Diversity Council Australia

Understanding the Economic Implications of the Gender Pay Gap in Australia

*Final Report*
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## Contents

1 Executive summary  
1.1 Background and purpose of the report 1  
1.2 Key findings 1  

2 Background  
2.1 Purpose of report 7  
2.2 Our approach 7  

3 Understanding the gender pay gap  
3.1 Analytical approach 12  
3.2 Labour market experience of Australian women 13  
3.3 Potential implications of a gender pay gap 15  

4 Literature review - factors underlying the gender pay gap  
4.1 Skill differentials 18  
4.2 Labour market rigidities 26  

5 Quantifying the gender pay gap in Australia  
5.1 The Household Income and Labour Dynamics in Australia Survey 44  
5.2 Methodology 45  
5.3 Key variables and summary statistics 47  
5.4 Regression and decomposition results 49  
5.5 The components of the gender pay gap and their implications 53  

6 Case studies of employers of choice for women  
6.1 KPMG 59  
6.2 AMP 61  
6.3 NAB 62  
6.4 Lend Lease 63  

A Detailed information on data and methodology  
A.1 Data 64  
A.2 Summary statistics 67  
A.3 Equations estimated 69  
A.4 Occupational and industry segregation 70  

B Detailed regression results 73
1 Executive summary

1.1 Background and purpose of the report

KPMG was engaged by the Diversity Council Australia (DCA) to undertake a close examination of the gender pay gap and its underlying factors, and the potential implications for the observed gap in relation to Australia’s overall economic growth and prosperity.

The underlying motivation for this project, and the premise on which it is based, is that labour market inflexibility prevents the most effective allocation of resources across the economy. It is theorised, therefore, that this will negatively impact on Australia’s ability to respond quickly to emerging opportunities and changing circumstances and limit prospective economic growth.

This project has involved:

- a comprehensive literature review and examination of Australian data to understand the factors that comprise the gender pay gap;
- econometric analysis using the Household, Income and Labour Dynamics in Australia (HILDA) survey to help quantify the relative impact of different factors on the gender pay gap;
- an evaluation of the findings from the econometric analysis, and an assessment of the implications that these findings on potential economic activity and growth; and
- drawing together case studies of employers that have implemented policies and programs that have helped to improve the employment experiences of women, and by doing so, improved and/or maximised growth opportunities and competitiveness.

1.2 Key findings

1.2.1 Understanding the gender pay gap and associated economic implications

In Australia, the last century has seen substantial improvements in the labour market conditions women face. At the same time, as women’s workforce participation has increased, there has been an obvious narrowing in the gender pay gap.

The female participation rate has nearly doubled over the past 40 years, and women have gone from earning around half the wage of men, when women were first officially included in Australia’s labour market legislation in 1919, to approximately 84 per cent of the average male wage in 2009.

Even though women’s labour market position has improved, a number of differences between men and women still remain. In particular women:

- earn on average 16 per cent less than males;
• comprise only 7 per cent of executives in ASX 200 companies, even though women account for 42 per cent of the total workforce; and

• make up the majority of Australia’s part-time workforce (70 per cent).

As noted, the persistence of this gender pay gap in Australia, and the associated misallocation of resources across the economy, may have serious implications for the nation’s competitiveness and restrict opportunities for growth.

To understand the gender pay gap and the implications of this gap on Australia’s economic prosperity, KPMG has adopted similar approaches to earlier studies into the gender pay gap, and used total wages as a proxy for productivity. This is because it is not possible to obtain data on individual output by gender, and so we take the value of the input, that is wages, as equivalent to the value of the person’s output.1 It is important to note that the implication is not that women are currently paid less than men because they are not as productive and is in no way a reflection on the current contribution or value of the work of women. Instead, we use wages as a substitute for productivity, which is widely recognised as an acceptable proxy.2

The intention of this study is to understand how the factors underlying the gender pay gap have a negative impact on overall economic productivity so as to gain some insight into potential productivity improvements that can be obtained by increasing women’s participation and more appropriately allocating the talent available to, and used by, organisations.

As such, the gender pay gap can be interpreted as a potential source of productivity gain, given that many of the factors underlying the gap are driven by labour market rigidities which, if removed, could benefit the Australian economy through increasing overall economic output.

Closing the gender pay gap may have a number of benefits both for individual companies, and the economy more generally. For companies that work to close the gap, benefits can include:

• improvement in an organisation’s ability to attract and retain female employees;

• reduced human resources costs through lower turnover rates; and

• capacity to create a more productive workforce through retaining talent, and ensuring individuals with the best skills and firm-specific knowledge remain with the company.

For the economy overall, reductions in the gender pay gap can arise through reducing labour market rigidities, including occupational segregation and labour market discrimination, and improving the underlying factors that drive the gap, for example skill differences. Both will increase broader economic activity – the former through improving labour market flexibility and

1 Using wages as a proxy for productivity has advantages and disadvantages. The advantages of doing so are that wages are both an indication of the market valuation of an individual’s worth to an organisation, and that data on wages are readily available in a reliable and robust form. However, the disadvantages are that wages may not be a ‘true’ representation of the productive contribution of an individual to an organisation, to the extent that wages are affected by discrimination and other labour market rigidities.

hence increasing the allocative efficiency of an economy, the latter through increasing human capital, which in itself has a positive effect on productivity and economic growth.

1.2.2 Factors underlying the gender pay gap

The gap between male and female pay is driven by two core sets of factors. The first set of factors relate to the difference between the skill sets of men and women, in particular, differences in:

- educational qualifications;
- formal and informal on-the-job training;
- tenure, or years of work with the firm;
- labour market experience, both in full and part-time work; and
- returns on an individual’s investment in human capital.

The second set of factors underlying the gender pay gap are labour market rigidities, which mean that labour is not allocated where it will be put to its most efficient use. These rigidities take the form of:

- labour market discrimination (both sex discrimination and other unknown factors);\(^3\)
- segmentation of labour markets, in terms of:
  - part-time versus full-time work;
  - occupational segregation; and
  - segregation by industry sector;
- interruptions to women’s work histories either due to family or caring responsibilities, or to unemployment; and
- the political and legislative environment.

1.2.3 Quantifying the gender pay gap

KPMG undertook econometric analysis using the HILDA dataset to identify the extent to which different factors underlying the gender pay gap contribute for this differential. The process

\(^3\) The gender pay gap econometric literature terms this ‘unobserved heterogeneity’. We have chosen to use the term ‘unknown factors’ so as to highlight that we are not referring to or implying that there are inherent differences between men and women that make women less effective in the work place. Rather, these unknown factors may result from subtle work value and cultural influences that cannot easily be quantified or measured.
involved undertaking regression analysis with the log of hourly wages as the dependent variable. A number of independent variables were included, these being:

- gender;
- education and training indicators;
- experience and tenure;
- length of interruptions due to family care commitments and unemployment;
- occupational and industry segregation;
- part-time employment;
- casual employment;
- industry sector and occupation;
- job characteristics (hours of work, employer size, union membership, type of employer, flexible work arrangements, job satisfaction); and
- demographic characteristics (age, marital status, number of dependent children, state, and location).

Appendix A includes a detailed description of the variables used and the key summary statistics.

KPMG used the Heckman two-step method to ensure that sample selection bias was minimised (see Appendix A for details on the equations estimated and the Heckman two-step method, and Appendix B for the regression results).4

After undertaking the regression analysis, KPMG followed the methodology used in Walby and Olsen (2002) to decompose the gender pay gap.5 We found that the overall size of the gender pay gap on an hourly rate basis as supported by the 2007 HILDA survey is $1.29, with women earning an average hourly rate of $21.91 compared with an average hourly rate of $23.20 for men (equivalent to a pay difference of 5.6 per cent). The key components of the gender pay gap are presented in Table 1.1; it shows that:

- sex discrimination and unknown factors accounts for 35 per cent of the gap;
- occupational segregation, where the differences in types of occupations in which males and females work account for 18 per cent of the gap;
- working part-time, which accounts for 14 per cent of the gap;

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• segregation by industry sector, which accounts for 10 per cent of the gap;

• the length of time women spend out of the workforce, work interruptions, accounts for 9 per cent of the gap;

• differences in age (a proxy for work experience) and tenure with current employers accounts for 8 per cent and three per cent of the gap respectively; and

• differences between the type of employers, with more women working at Non-Government Organisations (NGOs) and for government, the combined effect of which accounts for the remaining 3 per cent of the gender pay gap.

Table 1.1: Key components of the gender pay gap

<table>
<thead>
<tr>
<th>Component</th>
<th>Women’s levels compared to men’s</th>
<th>% of gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience (proxyed by age, years)</td>
<td>-0.47</td>
<td>8%</td>
</tr>
<tr>
<td>Tenure with current employer (years)</td>
<td>-1.27</td>
<td>3%</td>
</tr>
<tr>
<td>Years not working (interruptions)</td>
<td>3.35</td>
<td>9%</td>
</tr>
<tr>
<td>Industry segregation index (male/total)</td>
<td>-16%</td>
<td>10%</td>
</tr>
<tr>
<td>Occupational segregation (male/total)</td>
<td>-29%</td>
<td>18%</td>
</tr>
<tr>
<td>Share in part time employment</td>
<td>30%</td>
<td>14%</td>
</tr>
<tr>
<td>Share working in government or NGOs</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>Sex discrimination and other unknown factors</td>
<td>-1</td>
<td>35%</td>
</tr>
</tbody>
</table>

The results of this analysis were statistically significant, and were subject to sensitivity testing around the economic modelling to ensure that our analysis was robust and could stand up to scrutiny.

These results are broadly in line with those found by Walby and Olsen in their analysis of the UK labour market. The main differences are that full-time employment experience was shown to comprise a large share of the overall gap in the UK, at 26 per cent. By contrast, in Australia data limitations meant that we were not able to use exactly the same variable, and the measure we used to capture experience accounted for a smaller share of the overall gap than in the UK. In addition, education differentials were found to account for none of the gap in Australia (even though the results were statistically significant), while in the UK these differences accounted for 6 per cent of the gap, a result which was statistically significant.

1.2.4 Implications

The potential economic impacts could be significant where policies addressing the factors underlying the gender pay gap are implemented by governments and/or adopted by individual organisations or sectors. For example:

• introducing more flexible arrangements that enable women to reduce the length of time spent out of the workforce due to child bearing, rearing and other caring responsibilities could reduce the gap between male and female earnings and potentially increase economic activity by up to 9 per cent; and/or

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implementing policies to reduce occupational and industry segregation could reduce the
gender pay gap by up to 32 per cent, and have a positive impact on economic growth.

To place this in perspective, the KPMG analysis indicates that work interruptions for female
employees requiring absenteeism for maternity, childcare and other family reasons are estimated
to contribute towards 9 per cent of the gross wage gap between male and female employees. It
follows, therefore, that employers who can reduce the impact of work interruptions on female
workers, such as through the adoption of family friendly policies like better access to in-house
childcare, may expect a company-wide improvement in useful output.

The average annual wage gap between male and female full-time employees in the financial and
insurance services sector is estimated to be around $21,800 per annum (given women in this
sector earn an hourly wage rate 31 per cent lower than the male rate). If the length of work
interruptions could be reduced from an average of six to two years, for just 10 per cent of the
female workforce\(^7\) in the financial and insurance sector, annual gross activity across the sector
could possibly increase by as much as $30 million.\(^8\)

It is important to note, however, that a possible corollary of women with family responsibilities
working more and earning more, may be that men work less and, therefore, also earn less. While
there is insufficient data to enable a quantitative analysis of this particular factor, it is important
to recognise that the aforementioned changes will undoubtedly result in tangible economic
benefits, which are unlikely to be realised in a linear fashion. This will, therefore, dampen the
overall economic benefits for organisations and the wider economy. It is also important to note
that any changes will likely involve certain associated costs, which will impact on the net
economic benefit of the change.

The results of this analysis of the economic impact of the gender pay gap indicate that the
gender pay gap is not simply a social justice issue, but rather is a key concern for the Australian
Government if it wants to continue to promote a flexible, responsive and globally competitive
labour market in the longer term.

\(^7\) $21,800 \times 9\% \times 10\% \times 155,000 = $30.4 million
\(^8\) For a female workforce of around 155,000 persons as at May 2009.
2 Background

2.1 Purpose of report

KPMG have partnered with the Diversity Council Australia (DCA) in order to carry out this important project, which aims to identify and quantify, through economic modelling, the potential economic impact associated with the observed pay gender gap in Australia. It is hoped that undertaking innovative research such as this will reinvigorate contemporary national discussion on this crucial social and economic issue.

Framing this issue in terms of national productivity and economic growth and prosperity will assist to create a tangible link between the social injustice imperative of pay equity and the broader implications for the Australian economy. This position recognises and assesses women’s contribution to the labour market in terms of:

- wages;
- output and productivity levels; and
- overall economic performance.

Utilising available data sources, with strategic input from DCA, KPMG has developed a model that identifies the gender wage gap in Australia in these terms and draws implications for the broader economy. The project considers the premise that inflexibility in the labour market prevents the most effective allocation of resources, thereby negatively impacting economic activity and growth and the nation’s ability to respond quickly to emerging opportunities and changing circumstances.

In accordance with DCA’s mission to lead in diversity thought and practice in Australia, this project aims to raise national awareness and stimulate discussion on this crucial economic issue.

2.2 Our approach

KPMG has undertaken this project in partnership and with strategic input from the DCA in order to prepare this report that:

- identifies the gender pay gap; and
- presents an econometric model designed to assess the costs to the Australian economy of pay inequity.

This project was undertaken in five key steps, these being:

- the project plan, which contains information on the timing of project activities and deliverables, a resource plan, governance and reporting arrangements and key project risks and risk management strategies;
a detailed literature review that outlines the current status of gender pay equity in Australia, and further explores the ‘gender productivity gap’ position;

initial data cleaning and manipulation;

development of an economic model that was used to disaggregate the gender pay gap into key financial components and to further explore its economic implications; and

preparation of a draft and final report which contains the project findings.

These steps are described in more detail below.

2.2.1 Project stages

Stage 1: Project initiation

During the project initiation phase, KPMG agreed with DCA on how the project will be managed, and agreed on the project plan. This involved obtaining a common agreement between the DCA and KPMG on the:

• project objectives and methodology;

• project context and any critical issues;

• protocols regarding communications, deliverables, risk management and project governance;

• project roles and responsibilities for the KPMG project director and project manager; and

• indicative project deliverables and timelines.

Stage 2: Literature review

This phase of the project firstly involved desktop research to review the existing Australian and international literature on gender pay equity, and the drivers and effects of the gender pay gap. KPMG focussed particularly on the Australian gender pay equity research that uses the Household Income and Labour Dynamics in Australia (HILDA) dataset, which is the dataset used in our economic modelling. The literature review also focussed on:

• accepted definitions and proxies to measure productivity;

• identification of factors that are thought to comprise the gender pay gap, including for example interruptions to work, part time or casual employment, educational differences, occupational segregation and sex discrimination;

• sourcing case studies that highlight the economic implications of the gender pay gap; and
• identifying other effects and implications of the gender pay gap, such as the impact on job satisfaction, the links to social injustice, and the interaction between location and job mobility.

The key output of the desktop review is the literature review presented in Sections 3 and 4, as well as preparation of case studies which are presented in Section 6, and background material to inform the economic modelling.

In addition to the literature review, this phase of the project involved sourcing publicly available data on women’s workforce participation, educational attainment, occupational segregation, wages and the gender pay gap. This involved a detailed examination and analysis of Australian Bureau of Statistics (ABS) data, which provided the background material for the report. Specifically, we will examine:

• women’s labour force participation rates and how these have changed over time;
• the composition of the female and male labour markets, split by full-time, part-time and casual work;
• wage differentials between genders, and the extent to which these are a factor of differences between women and men’s access to over-award payments, overtime and bonuses;
• the extent of occupational and industry segregation of women and men;
• whether location and/or demographic factors influence women’s labour force participation rates, wage gaps and occupational segregation; and
• underemployment and underutilisation rates among women and men.

Stage 3: Initial data analysis and manipulation

This phase of the project involved three components. Firstly, KPMG obtained the HILDA dataset and began the process of data cleaning and manipulation. The output from this task was a set of data and variables that were analysed and used in the economic modelling.

Secondly, we conducted a preliminary analysis of the data, obtaining information on the differences between men and women in terms of:

• education and training levels;
• labour market experience both in current job and in aggregate;
• interruptions to employment history due to caring responsibilities or other reasons;
• occupation and industry of employment;
• employment status (i.e. full-time, part-time or casual);
• demographic status, including marital status, if they have dependent children and age; and

• other control factors including location, household income, firm size, trade union membership - this category could to be further drilled down (i.e. employed in unionised sector/trade union membership – this distinction is never made and may be worthy of examination in all contexts and sectors of employment).

Lastly, this phase of the project involved finalising the economic modelling methodology.

Stage 4: Economic modelling

In this phase we conducted an econometric analysis to disaggregate the gender pay gap in Australia into the components attributable to:

• differences in education (human capital) levels;

• interruptions in work histories;

• being employed part-time or casually;

• occupational segregation;

• demographic factors, including marital status, presence of dependent children in the household, household income and age; and

• other factors that may affect wages including location, industry of employment, sector of employment, firm size, and union status/levels of sector unionisation.

A detailed description of the methodology used is presented in Appendix A and the regression equation results are shown in Appendix B.

During this phase KPMG also conducted sensitivity testing around the economic modelling to ensure that our analysis was robust and could stand up to scrutiny.

Once the model was finalised KPMG undertook a marginal effects analysis, which enabled an estimate of the potential economic improvement from changing one factor (such as improving women’s education) known to contribute to the gender pay gap.

Stage 5: Reporting

This phase of the engagement involved the report writing, producing this research paper which brings together all information compiled during each of the prior phases, including the:

• literature review and desktop analysis of available information;
• summary of publicly available data on women’s workforce participation, educational attainment, occupational segregation, wages and the gender pay gap;

• a robust economic model used to disaggregate the gender pay gap and assess the economic impact of each component of the observed inequity; and

• commentary on key findings and opportunities.
3 Understanding the gender pay gap

The following section provides a review of the literature relevant to an analysis of the gender pay gap in Australia and the impact it has on Australia’s economic prosperity. KPMG has drawn on Australian and international literature to form an understanding of the components that contribute to the gap, the degree to which they affect it and the strength of their association with changes in the pay gap. The effect that these components may impose on economic output is considered through this discussion.

KPMG’s modelling strategy has drawn on the literature review to guide the development of a model that decomposes the gender pay gap. In this way, the model is built on variables with economic and statistical significance.

The literature review commences by describing the approach to the analysis, then provides a broad description of Australian women’s labour market experience. It goes on to highlight the potential implications for Australia of a gender pay gap.

3.1 Analytical approach

To effectively analyse the impacts of the gender pay gap on Australia’s economy, it is essential to have a suitable measure of productivity. Measuring productivity or economic output is widely acknowledged to be inherently difficult, and attempts to further distinguish the contribution of men and female to total productivity adds a further dimension of complexity.

Broadly speaking, Australia’s productive output is made up of market and non-market sector output. While measuring market sector output can be done on the basis of price, another approach is required for the non-market sector, which does not value its produce at the point of sale. The approach generally taken to measuring outputs in the non-market sector, including government services that are provided for free, is to value them at the input rather than the output level. In this way the cost of production, or delivery of the service, is the measure of its value. Following this reasoning, capturing the inputs of an individual to a company or country’s output can be done by taking the value of their input, wages, as equivalent to the value of the outputs. As such, pay can as a proxy for productivity and economic output.9

It is important to note that the implication is not that women are currently paid less than men because they are not as productive and is in no way a reflection on the current contribution or value of the work of women. Instead, we use wages as a substitute for productivity, which is widely recognised as an acceptable proxy.10

The intention of this study is to understand how the factors underlying the gender pay gap have a negative impact on overall economic output so as to gain some insight into potential

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9 Using wages as a proxy for productivity has advantages and disadvantages. The advantages of doing so are that wages are both an indication of the market valuation of an individual’s worth to an organisation, and that data on wages are readily available in a reliable and robust form. However, the disadvantages are that wages may not be a ‘true’ representation of the productive contribution of an individual to an organisation, to the extent that wages are affected by discrimination and other labour market rigidities.

productivity improvements that can be obtained across an organisation or the country by increasing women’s participation and maximising the talent available to, and used by, organisations.

To some extent, the link between pay and productivity can be seen through the size of the workforce. That is, as an individual’s pay increases, there is a tendency to increase workforce participation. Note that the term ‘gendered’ in this report is used to indicate that phenomena affect men and women differently. It is therefore necessary to consider those factors that impact on wages and ultimately may be responsible for the gap in pay between males and females.

3.2 Labour market experience of Australian women

Men and women in Australia have experienced significantly different labour market conditions over the past century. While women of the mid twentieth century faced a relatively closed labour market, with rules around dismissal on the basis of marriage and children, and a strong societal perception that males were the designated ‘bread winners’, men enjoyed high levels of participation, skills acquisition and professional recognition.

Women’s pay during this period reflected their inferior position in the workforce. In 1919, it was determined that the females basic wage rate should be set according to the needs of a single women supporting herself. This was set at the rate of 54 per cent of the male minimum wage, which at the time was 42 shillings per week. In effect, this centralised wage determined system enabled almost across-the-board gender wage discrimination, which remained relatively widespread in the early 1970s. Even in 1972, women in the full-time workforce earned only 76 per cent of the male average.

Substantial changes have occurred since this time with women’s workforce participation increasing significantly, as has the level of educational attainment of women, and their earnings. While in 1966, only around one third of working age Australian women participated in the labour force, by 2007, the participation rate of women had increased to 58 per cent. The increase in the participation rate among women with dependent children has been particularly striking. Indeed, over the two decades to 2003, the labour force participation rate among women in couple families where the youngest dependent child was less than five years increased by 20 percentage points to 52 per cent.

At the same time as women’s labour force participation rates have increased, the ratio of female to male wage rates has also increased substantially. Relative to male income, women were on average earning 88 per cent of the average male wage rate in 1977, which was 10 percentage points higher than in 1972. The ratio of female to male earnings declined slightly in the 1980s, since which time the gender pay gap has remained fairly stable. In fact, the gender pay gap

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11 Studies have generally found that labour force participation increases with wages up to a point, after which individuals prefer to have more leisure. As such, labour supply curves typically curve backwards, with the supply of labour declining with wages after wages reach a certain point.
13 Australian Bureau of Statistics (ABS), Labour Force, Australia, Cat. No. 6202.0
15 ABS Labour Force Survey, Cat No. 6203.0
seems remarkably resilient to change. A study undertaken to project the future path of convergence of male and female wages in Australia found that convergence will be slow with a substantial gap remaining still in 2031.\textsuperscript{16}

Today, while women account for over 42 per cent of the total Australian workforce, they continue to experience an average pay gap of over 16 per cent (2006).\textsuperscript{17} Females make up just 11 per cent of executives in companies which report ‘top earners’ (190 positions out of 1,718 positions), and hold only 7 per cent of top earner positions among the ASX200 companies (80 positions out of 1,136).\textsuperscript{18} The nature of the gender pay gap is clear in the distribution of men and women across income brackets (Graph 3.1). Women clearly dominate the low-income earning workforce, while there is a much larger share of males in the higher income brackets.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Graph3.1.png}
\caption{Income distribution by gender, 2006}
\end{figure}

Despite the persistence of the gender pay gap, we have now come to see dual income families as the most common household form, which is a far cry from the 1950s and 1960s. Furthermore, even with their seemingly disadvantaged labour market position, a recent study on levels of job satisfaction, including specific satisfaction with pay, found that females are more satisfied with their jobs than men over five of six job satisfaction measures.\textsuperscript{19} Only in relation to job flexibility – not pay – did females report lower levels of job satisfaction than males. Further to this, Kifle and Kler (2006) found that more highly educated women are more satisfied with their pay than men with a higher education, yet women are less satisfied with hours worked and job flexibility. The study did find, however, that females’ higher level of job satisfaction is being eroded over time.\textsuperscript{20}

\begin{thebibliography}{99}
\bibitem{Ibid2006} Ibid p. 6
\bibitem{KifleKler2006} Kifle, T. and Kler, P. (2006) \emph{Job Satisfaction and Gender: Evidence from Australia}. School of Economics, University of Queensland. p. 20
\end{thebibliography}
There are a number of differing theories as to why women report different levels of job satisfaction than men, which include:

- the role of expectations, with the historical treatment of women in the workforce causing women to have lower expectations;\(^{21}\) and

- a potential difference in work ‘values’.

Interestingly, no link has been found between personal and job characteristics and the difference in the level of job satisfaction among male and female employees.

### 3.3 Potential implications of a gender pay gap

The implications of a gender pay gap can be considered at a number of levels, including for an individual company or firm, or for the economy on the whole.

Where the focus is at the level of an individual company, closing the gender gap can be seen as an opportunity to:

- attract and retain good employees;
- save costs on recruitment due to higher retention rates;
- enable a more flexible and efficient workforce; and
- realise benefits associated with being seen as a good employer/corporate citizen.

On the contrary, when the gender pay gap is not reduced or removed, individual companies are likely to face higher costs and lower overall output. This has implications for the economy as a whole, with the accumulation of firm wide costs or forgone productivity gains having a large overall impact.

There are also a number of indirect costs to the Australian economy that are associated with the gender pay gap. These include:

- When women are discouraged from participating in the workforce because of the relative inequity between men and women’s pay, there is a cost associated with potentially higher rates of unemployment and underemployment. This would not only lead to lower levels of economic output across the economy, but it would also have the effect of putting pressure on the Commonwealth budget through increased welfare payments. Moreover, when women spend a period of time either unemployed or underemployed, they have less of an opportunity to accumulate adequate superannuation and so are more likely to require government support into old age.

• The cost of discrimination. Although this is difficult to quantify, one recent study quantifying the cost of workplace bullying provides some broad indication of the size of these types of costs. The study, undertaken in 2001, assessed the impacts of workplace bullying and suggested that it costs Australian employers between $17 billion and $36 billion a year.\textsuperscript{22} Costs to employers came in the form of redundancy and early retirement payouts, absenteeism among victims, formal grievance procedures, manager/supervisor time and productivity loss by victims. Some of these costs are similar to those that would be borne by employers in the case of gender discrimination.

• Another indirect effect of the gender pay gap is in reducing the level of population growth in Australia, and by doing so negatively effecting Australia’s potential long term economic growth. Indeed, sizeable barriers to women being able to successfully balance work and childrearing duties have been one of the factors influencing the downward trend in the population growth rate. Generally speaking, women in Australia are not having as many children as they would like to have, which suggests the existence of such barriers.\textsuperscript{23} Studies have found that factors that influence individuals’ work and family decisions include financial constraints, labour market constraints, industrial/workplace constraints, partnership difficulties and gendered assumptions about childbearing, childrearing and the domestic division of labour.\textsuperscript{24}

Falling levels of fertility combined with Australia’s ageing population has meant that there has been a sizeable increase in the dependency ratio of non-workers to workers. This has meant that there is a rapidly expanding share of the population that are not productive, which is an increasing resource-drain on those of working age. By 2021 the number of people over the age of 65 years is projected to outstrip the number under 15 years. Any factors that directly or indirectly reduce the size of the future labour force, including barriers to females’ productive participation, can negatively affect economic growth and prosperity into the future.

\textsuperscript{22} Sheehan, M., McCarthy, P. Barker, M., and Henderson, M., (2001). \textit{A Model for Assessing the Impacts and Costs of Workplace Bullying}. School of Management, Griffith University. p. 2


Literature review - factors underlying the gender pay gap

Decomposing or explaining the gender pay gap has been the topic of significant research over the past 40 years. A number of complex and interrelated factors have been found to affect the gender pay gap to varying degrees. The extent to which changes in these factors explain movements in the gender pay gap, and potential economic activity, occupies continuing research.

The earliest work into the gender pay gap was undertaken by Blinder (1973) and Oaxaca (1973), and through this work a technique was developed to decompose the gap. Many studies since have utilised this technique, termed the Oaxaca-Blinder decomposition. This method divides the gender pay gap into several effects, which stem not only from discrimination on the basis of gender but also from characteristics that differ between males and females. Later studies combined the Oaxaca-Blinder decomposition technique with the Heckman selection model, and by doing so was able to remove sample selection bias.

This literature review draws on recent work by Walby and Olsen in understanding the gender pay gap. Walby and Olsen decompose the gap into two broad factors, these being:

- skills deficits, which includes lower levels, returns and access to education and training for females; and
- market rigidities, which includes labour force segregation by sex, insufficient flexibility and support to allow work/life balance, the negative impact of policy and legislation, and discrimination.

Recent work in Australia by the Equal Opportunity for Women in the Workplace Agency (EOWA) published in the Census of Women in Leadership, identifies additional factors that may be contributing to the gender pay gap in Australia, including:

- women’s lower share of discretionary payments such as overtime;
- the impact of family responsibilities;
- the lack of suitably qualified mentors and champions for women in their workplaces;
- the prevalence of limiting gender stereotypes; and
- in some cases, outdated ways in which remuneration is calculated.

29 Equal Opportunity for Women in the Workplace Agency (2006), Australian Census of Women in Leadership, p. 2
These factors are discussed below. It is important to note that while we discuss the factors relating to the gender pay gap independently, they are to varying extents, inter-related. This is where economic modelling has an important role to play, as it allows us to capture and understand the complex interactions.

4.1 Skill differentials

Part of the difference between men and women’s pay can be explained by differing skill levels, with women typically having lower levels of education than males, and less experience and tenure (that is, number of years with current employer). Given the positive relationship between skills and earnings, women’s lower average level of skills translates into low earnings relative to males.

The following discussion considers three contributors to skills differentials between men and women, these being differences in:

- educational qualifications;
- levels of on-the-job training; and
- work tenure and experience.

In addition, this section considers differences in the returns to skills endowments earned by men and women.

4.1.1 Educational qualifications

According to the human capital theory, individuals make investments to improve their human capital so as to generate returns in the future, in the form of higher incomes. Education is one of the key investments in human capital an individual can make, and the returns to education are typically lagged and associated with career and wage advancement over time. The theory suggests that where women possess lower levels of qualifications than men, they are at an immediate disadvantage in the labour market, and face downward pressure on their ability to negotiate higher wages.

ABS data show that on the whole, fewer women possess non-school qualifications than men, with only 32 per cent of women holding non-school qualifications, compared to 40 per cent of males at working age (Graph 4.1). There are, however, marked differences across the age groups. Younger females, below the age of 30 years, are more likely to possess non-school qualifications than their male counterparts, while the opposite is true for people aged over 30 years. Interestingly, the disparity in the qualifications held by males and females increases with age, suggesting that there has been a reduction in barriers faced by females in attaining further education over time. Looking towards the future, if the trend of increasing female uptake of education continues, females may overtake males as the more highly educated gender on the basis of the share of the population with non-school qualifications.

As shown in Table 4.1, around a fifth of all males hold Certificate level qualifications making it the most prevalent form of qualifications held by men. By contrast, the most prevalent qualification for women is a bachelor degree. In fact, more females than males in Australia hold a university qualification (bachelor degree, graduate diploma or certificate or postgraduate degree), with 15.2 per cent of women holding a university qualification compared with only 13.5 per cent of men. Females also appear to be more inclined to obtain an advanced diploma and diploma level qualification than men.

Table 4.1 Share of population with non-school qualifications, by gender, 2006

<table>
<thead>
<tr>
<th>Non-school qualification</th>
<th>Share of male population</th>
<th>Share of female population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate degree</td>
<td>2.8%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Graduate diploma or certificate</td>
<td>1.0%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>9.7%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Advanced diploma or diploma</td>
<td>5.7%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Certificate</td>
<td>21.2%</td>
<td>9.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40.4%</strong></td>
<td><strong>32.3%</strong></td>
</tr>
</tbody>
</table>

Source: ABS Census 2006

There is significant empirical evidence to suggest that educational qualifications have a powerful effect on the likelihood of being in employment and the average productivity and pay level of those in employment. The positive relationship between education and wages was quantified in an analysis of a large-scale survey in the UK from 2001, which found that an individual who undertakes an additional year of full-time education will earn around 7 to 9 per cent more than someone who does not.

Mitchell and Breusch (2004) link educational attainment and rising participation rates among women in three ways, these being that:

education increases women’s potential earnings and therefore makes joining the labour force more attractive than not being in paid employment;

as educational attainment rises, the participation gap between men and women falls; and

there is an association of increased tertiary attainment level of women with the development of a politically skilled and articulate women’s movement in Australia that was able to lobby for a range of changes – such as childcare, equal employment policies – that created an employment environment that could sustain women’s participation over the long term.33

4.1.2 On the job training

An individual’s skills endowment can be increased through employer-based training. In 2006-07, nearly a third of all people aged between 25 and 65 years in paid employment participated in a work-related course.34 Data from 2001 shows that while 71 per cent of working aged males in or marginally attached to the labour force participated in on-the-job training in the prior 12 months, only 67 per cent of women undertook training.

Factors that influence the provision of employer-based training include:

- employment status, that is if the person is employed part-time or full-time, with people 77 per cent of employed full time participating in on-the-job training in Australia in 2001, which was four percentage points higher than the participation rate for people employed part-time;35

- if a person is employed permanently or on a contract;

- company/organisation size, with larger employers more likely to provide structured training in Australia (98 per cent of companies with 100 or more employees provided structured training to its workers in 2001-02 compared with only 39 per cent of firms with less than 20 employees);36

- sector, with the public sector more likely to provide structured training to its employees;

- occupational group, with individuals employed at a higher occupational level more likely to receive on-the-job training, and people employed in occupations where flexible work arrangements including casual and part-time work are more prevalent, typically receive less on-the-job training;37

34 ABS (2007) Adult Learning, Australia, 2006-07, Cat. No. 4229.0
• industry, with Australian employers in the government administration and defence, electricity, gas and water supply, and education sectors having the highest incidence of structured training provision by employers in 2001-02; and

• gender, with employers providing different levels of training to their male and female staff (as evidenced above).

A 1996 British study of the determinants and effects of employer-provided and work-related training courses leading to a formal vocational qualification found that men had a substantially higher probability than women of undertaking such training and that the effect on earnings was greater for men than for women.38

The labour market experience of Australian women, discussed below, places women heavily in categories of work that appear less likely to receive employer-based training. This places them at an immediate disadvantage in relation to realising higher commensurate wages.

4.1.3 Tenure and experience

In addition to formal education and on-the-job training, time spent in employment and tenure with an employer makes a positive contribution to an individual’s human capital. This is because an individual’s productivity increases as they have more employment experience and when they have high levels of firm-specific knowledge and skills.39

As is the case with education, acquiring additional human capital through work experience and tenure has a positive on an individual’s wages. All other things being equal, the longer the duration of employment experience and tenure with an employer, the more skills are accumulated, resulting in an individual having a stronger negotiating position in relation to wages. Differences in the average number of years of work experience and tenure with an employer between men and women is, therefore, one of the main factors underlying the gender pay gap.

Descriptive statistics show that despite being of similar age, women have fewer years work experience, having spent more time out of the labour force than men, which is mainly a result of interruptions in women’s work histories due to their responsibilities to care for children and close family.40 In addition, women who move to a new employer following the birth of a child or time outside the workforce, will show short-term declines in productive output while firm-specific knowledge and skills are being acquired.

Graph 3.1 shows that women have, on average, fewer years of work experience than males across all age categories, with the gap increasing with age. Across all age categories, the average level of work experience for men is 25 years, which is nearly seven years more than the average number of years of work experience for women.

Table 4.2 shows that across all levels of education, women have less work experience than men. The largest gap is for individuals with less than Year 12 education, or those with a technical qualification, where women have on average nine years less work experience than men. By contrast, women with only Year 12 education have on average 2.5 years less education than men, while those with a bachelor degree have only an average of three years less experience.

Women also typically have fewer years of tenure with their current employer. On average, women have worked with their current employer for six years, which is one year less than men. Graph 4.3 shows that a third of all women in the workforce have had less than one year of work experience, which is four percentage points higher than males. By contrast, only 19 per cent of women have over 10 years of work experience, compared with 24 per cent of men.
4.1.4 Returns to investment in human capital

Where the wage returns to education and workplace experience are gendered, the human capital theory does not stand and more education or experience does not necessarily mean more income. A gendered return to education in favour of men implies that, all else equal, the same qualification undertaken by both sexes will see the male attract a higher income compared to his female counterpart.

A recent study by Kidd and Shannon (2002) that attempted to project the future trend in the size of the gender wage gap of 25-64 year old Australians up to 2031 paid particular attention to whether the increase in education levels of women female and a greater overall commitment by women to the labour market would help reduce the gender pay gap, and even cause male and female wages to converge. The study found that despite substantial increases in the female labour force participation rate and female educational attainment, the gender wage convergence will be slow to 2031 with the gap closing only slightly from its level in 1996. The study found that while the projected increase in female skill acquisition will aid wage convergence, it will not be sufficient to close the wage gap substantially. Moreover, a 10 to 20 per cent increase in female returns to education or experience will not substantially change the projected path of convergence.

Another study undertaken comparing the gender wage gap in four countries, Australia, Britain, Japan and Germany, found the relative gender wage gap between countries cannot be explained by human capital endowments alone. Rather, the major source of differences in gender wage gap is the rewards to these endowments. Relative to the British, Australians were found to be rewarded less for their human capital endowments, including education, tenure with current employer and potential experience outside the current firm. The study concluded that country-

42 Ibid pp. 171-173
specific factors, particularly the institutional environment were important in explaining the differences in rewards and therefore, the gender pay gap.  

Research undertaken since the 1980s has found that returns to education and to experience are a key contributing factor to the gender pay gap. In 1982, Haig found that returns to schooling and experience are lower for women than for men. When Haig adjusted the raw wage gap of 46 per cent for differences in endowments of men and women, the wage gap only decreased to 32.5 per cent. In 1983, Chapman and Miller found that if women received the same returns as men, wages unambiguously increase across a sample of 20 industries.

While existence of gendered returns to human capital can only be established with any degree of rigor by undertaking econometric analysis, which allows other factors influencing men and women’s pay to be controlled for, a broad understanding can be gained by looking at the differences in:

- the income level by educational qualifications for men and women; and
- employment rates by educational qualifications for men and women.

These are discussed in turn below.

**Education and income**

Looking at the income earned by males and females with different educational qualifications (without controlling for other differences) shows that for all educational levels, women earn less on average than men (Graph 4.4). The largest relative gap is for women who do not have a Year 12 education, who earn nearly 50 per cent less than similarly educated males. The more education a woman has, the smaller the relative gap, such that women with a doctorate or masters degree earn 27 per cent less than males with the same level of qualification.

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44 *Ibid*, p. 175
47 It is important to note that causality cannot be attributed when other factors have not been controlled for – only when empirical analysis is undertaken can it be confirmed whether or not differences in returns to education explain the gap between men and women’s pay by education level.
**Education and labour market status**

Studies have also used gaps in employment rates between men and women with similar qualifications as an indicator of gendered returns to education. Graph 4.5 and Graph 4.6 show that across all levels of education, the share of women with full-time employment is significantly lower than that of males with the same level of education. The gap is largest for women with lower levels of education.

**Graph 4.5 Labour force status of women, by highest educational qualification, 2007**

It is important to note that without empirical analysis, it is not possible to conclusively state that the returns to education in Australia are ‘gendered’. In particular, the higher share of women than men in part time work across all levels of educational attainment, may be reflective of females’ preferences, rather than constraints on their ability to occupy full-time positions. These factors cannot be isolated without more thorough analysis, as we do in Section 5.
Labour market rigidities

Labour market rigidities, where the market is unable to allocate resources efficiently and effectively to achieve the most optimal allocation, are another key factor underlying the gender pay gap in Australia. There are a number of different sources of market rigidities that are preventing Australia from realising the full capacity of the female working-age population, including:

- labour market discrimination;
- labour market segmentation, which includes:
  - part-time work;
  - occupational segregation; and
  - industrial segregation
- interruptions to women’s work histories; and
- the policy and legislative environment.

Each of these factors is discussed in turn below.

4.2.1 Labour market discrimination

Discrimination could be said to be a form of market failure as it prevents women from reaching their full economic potential. Moreover, it reduces the measurable output of women that is recognised by companies at the firm-level and by the economy through unequal returns to human capital endowments.
Overt examples of discrimination are relatively well documented, and the number of cases has fallen in Australia over time. However, the existence of more behaviourally-embedded and discrete discrimination is evident mainly through wage gap decomposition studies – namely the finding of unequal returns based on gender.

As discussed in the previous section, studies continue to find that there are differences in the returns to human capital endowments, including education, training and labour force experience. Many studies attribute this ‘unexplained’ difference in returns to discrimination against females. In other words, studies conclude that lower rates of return to education and experience are indicative of discrimination in the workplace. Langford (1995) found that 24 per cent of the wage gap was a result of human capital differences, while 50-60 per cent was due to employer discrimination.

In Australia, the recent Senate Committee Report on the effectiveness of the Sex Discrimination Act 1984 found that:

"the Act has had an impact on the most overt forms of sex discrimination but has been less successful in addressing systemic discrimination."

Systemic discrimination refers to policies, practices or patterns of behaviour, which are absorbed into the institutions and structure of society, that create or perpetuate disadvantage for a particular group. The Australian Human Rights and Equal Opportunity Commission (HREOC) points to the gap between women and men’s earnings due to the lack of value ascribed to what is commonly characterised as ‘women’s work’, as an example of system discrimination.

A number of wage decomposition studies have found evidence of more covert forms of sex discrimination. Hosking (2007) found that in Australia, women who have recently given birth and have returned to work on a full or part-time basis earn significantly less than other women who have not taken a break in their career to have a child. Furthermore, the study showed that mothers who change employers after the birth of a child experience a fall in their earnings relative to other women who do not have a child and to mothers who return to work with the same employer and who to not have another child.

4.2.2 Labour market segmentation

Labour market segmentation, or differences in the share of males and females in segments of the labour market, is also a rigidity that is pervasive in the labour market. This characteristic of the labour market partly explains the gender pay gap, given that women tend to occupy segments of the labour market that are typically lower paid.

50 Standing Committee on Legal and Constitutional Affairs (2008) Effectiveness of the Sex Discrimination Act 1984 in eliminating discrimination and promoting gender equality, Department of the Senate, Australia
52 Ibid, p. 29
Labour market statistics show that women and men are not equally represented on a number of levels, including across occupations, industry, and in the break down of part-time and full-time work. That women are ‘segmented’ into particular industries and occupations, and are more likely to be employed on a part-time basis than men. Each of these factors is discussed in more detail below.

**Part-time work**

Considerable differences exist in the employment status of men and women in Australia. As at July 2009, 16 per cent of employed males held part-time roles, compared with 45 per cent of women. Reflecting this, women comprised 70 per cent of the total number of people employed part-time, but only 35 per cent of the full-time workforce.

The share of women working part-time is higher than the share of males across all age categories (Graph 4.7). For younger and older women in employment, the share working part time is the highest, at around 80 per cent. The largest differential between men and women is for those aged 35-44 years, where men working part-time account for only seven per cent of all males employed, compared with over 40 per cent of women of the same age that work on a part-time basis.

Graph 4.7 Share of employed persons working part-time, by age category and sex, 2008-09

A number of studies, both from Australia and internationally, point to the differences in returns to full and part-time work as a contributing factor to the gender pay gap. In the UK for example, several studies have found a wage penalty for working part-time. Institutional theories of the labour market suggest that such differences due to part-time workers producing a sub-optimal level of output. According to these theories, the labour market is generally structured around an ‘ideal worker’ who maintains a continuous, full-time attachment to the labour force and is able to prioritise paid work above all other commitments. Part-time work is contrary to this idea of the ‘ideal worker’. As such, the theories indicate that the part-time labour market will be made up of jobs that are poorly paid and offer few opportunities for advancement. Applying this

theory to the Australian labour market where majority of employed females work part-time would suggest that the bulk of the female workforce are poorly paid, thus contributing to the explanation of the gender pay gap.

The Australian experience appears to support that of the UK and the institutional theories of the labour market in that women’s segmentation into the part-time sector is associated with lower levels of pay, thus enhancing the wage differential in favour of men. Graph 4.8 shows that 15 per cent of employed males are in the lowest income quintile, and of these, around three quarters (or 11 per cent of employed males) are employed part-time. Overall, men comprise only a third of all employed persons in the lowest income quintile, but three quarters of those in the top income earning quintile.

Graph 4.8 Male workforce employed part-time vs. full-time, by individual income quintile

By contrast, around 30 per cent of employed women are in the lowest income quintile, and part-time employees account for most women in this group (Graph 4.9). More than 50 per cent of all employed women, and 86 per cent of women employed part-time are in the lowest two income quintiles. Interestingly, only 10 per cent of women employed are in the top income earning quintile, compared with 30 per cent of men.

Source: HILDA Wave 7, 2007
Recent research by Hosking, *The Effects of Motherhood and Job Transitions on Female Earnings in Australia*,\(^{55}\) suggests that the part-time/full-time segmentation may actually have the effect of reducing the gender pay gap in Australia. The findings of the study were contrary to predictions that part-time work in itself has negative implications for wages and that the transition to part-time employment by Australian mothers following a birth entails immediate downward mobility.

This research used the HILDA dataset and found that the earnings of Australian mothers who change from full to part-time hours after the birth of their child earn 13 per cent more than mothers who remain working part-time or remain full-time.\(^{56}\) This premium exists even when the impacts of casual pay loadings are controlled for. These results are likely to reflect differences in the nature and regulation of part-time work in Australia, specifically:

- Australia has relatively strong rights for the part-time workers;
- the female wage distribution in Australia is condensed; and
- mothers will typically self-select into part-time work.

Australian Research by Booth and Wood using HILDA also shows that there is a pay premium for transitions into part-time work and a penalty for movement back into full-time work among female employees in Australia.\(^{57}\)

### Occupational segregation

Segregation by occupation is another labour market rigidity that has been found to contribute to the gender pay gap. Occupational segregation occurs when women are segmented into lower...
income attracting occupations. As is evident by Graph 4.10, there is a clear difference in male and female employment by occupation. Females dominate the clerical and administrative, sales, and community and personal service occupational classes. Males, on the other hand, dominate the technicians and trades, machinery operators and drivers, and labourers occupational classes.

Different occupational classes also face varying rates of pay, with occupations dominated by women typically being lower paid. As such, occupational segregation has been often cited as a key factor underlying the gender pay gap. Australian research has found some evidence to support this, with Wooden (1998) showing that the component of the wage differential attributable to occupational distribution was 3.9 percentage points of an 8.9 per cent earning differential. One possible explanation that Wooden put forward for this differential was that women self-select into lower paying occupations because of the offsetting work conditions.

When we look at the income distribution for women within occupations – intra-occupational effect – we can gain greater insight as to how such labour market segmentation contributes to the gender pay gap. Disaggregation of occupations by earnings based on ABS data shows that females are more heavily concentrated in the lower income brackets than males across all occupations. This is particularly pronounced within the occupation of clerical and administrative workers and sales workers. This suggests, even in the occupations when females dominate in quantum, they appear relatively less able to negotiate higher levels of pay.


Occupational segregation can be partially explained by differences in education levels. Men are more likely than women to hold certificate type qualifications that lead to manufacturing, construction work, mining and transport. By contrast, women that do not have university qualifications are much less likely to hold certificates and diplomas, meaning that women will be more likely to be placed in the lower skilled jobs both within an occupational class and across occupations.

**Industry segregation**

Industry segregation occurs when females and males are more concentrated in different industry sectors. This can be a factor underlying the gender pay gap, particularly when women’s employment is concentrated in lower paid sectors. Graph 4.11 shows that males dominate the mining; manufacturing; electricity, gas, water and waste services; and transport, postal and warehousing sectors, whilst women comprise the majority of the education and training, and healthcare and community services sectors.

![Graph 4.11 Number of persons employed by industry sector, May 2009](image)

Different industry sectors face varying rates of pay, with some industries dominated by women typically being lower paid. In addition, the gap between male and female pay also differs by industry sector. Indeed, ABS data shows that in Australia, the industries with the largest gender pay gaps include the mining; transport, postal and warehousing; finance and insurance; and health and community services sectors. The industries where the gap between male and female earnings is the smallest are the accommodation and food services; retail trade; and public administration and security sectors.  

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Taking the mining industry as an example of industry segmentation, we see that women account for approximately 18 per cent of the mining workforce, compared to 42 per cent of the total Australian workforce. The numbers of women in operational roles is particularly low, with women comprising only seven per cent of the technical professional workforce and three per cent of the site-based workforce. With regard to remuneration, a considerable gender pay gap currently exists for mining technical professionals at all levels of responsibility, commencing at three per cent for graduates and escalating to 32 per cent for senior managers.

While Australia’s mining sector is experiencing significant growth, the following barriers to women’s employment and advancement in the sector have been identified:

- the tendency for some senior male managers to promote people more like ‘themselves’;
- that females are subject to overt sexual harassment and sexist verbal put-downs at work;
- the perception by some that females are more likely to have children and therefore it was a risk to invest in their professional development;
- the perception by some that women overall are less competent in senior roles;
- some males resenting the idea of reporting to a female manager; and
- females underselling themselves in their careers.

**Employer type – private sector, government and non-government organisations**

The gap between male and female pay also varies distinctly between the private sector, government and non-government organisations (NGOs). Graph 4.12 shows the distribution of male and female public sector employees over individual income brackets. What is most striking is that males comprise a significantly larger proportion of higher income earning groups. Looking at the income distribution across the public sector between males and females shows that a somewhat larger share of males in the public sector fall into the higher income earning brackets than women. Indeed, in the public sector, 36 per cent of males earned over $1,300 a week in 2006, compared with only 16 per cent of women. However, the share of women earning higher incomes is considerably larger than in the private sector, with only eight per cent of women employed by private companies earning over $1,300 a week in 2006.

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63 The AusIMM Remuneration and Employment Survey (2008)
Graph 4.12 Share of public sector employees, by individual gross income, by sex, 2006

Source: ABS Census 2006

In the private sector there is an increasing proportion of male workers that are paid higher incomes, and a declining share of women that earn high incomes. This possibly reflects the ‘glass ceiling’ effect which is more prevalent in the private sector. Where the gender pay gap gets wider at the top of the wage distribution and where women face a barrier to further advancement beyond a certain level, it is known as a ‘glass ceiling’.

Graph 4.13 Share of private sector employees, by individual gross income, by sex, 2006

Source: ABS Census 2006

A study by Joo Kee (2005) revealed the existence of a ‘glass ceiling’ in the Australian private sector, supporting the descriptive statistics above. The study found that while the wage gap was relatively constant over all income groups within the public sector, within the private sector, the wage gap becomes more pronounced at higher levels of income – where the ‘glass ceiling’ is reached. For the private sector, this means that even after controls of various

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occupation and industry are put in the place, the gender gap continues to accelerate at the upper
tail of the wage distribution, hence a glass ceiling.\textsuperscript{66}

Joo Kee posits that the absence of a glass ceiling in the Australian public sector may be credited
to the more family-friendly arrangements, which allow females to participate as well as to
commit to their careers. Such family-friendly arrangements include greater flexibility in parental
leave and a higher accessibility to childcare.\textsuperscript{67} Joo Kee suggests that where working conditions
are supportive of women, women may be less inclined to seek out the less demanding jobs,
which can put downward pressure on their ability to generate skills, grow their capacity and
attract higher wages.

4.2.3 Interruptions in work history

Labour market rigidities mean that individuals are often penalised if they change their
workforce status, occupation or industry.\textsuperscript{68} For women, such rigidities are apparent when
attempts are made to change the characteristics of their engagement in the workforce,
particularly through combining work with their child rearing or caring responsibilities.

Enhancing women’s workforce participation by reducing labour market rigidities is of
increasing importance to Australia’s economic positioning. This includes overcoming normative
and structural constraints and inflexibility preventing many women from finding suitable
employment arrangements and from moving into and out of, the labour market without undue
penalty in response to changes in caring duties over the life course. The existence of constraints
and the degree of workforce mobility faced by women, particularly around child bearing and
rearing time, has the potential to represent a significant market failure and contributing factor to
the gender pay gap.

In addition, interruptions to women’s work histories have the effect of reducing their
accumulated superannuation. This is particularly important given that women tend to live longer
than men, and as such, are likely require greater retirement funding. A recent ABS survey into
employment arrangements, retirement and superannuation in Australia found that the median
superannuation balance for women was around $18,500 in 2007, which was 40 per cent lower
than the median super balance for men.\textsuperscript{69}

Moreover, among women that are not retired, around one third have less than $10,000 in
accumulated superannuation, compared with a quarter of males, while 11 per cent of women
hold more than $100,000 in super, compared with 20 per cent of men. A large part of these
differences is attributable to the interruptions to women’s work histories, which means they
have fewer years than men to accumulate superannuation.\textsuperscript{70}

\textsuperscript{66} Ibid. p. 18
\textsuperscript{67} Ibid. p. 19
\textsuperscript{68} Smyth, C., et al. (2005). Op cit, p. 8
\textsuperscript{69} The average superannuation balance for females was just under $52,300, which was also 40 per cent lower than for
2007, Cat. No. 6361.0
\textsuperscript{70} For a more comprehensive analysis of the differences in superannuation savings between men and women, the
reasons for this, and policy recommendations, see Richardson, D. (2009) ‘The impact of the recession on women’,
The Australia Institute Paper, No. 3. Available from:
While there has been an increase in the proportion of women with dependent children entering the labour market, Australia shows a steeper decline in employment rates for women with children compared to other OECD countries. The fall in participation is among the highest of all the 23 OECD countries. For example, the employment rate for Australian women with two children was 43.2 per cent in 2002, compared to the OECD average of 61.9 per cent. These figures suggest that Australian women with children may be facing relatively greater constraints to their workforce participation than women of other similarly advanced developed nations. Alternatively, this difference may be explained by:

- Australian women’s greater propensity to prioritise family caring responsibilities over work;
- men in Australia less likely to take time off work to assume caring responsibilities than in other developed countries; or
- cultural factors.

Much research has been done on the issue of ‘choice’ and labour market participation in Australia. Hakim’s Preference Theory contends that the vast majority of women are able to exercise ‘genuine choices’ about reconciling work-family conflict. Hakim identified three distinct ‘packages’ of predispositions and work-lifestyles preferences, which feature distinct priorities, values and interests. She argues that these predispositions are a key determinant of women’s labour market behaviour.

The economic theory of compensating amenities supports this notion of ‘genuine choice’ by arguing that all employees are able to negotiate a package of financial and non-financial rewards and that the ability of employers to attract staff is affected by the agreeable or disagreeable conditions attached to a job, such as flexibility or location. For employed mothers the theory of compensatory amenities proposes that mothers have unrestricted access to family-friendly job benefits, but because such benefits are costly for employers to implement, mothers who utilise these conditions will forego some earnings.

In other words, a portion of their lost wages is compensated by the benefits or amenities they receive. However, research suggests that access to such family-friendly benefits is not readily available to all mothers and that it is often only female employees in higher status jobs who have access to family-friendly provisions. This association may reflect the desire by employers to offer family-friendly benefits to mothers in higher status jobs as a means of attracting skilled staff, reducing turnover and increasing organisational loyalty.

73 Home-centred women, Adaptive women, and Work-centred women
Disputing the idea of ‘genuine choice’, ‘compensation’ and Preference Theory, are researchers who do not believe that due attention has been given to the role of circumstantial constraints in determining women’s workforce participation. McRae, for example, has identified both structural and normative constraints that prevent many women form acting on their preference.\footnote{McRae, S. (2003). “Constraints and choices in mothers’ employment careers: a consideration of Hakim’s Preference Theory”, \textit{British Journal of Sociology}, Vol. 54 (3)} Structural constraints include:

- job availability;
- the cost and availability of child care;
- differences in family friendly work arrangements available to men and women; and
- the differences in opportunities afforded to people from different social backgrounds (i.e. educational level, early pregnancy, health, and culture).

Normative constraints include:

- women’s identities;
- gender relations in the home; and
- partners’ attitudes, including in particular the extent to which male partners (or other family members) are willing and able to assume some caring responsibilities and by doing so enable women to increase their labour force participation.

Other studies suggest that women’s orientation to paid work changes over time, which is reflected in changes to individuals’ occupational status and position in the life course.\footnote{Fagan, C. (2001). “Time, Money and the Gender Order: Work Orientation and Time Preferences in Britain”, \textit{Gender, Work and Organisations}, 8(3). July 2001}

It is important to highlight that these theories of women’s participation in the labour market and how this interacts with caring responsibilities all focus on women’s choice, and do not recognise that men also have a choice in taking on caring responsibilities, and typically also have access to family friendly work provisions. This is important, as they tend to reinforce the stereotypically role of woman as carer, and do not accommodate or support a shift towards men taking on more caring responsibilities.

An indication of the existence of structural constraints preventing Australian women from exercising their labour participation preference was found in a study using HILDA data and interviews of mothers undertaken in 2005. The study found a mismatch between women’s work preferences and their actual work arrangements. Half of the women with children in full-time employment would like to work fewer hours, even with the reduction in income taken into account. Conversely, the data also showed that a quarter of women in part-time employment would like to work more hours.\footnote{Smyth, C., et al. (2005). \textit{Op cit.} p. V}
In addition to these structural workforce mobility constraints are the more normative constraints relating to childbirth and rearing. The theory of New Home Economics proposes that motherhood makes employed females less productive because the caring demands of children limits the time and energy mothers have left to expend in paid employment.\(^79\) An alternative perspective is that employers discriminate against mothers with young children and this effects mothers’ earnings and opportunities for career development.\(^80\)

Much research suggests that many parents, particularly mothers, are experiencing difficulties and feelings of time pressure when trying to combine work and family. Indeed, ABS survey data shows that 85 per cent of employed women say that they always, often or sometimes felt rushed or pressured for time, the main reason being the balancing of work and family responsibilities.\(^81\)

Time-use research performed in Australia has shown that working mothers are the most time-pressured of all demographic groups.\(^82\) A number of workplace measures contribute to feelings of time-pressure and enhance tensions between work and caring responsibilities.

These include:

- rigid organisational cultures;
- long hours;
- variable start and finish time which are under the employer’s (rather than employee’s) control;
- compulsory overtime at unpredictable intervals; and
- with limited notice, unsympathetic supervisors and poor quality part-time schedules.\(^83\)

Recognising the benefits to workforce participation, retention and morale, many employers are instituting family benefits for their employees to overcome such work-life balance tensions (see Section 6 for case studies of companies which have undertaken these actions). Family benefits that ease the pressure between work and family demands include:

- paid leave;
- flexi-time or rostered days off;


work-from-home arrangements; and

• time in lieu for working additional hours.

Such workplace flexibility can act to mitigate against constraining factors preventing women from acting on their preferences. However, it is important to note that differences in family friendly work practices available to men and women may also be acting as a constraint on men taking on more caring responsibilities, and by doing so allowing women to increase their workforce participation.

Significant improvements have been made in recent years, particularly in the area of paid maternity leave. A recent survey by the Equal Opportunity for Women Agency (EOWA) shows that in 2008, over 50 per cent of surveyed organisations offered paid maternity leave, compared with only 36 per cent five years earlier.84

At the Productively Commission Inquiry into Paid Maternity, Paternity and Parental Leave, the CEO of the Diversity Council of Australia Nareen Young recently argued that there is a positive relationship between paid maternity or paternity leave and productivity. Specifically:

“Leading employers have long recognised the benefits of paid maternity leave to productivity and business which include attracting and retaining talented employees; protecting the significant investment in training and developing employees; improving staff retention and reducing turnover; and supporting family-friendly practices in workplaces as crucial to keeping skilled workers.”85

In addition, Young argued that paid maternity and paternity leave can have benefits including:

• a strong level of commitment and engagement from employees to achieve organisational goals;
• increased staff referrals;
• high job satisfaction; and
• higher satisfaction with work-life balance.86

Evidence from the Equal Opportunity for Women in the Workplace Agency supports this, showing that organisations with paid maternity leave have a higher average retention rate than organisations without paid maternity leave, at 67 per cent compared with 56 per cent.

4.2.4 Policy and legislative environment

86 Ibid p. 404
The concept of equal pay for women and men has been on the policy and legislative agenda in Australia for the past half-century. It began with the removal of the Commonwealth Government’s marriage bar in 1966 and the subsequent lifting of similar bars for State public services. In 1969, the Commonwealth Conciliation and Arbitration Tribunal accepted the principle of equal pay for men and women undertaking the same work.

In 1972 this was extended to equal pay for work of equal value, a wider concept and in 1974 a single minimum wage was introduced. Beginning in 1987, under the later versions of the Prices and Incomes Accord between the Labour Government and the Australia Council of Trade Unions (ACTU), there was a shift away from a centralised system of wage determination to one that focussed more on enterprise agreements. To complement this, the Sex Discrimination Act 1984 and the Workplace Relations Act 1996 make it illegal to discriminate against someone on the basis of gender. In parallel, the Affirmative Action (Equal Opportunity for Women) Act 1986 was revised in 1999 to the Equal Opportunity for Women in the Workplace Act 1999.

Despite these advancements, legislation does not exist making family-friendly entitlements compulsory beyond a minimum level. While Australia has unpaid parental leave provisions outlined in the Workplace Relations Act (1996), it is one of only two OECD countries that currently has no statutory paid maternity leave. However, the Commonwealth Government announced in the 2009-10 Commonwealth Budget that this situation will change in 2011 when the new paid parental leave scheme will be introduced (presuming the legislation is passed in parliament when it is introduced, which is likely to occur in 2010). The Government indicated that the Paid Parental Leave (PPL) will:

- provide up to 18 weeks of pay at the prevailing Federal Minimum Wage rate for the primary carer;
- be available to the primary carer provided they have been engaged in work continuously for at least 10 of the 13 months prior to the birth or adoption of the child, with the total amount of work in this period equivalent to a minimum of 330 hours;
- only be available to individuals with a taxable income of less than $150,000;
- cover employees, including casual workers, contractors and self employed persons;
- allow the PPL entitlement to be transferred to another caregiver if the primary caregiver returns to work before the full 18 weeks of entitlements have been paid; and
- not allow people that participate in the scheme to receive the baby bonus, or for the duration of the PPL period, receive the Family Tax Benefit Part B.87

The Productivity Commission Inquiry Report on Paid Parental Leave: Support for Parents with Newborn Children highlighted that the introduction of a paid parental leave policy would enhance workforce participation by providing an incentive for women to be in the workforce prior to giving birth, and increase the likelihood that they would return to their workplace after

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the parental leave period. The Commission also argued that it would promote gender equity and work-family balance by normalising the idea that many men and women have simultaneous work and care roles.

While the Commission estimates that its model will result in a six-month increase in lifetime participation of women on average, a number of commentators suggest that workforce participation is already increasing and that these increases are due to other factors, such as increased completion of higher education by women and the growing individual preference to combine work and family duties.

A question that is posed is whether reform to the existing system of family benefits to remove barriers to women’s workforce participation would be more efficient or effective compared to the introduction of paid parental leave. The University of Sydney academic Elizabeth Hill argues that the high effective marginal tax rate (EMTR) faced by second earners, who are not only taxed for their additional income but also face withdrawal of benefits as their income increases, provide a disincentive for part-time working mothers to increase their hours at work. She posits that this may distort the decisions of women who may otherwise choose to work more.

Further to this, Peter McDonald, a demographer at the Australian National University, cites the current system of family benefits as representing a disincentive for the second earner in the family, usually the mother, to work. This is because it provides incentives for one parent to stay at home full-time or for both parents to work full-time, with the greatest value obtained by one parent staying at home. McDonald argued that the existing tax system benefits single-earner couple families to a greater extent than dual earner couples, thus reinforcing traditional gender roles. Additionally, mothers with two or more children are often worse off when they work full-time rather than part-time suggesting “that the combination of increasing child care costs and a reduction in other forms of assistance to families with children acts as a strong deterrent to full-time work for mothers.”

While the comparative impacts of the existing tax system and proposed paid parental leave are still under debate, a number of studies have considered the relative impact of changes in legislation on the gender pay gap over time.

The Centre for Social Research at the Australian National University studied the impact on women’s labour force participation of four major institutional and legislative changes. These changes were the:

88 Productivity Commission (May 2009), Paid Parental Leave: Support for Parents with Newborn Children Inquiry Report, Australian Government Publisher, Canberra
removal of the Commonwealth Government’s marriage bar in 1966 and the subsequent lifting of similar bars for State public services;

introduction of equal pay legislation for women;

dismantling of overt labour market barriers; and

implementation of the Sex Discrimination Act, 1984.

The study finds a clear link between increases in the labour force participation rate among married women following the lifting of marriage bars in public sector employment.94 This period between 1966 and 1973 corresponded with a growth in female workforce participation of approximately 10 per cent.95 The impact of this change is observable through the lengthening of duration of work, as well as an increase in the number of women returning to work after the prime childbearing years, which showed a steeper rise, in years after 1966. This may be particularly due to the improvement in wages that made paid work more attractive.

The legislative changes of the 1980s involved:

starting the process of improving maternity leave;

protecting women’s employment continuity during maternity and early childhood; and

ensuring similar benefits and leave conditions for part-time workers as full-time workers.

This study found that these changes most likely contributed to fall in the number of work interruptions for women, and a reduction in the duration of these breaks in employment.96 Importantly, the study also attributes the relatively small decline in participation during childbearing years to the availability of part-time work.97

Policy changes that saw a more decentralised wage determination system evolve in Australia, and allowed greater negotiation over family-friendly initiatives in the workplace level, is argued to have resulted in a situation where such benefits are not universally available. The extent to which wage decentralisation applies is heavily dependent on the industry sector and an individual’s employment status. As a result, many women find themselves in a weak bargaining position or compelled to organise their working life around their family responsibility and not around their ultimate working preferences.

Arguing against such negative impacts of a decentralised wage determination system is a comparative study of Australia, Britain, Germany and Japan. The study found that decentralisation of labour market and wage determination institutions has not disadvantaged women working 30 hours or more per week.98 In fact, it suggests that if Australian women

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94 Ibid, p. 16
97 Ibid p. 17
worked under Britain’s more decentralised wage determination system, they would be even better off.
5 Quantifying the gender pay gap in Australia

This section provides estimates of the size of the components of the gender pay gap in Australia, and the possible implications of this for broader economic output. This section firstly describes the data and methodology used, details some of the key summary statistics, presents the decomposition model results, discusses the implications for Australia’s productivity, and finally presents implications of these results for the Government’s productivity and equal opportunities for women in the workplace agendas.

5.1 The Household Income and Labour Dynamics in Australia Survey

In this study KPMG has used the Household, Income and Labour Dynamics in Australia (HILDA) Survey data, a dataset which is collected and published by the Melbourne Institute in conjunction with the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA). The HILDA Survey is a household-based longitudinal survey which began in 2001, with data collected annually. It pays particular attention to family and household formation, income and work.

KPMG utilised the most recently published data, which is from the 2007 wave of the survey. HILDA has the following features:

- it collects information about economic and subjective well-being, labour market dynamics and family dynamics;
- each wave includes special questionnaire modules, such as the wealth module included in the 2002 and 2006 surveys which has detailed information on household wealth;
- a sample of over 7,500 households and nearly 20,000 individuals; and
- interviews are conducted annually with all adult members of each household and the panel members are followed over time, so changes to individual and household circumstances and characteristics can be monitored and tracked.99

This dataset is the best available for the purposes of the gender pay decomposition as it has:

- detailed information on the labour force characteristics of individuals for a large sample of Australian adults;
- information on child care and caring responsibilities for individuals;
- family composition, including financially and non-financially dependent children both resident and non-resident, and information on the labour force status of and financial support from the other parent;
- employment history and status information, including on labour market interruptions;

5.2 Methodology

KPMG has undertaken econometric modelling to estimate the factors underlying the gender pay gap, and the impact these have on productivity. This is the same technique as that employed by Walby and Olsen (2002) in the UK, with data from Wave 7 of the HILDA survey. While the factors considered by KPMG are broadly in line with those used in the Walby and Olsen study, this study does not exactly replicate the UK study due to differences in the datasets used, as well as variations between the UK and Australian labour markets. KPMG selected the factors associated with the gendered patterns of pay based on the review of the literature presented in Section 3.

The modelling involved a two-step process. In the first step, we estimated a model to determine the factors that affect the probability of a person being in the labour force. The motivation behind undertaking this step was to remove any sample selection bias that may exist. This bias can arise as the sample on which our model is based includes only those who are participating in the workforce (that is, we can only observe the market wage of employed persons). To

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100 Hourly wages are used as a proxy for productivity as it is not possible to obtain data on individual output by gender, and so we take the value of the input, that is wages, as equivalent to the value of the person’s output. Using wages as a proxy for productivity has advantages and disadvantages. The advantages of doing so are that wages are both an indication of the market valuation of an individual’s worth to an organisation, and that data on wages are readily available in a reliable and robust form. However, the disadvantages are that wages are not a ‘true’ representation of the productive contribution of an individual to an organisation, to the extent that wages are affected by discrimination and other labour market rigidities.

It is important to note that the implication is not that because women are currently paid less than men that they are not as productive and is in no way a reflection on the current contribution or value of the work of women. The intention of this study is to understand how the factors underlying the gender pay gap have a negative impact on overall economic productivity so as to gain some insight into potential economic improvements that can be obtained by increasing women’s participation and maximising the talent available to, and used by, organisations.


Note that this study uses data from the British Household Panel Survey from 1999 for the UK. There are some differences between the data collected between the two surveys, which translate into some differences in the regression model. Nonetheless, we have used the broad framework and approach in this study.

102 It is important to note that individuals who are not in the workforce may still be productive, as they contribute to non-market output (e.g. caring for family members) or to market output (e.g. through volunteer work for non-government organisations). As such, simply looking at the wages of employed persons will not fully capture the productivity differences between men and women.
account for the bias that arises due to individual’s participation decision, we use the Heckman two-step method (see Appendix A for more detail). In the employment participation equation, we included as explanatory variables: gender; educational attainment and current education participation; demographic characteristics (age, marital status, number of dependent children, whether a person is a migrant from an English speaking or non-English speaking background, health); years of work experience and time since that person has left full-time education; and location (urban, regional or remote). Using the results from the employment equation, we calculated the Inverse Mills ratio (which is part of the Heckman two-step method; see Appendix A for more detail).

The second step involved estimating the factors that affect the hourly wages earned by a person in the workforce. The dependent variable in the wage equation was the log of hourly wages, while the explanatory variables included the Inverse Mills ratio (to account for any sample selection bias), as well as: gender; education and training; length of employment; interruptions due to family care and unemployment; segregation including industry and occupation of employment; part-time and casual work; sector of employment; job characteristics (hours of work, size of employer, union membership, satisfaction with pay, and flexible work arrangements); demographic characteristics (age, marital status, number of dependent children); and state and location (urban, regional or remote). More detail on the variables is included in Table 5.1 and Appendix A.

These variables broadly fall into two categories: those variables that are expected to be factors associated with the gender pay gap and the control variables.

To estimate the effect of the gender differences in pay, and the implications of this for broader economic output, we followed Walby and Olsen (2002) and decomposed the gender wage gap using a method that shows the gross effect of each underlying factor (this methodology is described in more detail in Appendix A).

The aim of this analysis was to determine the effect of changing gender specific elements of the wage gap, and understanding how this may affect economic activity. The next section presents...
the reasoning behind and the nature of the variables used in our analysis, as well as the key summary statistics for the variables used in the modelling.

5.3 Key variables and summary statistics

Table 5.1 describes the main sets of variables used in the econometric model, and the rationale underlying their inclusion in the model.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly wages</td>
<td>The focus of the analysis is to explain differences in hourly wages. We use total wages as a proxy for national productivity, and as such, by looking at the factors underlying the gender pay gap in Australia, we can make some conclusions about the impact on economic output by improving some of the factors that are currently contributing to the gap. For technical reasons related to the pattern of the distribution of earnings, the dependent variable is the log of the hourly wage.</td>
</tr>
<tr>
<td>Education and training</td>
<td>A number of studies have found education and training are positively associated with earnings, as well as with economic growth. Moreover, education is a key component of human capital. We constructed an education variable which was a scale, in which a single point is roughly equal to one year’s education. This index was constructed using a system which assigns points to different levels of educational attainment. The highest level of educational attainment is a doctorate, which is assigned 17 points, while a person that has Year 12 qualifications is given an index of 12 points. The minimum amount of education, primary school education, was assigned 6 points. The index is detailed in Appendix A.</td>
</tr>
<tr>
<td>Length of employment</td>
<td>Many studies have found that longer labour market experience is positively associated with productive output and pay. However, the relationship between earnings and experience is not linear, rather there are diminishing marginal returns. It is the second major component of human capital that we capture in our model. It is measured in two ways: experience (equal to time in paid work), and tenure with current employer. Due to the diminishing marginal returns to experience, we also include an experience-squared variable in our model.</td>
</tr>
<tr>
<td>Interruptions due to family care and unemployment</td>
<td>The total length of time employed is unable to capture some of the complex ways in which working experience can impact on wages and output. Notably, even short interruptions to employment can have a marked impact on these indicators. A work interruption is defined as a period of non-employment which is directly prior to a period of employment either as an employee or self-employed. The reasons for an interruption include unemployment, maternity leave, family care, and long-term illness or disability, among other factors. In our study we look broadly at work interruptions without disaggregating the variable into the various reasons behind the interruption.</td>
</tr>
</tbody>
</table>
Variables | Rationale
---|---
Segregation | Segregation by sex between occupations and industries is widely understood to have a negative impact on women’s wages. The variables we use to capture this are constructed in the same way as in Walby and Olsen (2002). We use data from the ABS Labour Force Survey to create these variables (these data are more accurate due to the larger sample size).

Using data from 2007 on employment by industry and sex, and employment by occupation and sex, we constructed variables measuring segregation by industry and by occupation, respectively. To construct these variables we first calculated as the share of males by industry (by 2-digit ANZSIC code) and the share of males by occupation (by 2-digit ANZSCO code) based on the ABS data. Secondly, we assigned a share to each individual in the HILDA survey based on their industry and occupation.

The ratio is designed to capture the extent to which males are dominant in a given industry or occupation. In addition, we include industry and occupation dummy variables as controls.

Part-time and casual employment | Women who are employed either on a part-time or casual basis tend to have much lower wage rates on average than women employed full-time. This may be due to the characteristics of these women, or due to specific effects associated with working on a part-time or casual basis.

In order to understand whether there is an additional effect of part-time and casual work on wages, we include dummy variables that capture whether a person’s position is part-time or casual. Part-time is defined as working less than 35 hours a week (in line with the ABS definition), and casual is defined as not employed on a fixed term contract or a permanent/ongoing basis.

Sector of employment | Women have a higher representation in the public and non-government sectors than men. To test whether this is another form of segregation, we include dummy variables for government and non-government sectors.

Job characteristics | We include a number of job characteristics as controls, these being hours of work, size of employer, union membership, satisfaction with flexibility of work arrangements, and flexible work arrangements. The latter is captured in two variables, these being whether an individual is entitled to paid maternity or paternity leave, and whether an individual is entitled to unpaid maternity or paternity leave.

Demographic characteristics | To control for differences in demographic characteristics that may affect an individual’s earnings, we include the following controls: age and age squared, marital status, number of dependent children (four years or under, five to nine years, and 10 to 14 years), state, and location (urban, regional or remote).

Gender | Differences between male and female wages that cannot be explained by other variables are captured in the gender variable. These differences may arise from sex discrimination, or unobserved heterogeneity between men and women.

Table 6.3 in Appendix A presents the population weighted averages of the independent variables for men and women, and as such highlights some of the key factors that differ between the sexes.\textsuperscript{106} It is interesting to note, in particular:

- women earn on average $21.90 an hour, compared with a male wage of $23.20 an hour;

\textsuperscript{106} The weighting factor used in this analysis is an enumerated person sample weight, which is provided in the HILDA dataset. This is the cross-section population weight that is rescaled to the same of the sample size for the relevant wave. It is important to re-weight the sample so as to ensure that the averages reflect the population as a whole, and that sample selection biases are minimised.
• nearly half of all employed women work part-time, compared with only 17 per cent of men, and 23 per cent of women are employed casually which is 10 percentage points higher than the share of males employed casually;

• while a third of all employed women work in government or non-government organisations, only 20 per cent of men are employed in these sectors;

• women have, on average 3.3 years less of work experience, which is broadly equal to the difference in the number of years of interruptions between men and women, when women were not working either due to caring responsibilities or unemployment;

• a significantly larger share of males work in industries such as agriculture, forestry and fishing, mining, manufacturing and construction than women;

• a larger share of women work in industries such as retail trade, accommodation and food services, education and training, and healthcare and social assistance;

• while 15 per cent of men hold managerial positions, only 9 per cent of women in the labour force are in these occupations; and

• women comprise a significantly larger share of clerical and administrative workers, sales workers, and community and personal service workers than males.

5.4 Regression and decomposition results

5.4.1 Regression results

KPMG undertook regression analysis in order to understand whether the factors understood to be underlying the gender pay gap were significant, and if so, the degree to which they are linked with the level of pay. Some of the main findings were:

• holding all other factors constant, women earn on average 7.4 per cent less than men;

• each year of education has a positive impact on hourly income of around 3.5 per cent;

• people employed on a part time basis earn 9.7 per cent less per hour, all else held constant;

• interruptions to a person’s work history have a negative impact on hourly earnings;

• individuals working at large firms earn 5.5 per cent more than people working at medium sized firms (20-100 employees) and 10.5 per cent more than those working at small firms (less than 20 employees);

• pay is positively related to jobs in which people are satisfied with the flexibility the job provides to balance work and non-work commitments;
people working in the following industries earn significantly less than those working in the public administration and safety (government) industry:

- agriculture, forestry and fishing;
- retail trade;
- accommodation and food services;
- education and training;
- arts and recreation services; and
- other services;

by contrast, those working in the mining, financial and insurance services, and administrative and support services industries earn significantly more than government workers;

there is a positive link between industries and occupations with a high share of male employees, and pay;

individuals in all occupations, with the exception of machinery operators and drivers, earn significantly more than labourers; and

people living in regional areas earn significantly less than those in cities, with the gap between 5.5 and 7.4 per cent.

More detailed regression results are presented in Appendix B.

It is interesting to note that while we find that education has a positive effect on wages, as is the case with previous studies, education is not a factor contributing to the gender pay gap. This is because the HIDLA survey data shows no significant difference between the average education levels of males and females in the workforce. This is an interesting result, and to understand this we look at the education of men and women in more detail.

As shown in Table 5.2, more women have below Year 12 qualifications than men. Fewer women have a certificate qualification than men, with only 15 per cent of women holding this type of qualification, 12 percentage points lower than the male share. However women are actually more likely to have university education than men, particularly those in the labour force, with 29 per cent of women in the labour force holding a bachelor degree or higher, compared with 22 per cent of men. This is an interesting result, which reflects the tendency for younger people to be more likely to obtain educational qualifications, with this trend particularly strong among younger women.
Another point to note is that the experience and experience squared variables are not individually significant, but when tested are found to be jointly significant. The lack of significance is likely due to the effect of the experience being captured in other variables in the regression – these being age, tenure, and time either unemployed or not in the labour force. As the experience variables are insignificant, we include age and age squared in the decomposition, as well as tenure and time not in the labour force.

### 5.4.2 Decomposition results

After running the regressions, we sought to use these results to draw some conclusions relating to economic activity. We did this by decomposing the gender pay gap using a method which does the following:

- assumes that men and women belong to the same labour market;
- obtains the average of each relevant characteristic for men and women;
- simulates a change in women’s position by bringing it up to the average for men; and
- taking the coefficient from the wage equation, looking at the gross economic impact of bringing women to the same level as men.

That is, this technique looks at the effect of improving labour market conditions such that women are given some of the same characteristics of men.\(^{107}\) For example, this technique looks at the impact of increasing women’s years of tenure from 6.1 to 7.4 years (level for men), by multiplying the coefficient of tenure in the wage equation (that is the extent to which an additional year of tenure impacts on the log of the hourly wage), which is 0.0051, by the difference in tenure, 1.3 years, to determine the effect of bringing women’s tenure to the same level as men’s.

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\(^{107}\) Not all differences between men and women are due to factors that are underlying the gender pay gap – that is they are not due to labour market rigidities or skills differentials. For example, we are not interested in determining the effect on wages of increasing the share of women living in Queensland to be the same as for men. Moreover, it is unrealistic to assume that women can have all of the same characteristics as men, as there are always going to be broad differences in capabilities and responsibilities. As such, in the disaggregation we focus only on the factors thought to be underlying the gender pay gap.
This analysis is aimed at establishing the impact of changing specific elements of the wage gap on broader economic activity. This is important as it shows the potential economic improvements of reducing the differences between men and women. The main results of the decomposition analysis are presented in Table 5.3.

The overall size of the gender pay gap as shown by the 2007 HILDA survey is $1.29, with women earning an average hourly rate of $21.91 compared with an average hourly rate of $23.20 for men. This is equivalent to a pay difference of 5.6 per cent.

The components of the gender pay gap are summarised in Table 5.3, and shown in Graph 5.1. KPMG find that the most important factors associated with the gender gap in economic output and wages are:

- sex discrimination and other factors associated with being female, which accounts for 35 per cent of the gap;
- occupational segregation, with the differences in types of occupations in which males and females work accounting for 18 per cent of the gap;
- working part-time, which accounts for 14 per cent of the gap;
- segregation by industry sector, which accounts for 10 per cent of the gap;
- the length of time women spend out of the workforce, work interruptions, accounts for 9 per cent of the gap;
- differences in age (a proxy for work experience) and tenure with current employers accounts for 8 per cent and 3 per cent of the gap respectively; and
• differences between the type of employers, with more women working at NGOs and for government, the combined effect of which accounts for the remaining 3 per cent of the gender pay gap.

It is important to note that other factors associated with being female include not only sex discrimination, but also any unobserved differences between the sexes such as motivation or effort.

In undertaking the decomposition, we assume additive separability, that is, the components are separate from each other and can be added together. In practice, the factors we evaluate in this analysis do overlap to some extent, which somewhat compromises the additive separability assumption. KPMG ran tests for interaction effects among the factors, however no substantive significant effects were found.\textsuperscript{108} This effectively confirms that the assumption of additive separability is appropriate to use, however, it is important to recognise that there are limits to which this assumption is realistic.

5.5 The components of the gender pay gap and their implications

The factors we have identified as the main contributors to the gender pay gap are, in most part, associated with labour market rigidities, and to less of an extent, women having less human capital than men (see Table 5.4 for a summary of the results). Given that wages are a proxy for productivity or economic output, our decomposition analysis points to the sources of potential improvements that may result in increasing women’s human capital and reducing or removing labour market rigidities. This section discusses each of these components and the implications for the economy.

\textsuperscript{108} The largest significant effect was found with the employed part time and occupational segregation factors. We did not include this interaction factor in the final specification given that the interpretation of the disaggregation would have been complicated. Nonetheless, it is important to recognise that the effect of this may account as much as 5 per cent of the total gap.
Table 5.4: Key components of the gender pay gap

<table>
<thead>
<tr>
<th>Component</th>
<th>Women’s levels compared to men’s</th>
<th>% of gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>-0.47</td>
<td>8%</td>
</tr>
<tr>
<td>Tenure with current employer (years)</td>
<td>-1.27</td>
<td>3%</td>
</tr>
<tr>
<td>Years not working (interruptions)</td>
<td>3.35</td>
<td>9%</td>
</tr>
<tr>
<td>Industry segregation index (male/total)</td>
<td>-16%</td>
<td>10%</td>
</tr>
<tr>
<td>Occupational segregation (male/total)</td>
<td>-29%</td>
<td>18%</td>
</tr>
<tr>
<td>Share in part time employment</td>
<td>30%</td>
<td>14%</td>
</tr>
<tr>
<td>Share working in government or NGOs</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>Female</td>
<td>-1</td>
<td>35%</td>
</tr>
</tbody>
</table>

5.5.1 Experience and tenure

Studies have shown that the longer a person has been employed, the more productive and well paid they will tend to be. However, there are diminishing marginal returns to experience – that is, there is a limit to the extent to which additional years of employment can help improve output and wages. In addition, studies have found that only full-time employment experience has this effect on productivity and wages.

Interestingly, our study found that experience in itself does not have a significant effect on wages, but rather age (a proxy for experience) and tenure with an employer are more important factors in both determining wages, and in contributing to the gender pay gap. The implication of the more significant link between tenure and productivity, than the direct link between experience and output, is that developing policies and programs, both by governments and individual firms, that help increase retention of women and allow them to improve their average tenure with an employer will likely have a positive impact on economic activity.

5.5.2 Part-time work

Women that work part-time have significantly lower wages than women employed on a full-time basis. Indeed our results show that part-time employment has a significant negative effect on wages, independent of all other factors. Moreover, the disaggregation results show that differences in the share of part-time workers between men and women accounts for 14 per cent of the gender pay gap. The negative impact on wages of part-time work is a significant result, given that 45 per cent of women are employed on a part-time basis, and women account for 71 per cent of the total part-time workforce in Australia.

Working part-time correlates with a number of factors that are also associated with lower wages, including lower levels of education, occupations and industries in which a larger share of women work, longer periods of labour market interruptions, fewer years of experience and tenure, and being a single parent. Even so, our study found a strong independent effect of whether an individual is employed part time on wages.\(^{109}\) The implications of this are that focussing on part-time employment when developing policies and interventions to address the

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\(^{109}\) This may partly be capturing part-time employment experience, given that previous studies have found a strong negative relationship between part-time work experience and wages without current part-time employment status having an independent significant effect. Indeed, Walby and Olsen (2002) find this to be the case. However, we could not include a part-time employment experience variable in our analysis as the HILDA survey does not collect data on this.
gender pay gap are likely to be effective, given that not only does part-time work have a negative effect on pay, but also because many aspects of disadvantage are strongly associated with working part-time.

5.5.3 Interruptions to work history

Interruptions to employment have a negative effect on earnings which is separate from the impact that comes from reducing a person’s work experience and tenure. This is because periods of time during which individuals are away from the labour force can lead to a reduction in skills and employer specific knowledge. In addition, when an individual spends a significant period of time away from work the types of skills they offer have often been replaced by new technologies, knowledge and techniques, making some of the skills that an individual does possess redundant.\textsuperscript{110} In addition, it can lead to a person facing difficulties in obtaining jobs for which they hold formal qualifications, and/or in the sector in which they were employed prior to taking a career break.

ABS data provides some support for this, showing that in 2008, around a quarter of discouraged female job seekers were not actively looking for work as they lacked the necessary schooling, training, skills or experience. This compares with less than 10 per cent of discouraged male job seekers that were not looking for work due to lack of adequate human capital.\textsuperscript{111} In addition, 20 per cent of unemployed women cited insufficient work experience or lack of necessary skills or qualifications as the main difficulty they faced in finding work in 2008, compared with around 16 per cent of males.\textsuperscript{112} In addition, among women that wanted a job or more hours in their current job, nearly a fifth of women cited a lack of necessary training, qualifications or experience as the main difficulty in finding work or more hours, which was nearly twice the share of males.\textsuperscript{113}

For men, interruptions are primarily due to unemployment, while for women, interruptions to work histories are due to maternity leave and taking time off to care for both young children and family members. Overall, the total time that women have spent out of the workforce is much higher than for men. As such, interruptions to employment are a relatively large component of the gender pay gap, accounting for around nine per cent of the difference.

Developing policies to promote flexibility, and allow women to return to the workforce earlier after taking leave to have children or care for family members will help to increase economic output by reducing the length of work interruptions. Moreover, there is an important role for measures that encourage men to take up more flexible workplace arrangements, allowing them

\textsuperscript{110} A number of studies have found that women taking career interruptions for childbirth and childrearing has a negative and significant effect on women’s earnings due to human capital depreciation, and the fact that women are unable to accumulate human capital when on a career break. See for example: Gupta, N.D and Smith, N. (2002) ‘Children and Career Interruptions: The Family Gap in Denmark’, Economica, Vol. 69 (276), p. 609.
\textsuperscript{111} It is interesting to note, that three quarters of all female discouraged job seekers have not held a job for more than three years, compared with around 50 per cent of males.
ABS (2009) Job Search Experience, Cat. No. 6222.0
\textsuperscript{112} ABS (2007) Barriers and Incentives to Labour Force Participation, Australia, July 2006 to June 2007, Cat. No. 6239.0
to take on more caring responsibilities and providing women with the choice to increase their
labour market participation.

5.5.4 Occupational and industry segregation

ABS data shows that occupational and industry segregation are pervasive in the Australian
economy. As shown in Table 6.4 in Appendix A, some industries and occupations are heavily
male dominated, for example the mining and construction industries have over 85 per cent
males, whilst the males account for nearly all the workers in the automotive and engineering
trade workers, construction trade workers, electrotechnology and communication trade workers
and machinery operators and drivers occupational classes. By contrast, women account for over
80 per cent of those working in the health and community services industry, as well as the
personal assistant and secretary, carers and aides, and general clerical worker occupational
classes.

KPMG’s analysis shows that occupational and industry segregation by sex has an effect on
wages, with earnings in occupations and industries with a large share of males higher than the
wages for female dominated industries and occupations (holding all else constant). This is a
form of labour market rigidity, particularly when it limits the range of employment taken by
women and results in a mismatch between a person’s skills and actual job.114

The results from our regressions show that when women shift from one occupation to another
where the occupational segregation index is 10 points higher, we would expect an increase in
women’s wages of 1.3 per cent. Similarly, if women were to shift from one industry to another
where the industry segregation index is 10 points higher, the expected increase in the woman’s
wage would be around 1.4 per cent.

The labour market rigidities underlying the pervasive and persistent occupational and industry
segregation in Australia are likely embedded in outmoded expectations and institutional
practices. Policies that facilitate change in these expectations that underlie the labour market
rigidities can help to reduce mismatches in people’s skills and experience and help in improving
economic activity and growth.

5.5.5 Sex discrimination and unobserved heterogeneity

KPMG’s analysis found that after taking into account all other factors, gender alone accounted
for a third of the gender pay gap. While some of this variance due to gender is likely a result of
sex discrimination it is important to note that there may be other unknown or unquantifiable
factors which have a bearing on the pay gap.115

Given these caveats, it is still important to recognise the role that sex discrimination can play in
reducing economic output, through reduced efficiency. That is, when sex discrimination is a

114 It is important to recognise that not all occupational segregation is due to labour market rigidities, but rather a
share is likely due to individual preferences for working in different occupations. Similarly, industry segregation
partly reflects preferences.

115 The gender pay gap econometric literature terms this ‘unobserved heterogeneity’. We have chosen to use the term
‘unknown factors’ so as to highlight that we are not referring to or implying that there are inherent differences
between men and women that make women less effective in the work place. Rather, these unknown factors may
result from subtle work value and cultural influence that cannot easily be quantified or measured.
pervasive element of a labour market, women may not be employed in the jobs to which their skills and experience are best suited. This will mean that output is below the optimal levels. As such, policies that help to reduce sex discrimination can have a positive impact on economic activity by ensuring that women are employed in the roles to which they are best suited.
6 Case studies of employers of choice for women

This section presents four case studies where employers have introduced flexible workplace arrangements and other diversity programs and initiatives that have helped improve retention of female staff, and through doing so have increased their useful output. These serve as examples of the ways in which businesses may be able to help to not only improve the position of women in the workforce, but through doing so help to improve the performance of the companies as a whole. These case studies also provide practical examples to support findings from research that show that gender equality in the workplace reduces costs to the employer through:

- reduced turnover;
- lowered employee absenteeism; and
- a reduced risk of employee litigation under discrimination legislation.\textsuperscript{116}

It is important to note that two of these organisations, KPMG and NAB, have been included on the EOWA Employer of Choice for Women list in 2009. To be included on this list, an organisation must be compliant with the \textit{Equal Opportunities for Women in the Workplace Act} and meet the following six criteria:\textsuperscript{117}

- have polices in place (across employment matters) that support women across the organisation;
- have effective processes (across employment matters) that are transparent;
- have strategies in place that support a commitment to fully utilising and developing its people (including women);
- educate its employees (including supervisors and managers) on their rights and obligations regarding sex-based harassment;
- have an inclusive organisational culture that is championed by the CEO, driven by senior executives and holds line managers accountable; and
- deliver improved outcomes for women and the business.

In addition, the organisations must demonstrate the following requirements:

- ‘Equal Opportunity for Women’ is a standing agenda item on a Committee chaired by the CEO or the CEO’s direct report;


• female managers are able to work part-time;

• paid maternity leave provided at a minimum of six weeks’ paid leave after 12 months of service;

• sex-based harassment training must be conducted at induction for all staff (including management, contract staff and casual staff), and refresher courses or an update is received by all staff every two years;\textsuperscript{118}

• the pay equity gap between average male and female salaries at each level of the organisation is less than the national gender gap identified by ABS research (17 per cent in 2009), and the organisation’s overall pay gap must be less than the organisation’s industry average pay gap, based on current ABS data (both calculations must be based on ordinary earnings); and

• at least 27 per cent of managers should be women, or the share of female managers is greater than the industry average.

6.1 KPMG

Background

KPMG is one of the world’s leading professional services firms, with an extensive global network in over 140 countries. It provides audit, tax and advisory services through industry focused, talented professionals who deliver value for the benefit of their clients and communities. KPMG employs over 135,000 people globally, while in Australia, KPMG operates across 13 offices with over 4,500 people. KPMG recognises the need for people to strike an appropriate balance between their working lives, family responsibilities and other personal interests.

Situation

Attraction and retention programs are an important part of business at KPMG. The global skills shortage, a very real business issue for many professional firms, is also an issue for KPMG. One area KPMG has focused on is gender. They have aimed at resolving the falling number of female employees in the senior levels of the firm. Lower levels of the firm display a healthy number of females, with KPMG’s yearly national graduate intake of around 500 people evenly distributed between genders.

Action

KPMG developed a number of initiatives regarding people management, with some of the policies having a special focus on the attraction and retention of women. In 2005, KPMG introduced the People, Performance & Culture (PPC) structure, which encouraged the firm to create an environment for staff to realise their full potential and for the leaders of the firm to take responsibility for people management. A Diversity Advisory Board was also established with an initial focus on gender.

KPMG’s goal is to understand the issues women face in the workforce and then implement solutions to address and resolve these concerns. There is a strong focus on flexible work practices and family-friendly initiatives to proactively deal with these important people related issues.

KPMG’s is essentially gender neutral when it comes to its learning and training initiatives. It does however address particular needs for female employees by employing specific development programs, courses and initiatives. These include:

- career resiliency programs;
- the Executive Women’s Development program;
- parental leave courses for pregnant women and their spouses;
- parenting workshops;
- return to work forums (post parental leave);
- sponsorship of the Serious Women’s Business Conference; and
- celebrating International Women’s Day in each office throughout Australia.

KPMG effectively communicates the many success stories generated from the people initiatives via two employee newsletters. The publications promote diversity issues within the firm by highlighting successful examples of people who have benefited from the programs available.

Outcome

There has been an increased awareness at KPMG of the need to address the issue of female staff turnover and this awareness has been supported by the proactive actions of the firm’s leaders. KPMG is now able to say that turnover has equalised by gender.

Some statistics on KPMG’s women are:

- the number of women working part-time has increased by over 40 percent since the end of the financial year in 2005;
- the number of female Partners has increased by 114 percent since 2002;
• in the past two financial years, over 180 women have taken parental leave; and

• in the past two financial years 48 women have been posted on overseas secondments.

These statistics show that KPMG is taking positive steps in narrowing the gender productivity gap, and shows KPMG is a leader on addressing gender issues within the workplace. However the firm is proactive and is continuously reviewing current policies and thinking of new initiatives that can be implemented.

6.2 AMP

Background
AMP is a leading wealth management company with more than 3.4 million customers and 3,800 employees in Australia and New Zealand. They offer a range of financial products and services including retirement savings and income, investments, superannuation, financial planning, insurance and banking. As at the 31 December 2008, AMP had more than $96 billion in assets under management.

Situation
AMP has an equal opportunity policy that aims to ‘make all employees aware of their obligations and encourage a working environment in which employees are treated with dignity, respect and on the basis of merit. AMP has a high number of female staff and the firm is committed to ensuring these employees are retained and also represented in senior management.

Action
Part of AMP’s vision is to be an employer of choice for women. They have therefore implemented an affirmative action program for women in order to attract, retain and promote women at all levels of the firm. The firm now has policies including:

• special emphasis on attracting suitable qualified women to areas where women are under represented;

• increase of paid parental leave from 6 weeks to 14 weeks;

• other flexible leave policies; and

• a parent room allowing nursing mothers room for expressing and storing breast milk for breastfeeding mothers.
Outcome
AMP has been able to benefit from the skills, talents and abilities of the female employees that have been retained and promoted to senior management as a result of their flexible work arrangements and other equal opportunity programs. The policies have also led to an increased profile and recognition of female employees and their contribution to the success of the business. Since the introduction of the increase of paid paternity leave, females’ taking this entitlement has increased by 56 per cent, while the return to work rate for these women has also increased to 85 per cent.

6.3 NAB

Background
NAB is an international financial services organisation that provides a comprehensive and integrated range of financial products and services. The group is structured around regional banking and wealth management operations and an international capital markets and institutional banking business. It has around 23,000 employees in Australia.

Situation
NAB shares a similar employment and pay profile to the rest of the finance and insurance sector. On average women earn just 63 per cent of the income of males at NAB and this gap is increasing at a faster pace then in other sectors. At NAB, women comprise 60 per cent of the workforce, though women are heavily concentrated in the clerical grades. At the lower levels, women outnumber men by more than two to one, however at senior management levels this is reversed with men accounting for just over two-thirds of all management roles.

Action
In 2006, NAB and the Finance Sector Union proposed a joint pay equity audit to address the pattern on unequal earnings for women at NAB and also within the finance sector more generally. In addition to this audit, NAB has introduced initiatives such as career transition programs, mentoring, women’s forums and flexible leave options in the hope that these will help the retention of female staff and the progression to senior management.

Outcome
NAB has implemented a comprehensive range of programs so as to help the firm become an employer of choice for women. The preliminary findings of the pay equity audit indicated that men and women working in the same role receive similar fixed pay and incentive outcomes.

119 This gap of 37 per cent in earnings is based on fulltime adult ordinary-time earnings using ABS figures for November 2004. EOWA cites earnings data from the ABS which indicates that in the finance and insurance sector, the gender pay gap in fulltime adult ordinary-time earnings increased from 29.1 per cent in 1994 to 36.8 per cent in 2004, compared with a decrease for Australia as a whole from 18.2 to 15.2 per cent over the same time period.
Whilst the findings also indicate there has yet to be a significant increase in women in management roles, NAB believes this presents an area of opportunity and hopes current and future policies will rectify this issue. The firm also has a high return to work rate from maternity leave, currently at 85 per cent, and believes this will continue to increase in the next few years.

### 6.4 Lend Lease

#### Background

Bovis Lend Lease is one of the world’s leading companies in the project management and construction services industry, and operates within the larger Lend Lease Group. Lend Lease is an international property group with broad skills across the property value chain. It is Australian based and operates three core businesses: project management and construction, property investment management and property development. It boasts 11,737 employees globally.

#### Situation

Most of the employees at Bovis Lend Lease work in areas of architecture, engineering and project management. These professions have generally been male-dominated areas, and thus Bovis Lend Lease has implemented policies to find talent, and then retain and reward female employees and so as to improve gender diversity.

#### Action

One of the strategies that Bovis Lend Lease has implemented is in the area of remuneration. It was discovered that a major disincentive for female employees that contributed to high attrition rate of female employees was the systemic gender differences in salary outcomes.

The firm addressed this issue by undertaking annual salary and remuneration checks of all staff. All salaries are examined (broken down into key professional groupings) and a line of best fit is applied to the data. A comparison of male against female salaries is carried out and any female employees that are clearly below the line for no apparent reason have their remuneration reviewed and adjusted if required.

#### Outcome

The strategy has resulted in Bovis Lend Lease ensuring equity in rewards and that the salary of its staff reflects their experience and performance rather than personal characteristics. It has caused the firm to have a higher retention rate of female employees plus the advantage of attracting more female workers to Bovis Lend Lease and the industry as a whole.
A Detailed information on data and methodology

A.1 Data

The variables used in the analysis are detailed in Table 6.1, along with the description of the HILDA code, and the type of variable. Table 6.2 provides more detail on how the education index was constructed, and the assumptions underlying the scale variable. The dataset we used included all potential employees – that is all people of working age, whether they were in the labour force, marginally attached, or not in the labour force at the time of the survey. Self-employed persons were included in the sample.

Table 6.1 Variables used in analysis

<table>
<thead>
<tr>
<th>Variable name</th>
<th>HILDA code</th>
<th>Type of variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>GHGSEX</td>
<td>Dummy variable = 1 if male</td>
</tr>
<tr>
<td>Age</td>
<td>GHGAGE</td>
<td>Age at 30 June 2007 (years)</td>
</tr>
<tr>
<td>Education</td>
<td>GEDHISTS, GEDHIGH</td>
<td>Highest education completed for school (unfinished primary school through to Year 12), and highest post-school education completed (postgraduate masters or doctorate, graduate diploma or certificate, bachelor or honours, advanced diploma or diploma, Certificate III or IV, Certificate I or II, Certificate undefined). Education index variable constructed based on assumptions set out in Table 6.2.</td>
</tr>
<tr>
<td>Marital status</td>
<td>GMRCURR</td>
<td>Dummy = 1 if married or de facto</td>
</tr>
<tr>
<td>Number of children 4 years and under</td>
<td>GHH0_4</td>
<td>Number of children aged 0 to 4 years in household</td>
</tr>
<tr>
<td>Number of children 5 to 9 years</td>
<td>GHH5_9</td>
<td>Number of children aged 5 to 9 years in household</td>
</tr>
<tr>
<td>Number of children 10 to 14 years</td>
<td>GHH10_14</td>
<td>Number of children aged 10 to 14 years in household</td>
</tr>
<tr>
<td>Migrant ESB</td>
<td>GANBCOB</td>
<td>Dummy = 1 if born overseas and English is their first language</td>
</tr>
<tr>
<td>Migrant NESB</td>
<td>GANBCOB</td>
<td>Dummy = 1 if born overseas and English is not their first language</td>
</tr>
<tr>
<td>Long-term health condition</td>
<td>GHELTH</td>
<td>Dummy = 1 if has a long-term health condition</td>
</tr>
<tr>
<td>Poor health status</td>
<td>GGH1</td>
<td>Dummy = 1 if self-assessed health status is fair or poor</td>
</tr>
<tr>
<td>Household income</td>
<td>GHFIFEP</td>
<td>Household financial year gross income (imputed, weighted topcode) positive values only</td>
</tr>
<tr>
<td>Attending full-time education</td>
<td>GCAPEFT</td>
<td>Per cent of time spent in full-time education in last financial year</td>
</tr>
<tr>
<td>Attending part-time education</td>
<td>GCAPEPT</td>
<td>Per cent of time spent in part-time education in last financial year</td>
</tr>
<tr>
<td>Years since left full-time education</td>
<td>GEHTSE</td>
<td>Time since full-time education (years). Calculated as sum of time in paid work, time not looking and looking for work, time not working or looking for work.</td>
</tr>
<tr>
<td>Work experience</td>
<td>GEHTJB</td>
<td>Time in paid work (years)</td>
</tr>
<tr>
<td>Employed casually</td>
<td>GJBCASAB</td>
<td>Dummy = 1 if employee is a casual worker (i.e. not entitled to paid holiday or sick leave)</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>GESDTL</td>
<td>Dummy = 1 if currently employed part-time</td>
</tr>
<tr>
<td>Tenure with current employer (years)</td>
<td>GJBEMP</td>
<td>Number of years worked at current employer</td>
</tr>
<tr>
<td>Usual hours of work in all jobs (per week)</td>
<td>GJBHRUC</td>
<td>Hours per week usually worked in all jobs</td>
</tr>
<tr>
<td>Total time not in the labour force</td>
<td>GEHTO</td>
<td>Total time spent not working and not looking for work (years)</td>
</tr>
<tr>
<td>Total time unemployed</td>
<td>GEHTUJ</td>
<td>Total time spent unemployed and looking for work</td>
</tr>
<tr>
<td>Entitled to paid maternity/paternity leave</td>
<td>GJOWPPML</td>
<td>Dummy = 1 if employee entitled to paid maternity leave in current job</td>
</tr>
<tr>
<td>Variable name</td>
<td>HILDA code</td>
<td>Type of variable</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Entitled to unpaid maternity/paternity leave</td>
<td>GJOWPUMUL</td>
<td>Dummy = 1 if employee entitled to unpaid maternity leave in current job</td>
</tr>
<tr>
<td>Employed in government or non-government organisation</td>
<td>GJBMMPLOY</td>
<td>Dummy = 1 if employer is government business enterprise, commercial statutory authority, other government organisation, private sector not-for-profit organisation or other non-commercial organisation</td>
</tr>
<tr>
<td>Union member</td>
<td>GJBMUABS</td>
<td>Dummy = 1 if union member</td>
</tr>
<tr>
<td>Employer has &lt; 20 employees</td>
<td>GJBMWPS</td>
<td>Dummy = 1 if there are less than 20 people employed at place or work, or with the employer in locations throughout Australia</td>
</tr>
<tr>
<td>Employer has 20-100 employees</td>
<td>GJBMWPS</td>
<td>Dummy = 1 if there are 20 to 99 people employed at place or work, or with the employer in locations throughout Australia</td>
</tr>
<tr>
<td>Satisfaction with flexibility of work arrangements</td>
<td>GJBMSFLX</td>
<td>Dummy = 1 if satisfied with the flexibility the job provides to balance work and non-work commitments (satisfaction is defined as &gt; 5 on a scale of 0 to 10)</td>
</tr>
</tbody>
</table>

**Industry sector**

| Industry sector                                      | GJBMI61 | Dummy = 1 if current main job is in the |  |
|--------------------------------------------------------|---------|----------------------------------------|  |
| Agriculture, forestry and fishing                      | GJBMI61 | in the agriculture, forestry and fishing sector (ANZSIC division A) |  |
| Mining                                                 | GJBMI61 | in the mining sector (ANZSIC division B) |  |
| Manufacturing                                          | GJBMI61 | in the manufacturing sector (ANZSIC division C) |  |
| Electricity, gas water and waste services              | GJBMI61 | in the electricity, gas, water and waste services sector (ANZSIC division D) |  |
| Construction                                           | GJBMI61 | in the construction sector (ANZSIC division E) |  |
| Wholesale trade                                        | GJBMI61 | in the wholesale trade sector (ANZSIC division F) |  |
| Retail trade                                           | GJBMI61 | in the retail trade sector (ANZSIC division G) |  |
| Accommodation and food services                        | GJBMI61 | in the accommodation and food services sector (ANZSIC division H) |  |
| Transport, postal and warehousing                      | GJBMI61 | in the transport, postal and warehousing sector (ANZSIC division I) |  |
| Information media and telecommunications                | GJBMI61 | in the information media and telecommunications sector (ANZSIC division J) |  |
| Financial and insurance services                       | GJBMI61 | in the financial and insurance services sector (ANZSIC division K) |  |
| Rental, hiring and real estate services                | GJBMI61 | in the rental, hiring and real estate services sector (ANZSIC division L) |  |
| Professional, scientific and technical services         | GJBMI61 | in the professional, scientific and technical services sector (ANZSIC division M) |  |
| Administrative and support services                    | GJBMI61 | in the administrative and support services sector (ANZSIC division N) |  |
| Public administration and safety                       | GJBMI61 | in the public administration and safety sector (ANZSIC division O) |  |
| Education and training                                 | GJBMI61 | in the education and training sector (ANZSIC division P) |  |
| Healthcare and social assistance                       | GJBMI61 | in the healthcare and social assistance sector (ANZSIC division Q) |  |
| Arts and recreation services                           | GJBMI61 | in the arts and recreation services sector (ANZSIC division R) |  |
### Understanding the Economic Implications of the Gender Pay Gap in Australia

#### November 2009

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>HILDA Code</th>
<th>Type of Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other services</td>
<td>GJBMI61</td>
<td>Dummy = 1 if current main job is in the other services sector (ANZSIC division S)</td>
</tr>
<tr>
<td>Index of industrial segregation</td>
<td>GJBMI62</td>
<td>Index constructed from HILDA variables and ABS Labour Force, Australia, Detailed, Quarterly, May 2009 Cat. No. 6291.0.55.003</td>
</tr>
</tbody>
</table>

#### Occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>HILDA Code</th>
<th>Type of Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a manager (ANZSCO Group 1)</td>
</tr>
<tr>
<td>Professionals</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a professional (ANZSCO Group 2)</td>
</tr>
<tr>
<td>Technicians and trades workers</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a technician or trade worker (ANZSCO Group 3)</td>
</tr>
<tr>
<td>Community and personal service workers</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a community or personal service worker (ANZSCO Group 4)</td>
</tr>
<tr>
<td>Clerical and administrative workers</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a clerical or administrative worker (ANZSCO Group 5)</td>
</tr>
<tr>
<td>Sales workers</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a sales worker (ANZSCO Group 6)</td>
</tr>
<tr>
<td>Machinery operators and drivers</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a machinery operator or driver (ANZSCO Group 7)</td>
</tr>
<tr>
<td>Labourer</td>
<td>GJBMO61</td>
<td>Dummy = 1 if current main job is as a labourer (ANZSCO Group 8)</td>
</tr>
<tr>
<td>Index of occupational segregation</td>
<td>GJBMO62</td>
<td>Index constructed from HILDA variables and ABS Labour Force, Australia, Detailed, Quarterly, May 2009 Cat. No. 6291.0.55.003</td>
</tr>
</tbody>
</table>

#### Location

<table>
<thead>
<tr>
<th>Location</th>
<th>HILDA Code</th>
<th>Type of Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in NSW</td>
</tr>
<tr>
<td>Victoria</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in Victoria</td>
</tr>
<tr>
<td>Queensland</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in Queensland</td>
</tr>
<tr>
<td>South Australia</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in South Australia</td>
</tr>
<tr>
<td>Western Australia</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in Western Australia</td>
</tr>
<tr>
<td>Tasmania</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in Tasmania</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in ACT</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>GHHSTATE</td>
<td>Dummy = 1 if lives in Northern Territory</td>
</tr>
<tr>
<td>Urban location</td>
<td>GHHRA</td>
<td>Dummy = 1 if lives in urban area as defined in the ABS Australian Standard of Geographical Classifications (ASGC)</td>
</tr>
<tr>
<td>Inner regional location</td>
<td>GHHRA</td>
<td>Dummy = 1 if lives in inner regional area as defined in ASGC</td>
</tr>
<tr>
<td>Outer regional location</td>
<td>GHHRA</td>
<td>Dummy = 1 if lives in outer regional area as defined in ASGC</td>
</tr>
<tr>
<td>Remote/very remote</td>
<td>GHHRA</td>
<td>Dummy = 1 if lives in a remote or very area as defined in ASGC</td>
</tr>
<tr>
<td>Hourly income</td>
<td>GWSCOEI GJBHRUC</td>
<td>Current weekly gross individual weekly wages and salaries, all jobs, imputed, weighted topcode, divided by total number of hours usually worked in all jobs</td>
</tr>
</tbody>
</table>

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Table 6.2 Education index details

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Index points in education scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate masters or doctorate</td>
<td>18</td>
</tr>
<tr>
<td>Graduate diploma or graduate certificate</td>
<td>17</td>
</tr>
<tr>
<td>Bachelor degree, including with honours</td>
<td>16</td>
</tr>
<tr>
<td>Advanced diploma or diploma</td>
<td>15</td>
</tr>
<tr>
<td>Certificate III or IV</td>
<td>14.5</td>
</tr>
<tr>
<td>Certificate I or II</td>
<td>14</td>
</tr>
<tr>
<td>Certificate not defined</td>
<td>13.5</td>
</tr>
<tr>
<td>Year 12</td>
<td>13</td>
</tr>
<tr>
<td>Year 11</td>
<td>12</td>
</tr>
<tr>
<td>Year 10</td>
<td>11</td>
</tr>
<tr>
<td>Year 9</td>
<td>10</td>
</tr>
<tr>
<td>Year 8</td>
<td>9</td>
</tr>
<tr>
<td>Year 7</td>
<td>8</td>
</tr>
<tr>
<td>Primary school</td>
<td>7</td>
</tr>
<tr>
<td>Did not complete primary school</td>
<td>6</td>
</tr>
</tbody>
</table>

A.2 Summary statistics

Table 6.3 below contains the key summary statistics for the variables used in the modelling.

Table 6.3 Summary statistics, population averages of explanatory variables

<table>
<thead>
<tr>
<th>Factor</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>38.72</td>
<td>38.25</td>
</tr>
<tr>
<td>Education scale (approximate number of years)</td>
<td>13.95</td>
<td>13.97</td>
</tr>
<tr>
<td>Marital status</td>
<td>62 %</td>
<td>61 %</td>
</tr>
<tr>
<td>Number of children 4 years and under</td>
<td>0.21</td>
<td>0.16</td>
</tr>
<tr>
<td>Number of children 5 to 9 years</td>
<td>0.18</td>
<td>0.20</td>
</tr>
<tr>
<td>Number of children 10 to 14 years</td>
<td>0.22</td>
<td>0.25</td>
</tr>
<tr>
<td>Employed casually (share)</td>
<td>13 %</td>
<td>23 %</td>
</tr>
<tr>
<td>Employed part-time (share)</td>
<td>17 %</td>
<td>47 %</td>
</tr>
<tr>
<td>Years of work experience</td>
<td>21.23</td>
<td>17.86</td>
</tr>
<tr>
<td>Tenure with current employer (years)</td>
<td>7.40</td>
<td>6.13</td>
</tr>
<tr>
<td>Usual hours of work in all jobs (per week)</td>
<td>41.63</td>
<td>31.82</td>
</tr>
<tr>
<td>Total time not in the labour force (years)</td>
<td>0.95</td>
<td>4.31</td>
</tr>
<tr>
<td>Total time unemployed (years)</td>
<td>0.68</td>
<td>0.55</td>
</tr>
<tr>
<td>Entitled to paid maternity/paternity leave (share)</td>
<td>26 %</td>
<td>34 %</td>
</tr>
<tr>
<td>Entitled to unpaid maternity/paternity leave (share)</td>
<td>31 %</td>
<td>44 %</td>
</tr>
<tr>
<td>Employed in government (share)</td>
<td>16 %</td>
<td>25 %</td>
</tr>
<tr>
<td>Employed at a non-government organisation (share)</td>
<td>4 %</td>
<td>9 %</td>
</tr>
<tr>
<td>Union member (share)</td>
<td>23 %</td>
<td>23 %</td>
</tr>
<tr>
<td>Employer has &lt; 20 employees (share)</td>
<td>3 %</td>
<td>4 %</td>
</tr>
<tr>
<td>Employer has 20-100 employees (share)</td>
<td>26 %</td>
<td>32 %</td>
</tr>
<tr>
<td>Hourly wages</td>
<td>$23.20</td>
<td>$21.91</td>
</tr>
</tbody>
</table>
### Industry sector (share)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>4.4%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Mining</td>
<td>2.9%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12.8%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Electricity, gas, water and waste services</td>
<td>1.3%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Construction</td>
<td>12.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>3.3%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Retail trade</td>
<td>9.0%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Accommodation and food services</td>
<td>4.6%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Transport, postal and warehousing</td>
<td>6.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Information media and telecommunications</td>
<td>2.9%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Financial and insurance services</td>
<td>3.7%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Rental, hiring and real estate services</td>
<td>1.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Professional, scientific and technical services</td>
<td>9.0%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Administrative and support services</td>
<td>2.5%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Public administration and safety</td>
<td>7.3%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Education and training</td>
<td>4.7%</td>
<td>13.8%</td>
</tr>
<tr>
<td>Healthcare and social assistance</td>
<td>5.1%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Arts and recreation services</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Other services</td>
<td>4.0%</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>Index of industrial segregation</strong></td>
<td>59.64</td>
<td>43.85</td>
</tr>
</tbody>
</table>

### Occupation (share)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>14.9%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Professionals</td>
<td>20.8%</td>
<td>27.0%</td>
</tr>
<tr>
<td>Technicians and trades workers</td>
<td>23.5%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Community and personal service workers</td>
<td>6.4%</td>
<td>14.4%</td>
</tr>
<tr>
<td>Clerical and administrative workers</td>
<td>7.7%</td>
<td>23.8%</td>
</tr>
<tr>
<td>Sales workers</td>
<td>5.6%</td>
<td>13.4%</td>
</tr>
<tr>
<td>Machinery operators and drivers</td>
<td>10.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Labourers</td>
<td>11.1%</td>
<td>7.2%</td>
</tr>
<tr>
<td><strong>Index of occupational segregation</strong></td>
<td>65.64</td>
<td>36.92</td>
</tr>
</tbody>
</table>

### Location (share)

<table>
<thead>
<tr>
<th>Location</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>32%</td>
<td>32%</td>
</tr>
<tr>
<td>Victoria</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Queensland</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td>South Australia</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Western Australia</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Tasmania</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>City</td>
<td>68%</td>
<td>70%</td>
</tr>
<tr>
<td>Inner regional location</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td>Outer regional location</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Remote/very remote</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>
A.3 Equations estimated

A pair of equations were estimated using the two-step Heckman approach. The first equation had as the dependent variable a dummy variable equal to one if the person (of working age) was employed full or part time, and equal to zero otherwise. The specification of the equation is given by:

$$\Pr(\text{emp}_i = 1 \mid Z) = \Phi(Z_\gamma)$$  \hspace{1cm} (1)

Where \( \text{emp}_i \) indicates the employment dummy variable, \( Z \) is a vector of explanatory variables, \( \gamma \) is a vector of unknown parameters, and \( \Phi \) is the cumulative distribution function of the standard normal equation. In the model we estimated, the following independent variables were included: years of education; gender; age and age squared; marital status; number of children 0 – 4 years, 5 – 9 years and 10 – 14 years; migrant from an English or non English speaking background; health status and long-term health conditions; whether attending full-time or part-time education; years since left full-time education; years of work experience and experience squared; and location by inner regional, outer regional; or remote/very remote.

After the employment equation is estimated, the Inverse Mills Ratio, \( \lambda \), is obtained by using the regression equation results to calculate the employment probability for every individual in the sample. This variable is included in the second stage to correct for self-selection into or out of employment.

The second step of the process involves estimating the wage equation. Here the dependent variable is the log of the hourly wage rate. The wage equation may be specified as:

$$w^* = X\beta + u$$  \hspace{1cm} (2)

Where \( w^* \) is an underlying wage offer, which is not observed if the individual does not work. The conditional expectation of wages given the person works is, as such, given by:

$$E[w \mid X, D = 1] = X\beta + E[u \mid X, D = 1]$$  \hspace{1cm} (3)

Based on the assumption that the error terms are jointly normal, we can express the wage equation as:

$$E[w \mid X, D = 1] = X\beta + \rho \sigma_u \lambda(Z\gamma)$$  \hspace{1cm} (4)

Where \( \rho \) is the correlation between unobserved determinants of the propensity to work, \( \varepsilon \), and unobserved determinants of wage offers \( u \), \( \sigma_u \) is the standard deviation of \( u \), and \( \lambda \) is the Inverse Mills Ratio evaluated at \( Z\gamma \).

The independent variables in the wage equation were: age and age squared; education; marital status; number of children 0 – 4 years, 5 – 9 years and 10 – 14 years; whether employed casually; whether employed part-time; years of work experience and experience squared; years of tenure with current employer; usual hours of work per week in all jobs; total number of years not in the labour force; total number of years unemployed; whether entitled to paid or unpaid
maternity/paternity leave at work; employed in government or non-government organisation; whether is a union member; employer size; satisfaction with flexibility to balance work and non-work commitments; industry sector; index of industrial segregation; occupation; index of occupational segregation; state of residence; and location by inner regional, outer regional; or remote/very remote.

A.4 Occupational and industry segregation

Table 6.4 shows the share of males employed in each industry (based on the ANZSIC 1-digit codes) and occupation (based on the ANZSCO 2-digit codes), which measures the degree of industry and occupational segregation respectively.

Table 6.4 Segregation index by industry and occupation, 2007

<table>
<thead>
<tr>
<th>Industry/occupation</th>
<th>Segregation index (share of males)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry (1-digit ANZSIC level)</strong></td>
<td></td>
</tr>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>69.1</td>
</tr>
<tr>
<td>Mining</td>
<td>86.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>74.1</td>
</tr>
<tr>
<td>Electricity, gas and water supply</td>
<td>80.5</td>
</tr>
<tr>
<td>Construction</td>
<td>88.1</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>67.2</td>
</tr>
<tr>
<td>Retail trade</td>
<td>43.7</td>
</tr>
<tr>
<td>Accommodation, café's and restaurants</td>
<td>43.9</td>
</tr>
<tr>
<td>Transport and storage</td>
<td>76.9</td>
</tr>
<tr>
<td>Communication services</td>
<td>58.5</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>48.5</td>
</tr>
<tr>
<td>Property and business services</td>
<td>52.6</td>
</tr>
<tr>
<td>Government administration and defence</td>
<td>53.8</td>
</tr>
<tr>
<td>Education</td>
<td>32.7</td>
</tr>
<tr>
<td>Health and community services</td>
<td>20.8</td>
</tr>
<tr>
<td>Cultural and recreational services</td>
<td>52.8</td>
</tr>
<tr>
<td>Personal and other services</td>
<td>29.9</td>
</tr>
<tr>
<td><strong>Occupation (2-digit ANZSCO level)</strong></td>
<td></td>
</tr>
<tr>
<td>Managers</td>
<td>66.4</td>
</tr>
<tr>
<td>Chief Executives, General Managers and Legislators</td>
<td>78.4</td>
</tr>
<tr>
<td>Farmers and Farm Managers</td>
<td>73.3</td>
</tr>
<tr>
<td>Specialist Managers</td>
<td>69.8</td>
</tr>
<tr>
<td>Hospitality, Retail and Service Managers</td>
<td>56.6</td>
</tr>
</tbody>
</table>
### Understanding the Economic Implications of the Gender Pay Gap in Australia

November 2009

#### Segregation index (share of males)

<table>
<thead>
<tr>
<th>Industry/occupation</th>
<th>Segregation index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professionals</strong></td>
<td></td>
</tr>
<tr>
<td>Arts and Media Professionals</td>
<td>55.1</td>
</tr>
<tr>
<td>Business, Human Resource and Marketing Professionals</td>
<td>54.1</td>
</tr>
<tr>
<td>Design, Engineering, Science and Transport Professionals</td>
<td>73.0</td>
</tr>
<tr>
<td>Education Professionals</td>
<td>33.4</td>
</tr>
<tr>
<td>Health Professionals</td>
<td>24.6</td>
</tr>
<tr>
<td>ICT Professionals</td>
<td>81.7</td>
</tr>
<tr>
<td>Legal, Social and Welfare Professionals</td>
<td>42.8</td>
</tr>
<tr>
<td><strong>Technicians and Trade Workers</strong></td>
<td>85.8</td>
</tr>
<tr>
<td>Engineering, ICT and Science Technicians</td>
<td>74.2</td>
</tr>
<tr>
<td>Automotive and Engineering Trades Workers</td>
<td>98.8</td>
</tr>
<tr>
<td>Construction Trades Workers</td>
<td>99.0</td>
</tr>
<tr>
<td>Electrotechnology and Telecommunications Trades Workers</td>
<td>98.1</td>
</tr>
<tr>
<td>Food Trades Workers</td>
<td>72.2</td>
</tr>
<tr>
<td>Skilled Animal and Horticultural Workers</td>
<td>71.1</td>
</tr>
<tr>
<td>Other Technicians and Trades Workers</td>
<td>57.1</td>
</tr>
<tr>
<td><strong>Community and Professional Service Workers</strong></td>
<td>31.5</td>
</tr>
<tr>
<td>Health and Welfare Support Workers</td>
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<tr>
<td>Carers and Aides</td>
<td>11.7</td>
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<td>Hospitality Workers</td>
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<td>Protective Service Workers</td>
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</tr>
<tr>
<td>Sports and Personal Service Workers</td>
<td>36.6</td>
</tr>
<tr>
<td><strong>Clerical and Administrative Workers</strong></td>
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<tr>
<td>Office Managers and Program Administrators</td>
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<tr>
<td>Personal Assistants and Secretaries</td>
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</tr>
<tr>
<td>General Clerical Workers</td>
<td>17.3</td>
</tr>
<tr>
<td>Inquiry Clerks and Receptionists</td>
<td>14.7</td>
</tr>
<tr>
<td>Numerical Clerks</td>
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</tr>
<tr>
<td>Clerical and Office Support Workers</td>
<td>55.6</td>
</tr>
<tr>
<td>Other Clerical and Administrative Workers</td>
<td>52.0</td>
</tr>
<tr>
<td><strong>Sales Workers</strong></td>
<td>37.5</td>
</tr>
<tr>
<td>Sales Representatives and Agents</td>
<td>61.5</td>
</tr>
<tr>
<td>Sales Assistants and Salespersons</td>
<td>33.8</td>
</tr>
<tr>
<td>Sales Support Workers</td>
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</tr>
<tr>
<td><strong>Machinery Operators and Drivers</strong></td>
<td>90.5</td>
</tr>
<tr>
<td>Machine and Stationary Plant Operators</td>
<td>84.1</td>
</tr>
<tr>
<td>Mobile Plant Operators</td>
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</tr>
<tr>
<td>Road and Rail Drivers</td>
<td>95.1</td>
</tr>
<tr>
<td>Storepersons</td>
<td>82.3</td>
</tr>
<tr>
<td>Industry/occupation</td>
<td>Segregation index (share of males)</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Labourers</td>
<td>64.2</td>
</tr>
<tr>
<td>Cleaners and Laundry Workers</td>
<td>38.1</td>
</tr>
<tr>
<td>Construction and Mining Labourers</td>
<td>98.7</td>
</tr>
<tr>
<td>Factory Process Workers</td>
<td>65.2</td>
</tr>
<tr>
<td>Farm, Forestry and Garden Workers</td>
<td>74.6</td>
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<tr>
<td>Food Preparation Assistants</td>
<td>48.2</td>
</tr>
<tr>
<td>Other Labourers</td>
<td>69.0</td>
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</tbody>
</table>

## B Detailed regression results

Table 6.5 Regression results for the employment equation

<table>
<thead>
<tr>
<th>Employment model results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Age squared</td>
</tr>
<tr>
<td>Marital status</td>
</tr>
<tr>
<td>Number of children 4 years and under</td>
</tr>
<tr>
<td>Number of children 5 to 9 years</td>
</tr>
<tr>
<td>Number of children 10 to 14 years</td>
</tr>
<tr>
<td>Migrant ESB</td>
</tr>
<tr>
<td>Migrant NESB</td>
</tr>
<tr>
<td>Long-term health condition</td>
</tr>
<tr>
<td>Poor health status</td>
</tr>
<tr>
<td>Household income</td>
</tr>
<tr>
<td>Attending full-time education</td>
</tr>
<tr>
<td>Attending part-time education</td>
</tr>
<tr>
<td>Years since left full-time education</td>
</tr>
<tr>
<td>Work experience</td>
</tr>
<tr>
<td>Work experience squared</td>
</tr>
<tr>
<td>Inner regional location</td>
</tr>
<tr>
<td>Outer regional location</td>
</tr>
<tr>
<td>Remote/very remote</td>
</tr>
<tr>
<td>Constant</td>
</tr>
</tbody>
</table>

*** 1 per cent significance; ** 5 per cent significance; * 10 per cent significance
Dependent variable = 1 if in the labour force, = 0 otherwise
Number of observations 11,365
Binary Probit model with Huber/White standard errors and covariances
McFadden R-squared = 0.4252
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>-0.0740</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Age</td>
<td>0.0354</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.0003</td>
<td>0.0070***</td>
</tr>
<tr>
<td>Education scale (years)</td>
<td>0.0366</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.0643</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Number of children 4 years and under</td>
<td>0.0684</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Number of children 5 to 9 years</td>
<td>-0.0230</td>
<td>0.0204**</td>
</tr>
<tr>
<td>Number of children 10 to 14 years</td>
<td>-0.0314</td>
<td>0.0067***</td>
</tr>
<tr>
<td>Employed casually</td>
<td>0.0408</td>
<td>0.0220**</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>-0.0967</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Work experience</td>
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<td>0.4602</td>
</tr>
<tr>
<td>Work experience squared</td>
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<td>0.1076</td>
</tr>
<tr>
<td>Tenure with current employer (years)</td>
<td>0.0051</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Usual hours of work in all jobs (per week)</td>
<td>-0.0080</td>
<td>0.0000***</td>
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<tr>
<td>Total time not in the labour force</td>
<td>-0.0058</td>
<td>0.0071***</td>
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<tr>
<td>Total time unemployed</td>
<td>-0.0282</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Entitled to paid maternity/paternity leave</td>
<td>0.0262</td>
<td>0.0340**</td>
</tr>
<tr>
<td>Entitled to unpaid maternity/paternity leave</td>
<td>0.0475</td>
<td>0.0000***</td>
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<tr>
<td>Employed in government or non-government organisation</td>
<td>-0.0434</td>
<td>0.0137**</td>
</tr>
<tr>
<td>Union member</td>
<td>0.0497</td>
<td>0.0001***</td>
</tr>
<tr>
<td>Employer has &lt; 20 employees</td>
<td>-0.1049</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Employer has 20-100 employees</td>
<td>-0.0552</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Satisfaction with flexibility to balance work and non-work commitments</td>
<td>0.0456</td>
<td>0.0002***</td>
</tr>
<tr>
<td>Industry sector a</td>
<td>-0.2048</td>
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</tr>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>0.2616</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Mining</td>
<td>-0.0440</td>
<td>0.1351</td>
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<tr>
<td>Manufacturing</td>
<td>0.0892</td>
<td>0.1891</td>
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<tr>
<td>Construction</td>
<td>0.0132</td>
<td>0.6989</td>
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<tr>
<td>Wholesale trade</td>
<td>-0.0487</td>
<td>0.2028</td>
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<tr>
<td>Retail trade</td>
<td>-0.1607</td>
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</tr>
<tr>
<td>Accommodation and food services</td>
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<td>0.0000***</td>
</tr>
<tr>
<td>Transport, postal and warehousing</td>
<td>-0.0116</td>
<td>0.7197</td>
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<td>Information media and telecommunications</td>
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<td>Financial and insurance services</td>
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<td>0.0107**</td>
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<tr>
<td>Rental, hiring and real estate services</td>
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<td>0.3082</td>
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<tr>
<td>Professional, scientific and technical services</td>
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<tr>
<td>Administrative and support services</td>
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<td>0.0176**</td>
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<tr>
<td>Education and training</td>
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<td>0.0002***</td>
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<td>Healthcare and social assistance</td>
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<tr>
<td>Arts and recreation services</td>
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<td>0.0067***</td>
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<td>Other services</td>
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<tr>
<td>Index of industrial segregation</td>
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<td>0.0104**</td>
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<tr>
<td>Independent variable</td>
<td>Coefficient</td>
<td>Significance</td>
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<tr>
<td>----------------------</td>
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<tr>
<td>Occupation&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Managers</td>
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<td>Professionals</td>
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<td>Technicians and trades workers</td>
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<td>Clerical and administrative workers</td>
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<tr>
<td>Sales workers</td>
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<td>Machinery operators and drivers</td>
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<td>Index of occupational segregation</td>
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<td>Victoria</td>
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<td>Queensland</td>
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<td>0.0488**</td>
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<td>South Australia</td>
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<td>Outer regional location</td>
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</tr>
<tr>
<td>Remote/very remote</td>
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<td>Constant</td>
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</tr>
<tr>
<td>Inverse Mills ratio</td>
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</tr>
</tbody>
</table>

*** 1 per cent significance, ** 5 per cent significance; * 10 per cent significance

a. The omitted variable is employees working at companies with 100 or more persons employed
b. The industry sector that has been omitted is public administration and safety
c. The labourer occupational class is the omitted variable
d. For the states, NSW has been omitted, and for the remoteness index, cities have been omitted.

Dependent variable = log of hourly wage, which is given by the natural log of income imputed current weekly gross wages and salaries for all jobs divided by the hours worked per week in all jobs

Number of observations 5,833

Ordinary Least Squares regression model with White heteroskedasticity-consistent standard errors and covariances

Adjusted R-squared = 0.4717