their actual level of productivity.
- Alternatively, if a change in award wages is below the expected productivity of award workers, then workers and employers will have an incentive to have the workers pay set by an individual arrangement in which award workers are appropriately compensated for their value of their output.
- Finally, if a change in award wages reflects the expected productivity of award workers, then workers and employers will be indifferent to the method used to set the workers pay, as the award adequately compensates the worker is for their value of their output.

This means that wage decisions will have an effect on the method of setting pay whenever they are binding (that is, when the award wage is above the wage consistent with the workers expected productivity), which is when wage decisions have an effect on labour demand.

The Commission’s decisions can affect the incentives of employers and employees to adopt different methods of setting pay. As adopted elsewhere in this report, Access Economics recommends the use of a simple linear regression model to keep tabs on that eventuality.

That said, the data is limited at best, partly because the data are only published every two years, with a lag of almost one year, and partly because the splits within that data lack detail (and hence contain only a limited range of information potentially useful to the Commission).
6.1 Measuring the effect on bargaining

Wage decisions are common shocks to bargaining incentives of low paid workers

The key to our approach is to recognise that wage decisions are ‘common shocks’ to the labour demand and the bargaining incentives of low paid workers across industries and ages.

If wage decisions have an effect on the bargaining incentives of low paid workers, then they will show up as a significant shift in the method of setting pay of low paid workers after controlling for the economy-wide and industry-wide shocks that are common to all workers, not just the low paid.

The underlying structure of this identification strategy is similar to the labour demand approach. Changes in the proportion of different worker types on award and non-award methods of setting pay can be thought of (without loss of generality) as the sum of five different components:

• **Economy-wide**: common to all workers (includes aggregate business cycles and trends);
• **Industry-wide**: common to all workers in an industry, net of economy-wide component (includes industry-specific cycles and trends);
• **Occupation**: common to workers in an occupation, net of economy-wide and industry wide components (includes occupation-specific cycles and trends);
• **Age**: common to all workers of the same age, net of economy-wide, industry-wide and occupation components (includes age-specific cycles and trends);
• **Idiosyncratic**: specific to a type of worker net of all other components.

Only observe an effect if there is a shift in the relativity of wages and productivity

If wage decisions have an effect on labour demand, then there would be significantly different effects by occupation for high and low paid workers.

These differential responses would reflect differences in the changes in relative wages and expected productivity of workers of different types.

An obvious limitation of this identification strategy is that it assumes that wage decisions are the only common shock affecting the low paid.

In reality low paid workers are subject to a host of common shocks, some of which will coincide with the announcement of wage decisions.

Feasibility of the identification strategy

We can use this strategy to identify impact of wage decisions because low paid workers are distributed across industries and there is available ABS data on methods of setting pay by a workers industry, occupation and age.

However, Australian Bureau of Statistics data on methods of pay setting can be split by industry and occupation or industry and age, but not split by industry, occupation and age.

This means that we can estimate occupation effects or age effects, but not age effects that control for occupation effect.
Estimated age effects will include occupation effects, which potentially limits their usefulness in monitoring the effects of wage decisions on junior workers.

The usefulness of the data for monitoring wage decisions is also limited by the fact that the data are published every two years, with a lag of almost one year.

**Estimating the impact on method of setting pay**

Estimates of common occupation effects require a statistical model. There are essentially two types of model that can be used. The simplest approach is a variant of the linear regression model used in the labour demand analysis implemented above.

In this case, the linear model regresses changes in the proportion of workers in an industry and occupation type on only awards on a constant, which captures the economy-wide effects and occupation dummy variables (1 if low paid worker, 0 otherwise), and a residual term, which captures idiosyncratic effects.

Based on the earlier analysis of labour demand, low paid workers are measured in the occupation data as elementary clerical, sales and service workers, and labourers and related workers, while high paid workers are made up of the remaining seven occupation groups.

An alternative approach which can overcome the limitations of linear models is to use unobserved component models. Unobserved component models allow for a richer specification of sensitivity of industries to economy-wide shocks. However, this gain in quality of fit needs to balanced against the extra effort required in estimating these more complicated models.
7. References


OECD (2006a) *Employment Outlook*, Boosting Jobs and Income, OECD.

OECD (2006b) *Boosting Jobs and Incomes, Policy Lessons from Reassessing the OECD's Job Strategy*, OECD.


Appendix A: Details of the linear model

This appendix provides details on the linear model underlying the labour demand, labour supply economy-wide and bargaining monitoring strategies. The presentation here describes the labour-demand model.

Labour demand model is described by the following equation:

\[ E_{I,O,A,T}^* S_{I,O,A,T} = C_t + C_{i,I} D_i + C_{o,O} D_o + C_{a,A} D_a + R_{I,O,A,T} \]

\( E_{I,O,A,T} \) is the year/year growth rate of employment for all workers in industry \( I \), occupation \( O \), and age \( A \) at time \( T \). To simplify the interpretation of the resulting estimates this growth rate is weighted by the workers’ share in total employment, \( S_{I,O,A,T} \). This also ensures that more weight is placed on the employment growth rates of industries, occupations and ages with a higher proportion of low paid workers.

There are 17 industry dummy variables \( D_i \). For each one, \( D_i = 1 \) if workers are in the same industry and 0 otherwise. There are nine occupation dummy variables. For each one, \( D_o = 1 \) if workers are in the same occupation and 0 otherwise. There are eight age dummy variables \( D_a \). For each one, \( D_a = 1 \) if workers are in the same age group and 0 otherwise.

Economy-wide effects at time \( T \) are captured by coefficient \( C_t \), industry effects at time \( T \) are captured by coefficient \( C_{i,I} \), occupation effects are captured by coefficient \( C_{o,O} \) and aged effects are captured by coefficient \( C_{a,A} \).

Finally, the idiosyncratic employment effects for all workers in industry \( I \), occupation \( O \), and age \( A \) at time \( T \) are captured by the residual \( R_{I,O,A,T} \).

Under the wage-decision common shock assumption, the model restricted so that \( C_{o,O} \) are the same for all workers in high and low paid occupations. This ensures that workers falling into these occupation types have the same occupation effect.

To identify the various effects, additional constraints must be placed on the model. In particular, one industry dummy variable (industry \( X \)), an occupation dummy variable (occupation \( Y \)) and an age dummy (age level \( Z \)) must be excluded. This means that the resulting industry effects are relative to the effects of the excluded industry and the occupation effects are relative to the effects of the excluded occupation. This yields a restricted model:

\[ E_{I,O,A,T}^* S_{I,O,A,T} = C_t + (C_{i,I} - C_{i,X}) D_i + (C_{o,O} - C_{o,Y}) D_o + (C_{a,A} - C_{a,Z}) D_a + R_{I,O,A,T} \]

Under the common shock assumption, the identified occupation effect for low paid workers is estimated relative to the occupation effect of high paid workers.

This restricted model can be estimated using ordinary least squares.
Appendix B: Trade-offs between adequacy, equity and incentive

In terms of the tax-transfer system, there are trade-offs in aiming for the three dimensions of fairness of adequacy, equity and incentive. This is illustrated with the use of Figure 13.

Figure 13: Trade-offs between adequacy, equity and incentive

The bottom (horizontal) axis shows households' private income as delivered 'by the market'.

After government interventions – principally in the form of the tax-transfer system but also conceptually including FMW interventions – household incomes are adjusted according to the left (vertical) axis.

In the absence of government interventions, households' private incomes delivered by the market will be the same as 'disposable' income.

- This is represented by the dashed line marked at (1) on the figure.
- The 45° slope of this line indicates that each extra dollar of private income translates to precisely one extra dollar of disposable income. The 'system' has an effective marginal tax rate (EMTR) of zero – which cannot be improved upon.
- Disposable incomes range from $0 to $100 (left axis), the same as for private incomes (bottom axis).

The 'no intervention' model does nothing for improving adequacy or compressing income relativities (improving equity). It does, however, provide excellent incentives.
When government intervenes to guarantee adequate incomes for the least well off, this has the effect of introducing a floor into the dashed ‘no intervention line’ as marked at (2) in the figure. The effect of the intervention in this case is that government provides a minimum income for all households of $30.

In the absence of other revenue, government will need to fund this income guarantee. An obvious way is to ‘tax the rich’, as marked at (3) in the figure:

- Whereas private incomes range from $0 to $100, disposable incomes range from only $30 to $70. That is, outcomes are more equal and there is less inequality.
- However, EMTRs are a punishing 100 per cent for private incomes between $0 and $30, and between $70 and $100. EMTRs are just 0 per cent for private incomes between $30 and $70.

Incentives can be improved:

- There are a range of possible alternative EMTR structures that could be applied. However, within any given government revenue constraint, lower EMTRs for some households must be paid for by applying higher EMTRs to other households.
- The structure marked at (4) in the figure assumes a universal flat EMTR.

Within any given government revenue constraint, the nature of the trade-offs between the three safety net features identified by the Commission can be summarised as follows:

- The greater the weight given to ‘adequacy’ and ‘equity’, the more damage will be done to ‘incentives’.
- ‘Adequacy’ and ‘equity’ complement one another: if ‘adequacy’ is improved then it must be because households further up the income scale are worse off (resulting in more equal disposable incomes).

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23 The effect of this intervention is that maximum disposable incomes (left axis) are now capped at $70.
24 The revenue raised from the rich (triangle in top right corner) is equal in size to the spending on the poor (triangle in bottom left corner).
25 The EMTR is 60 per cent.