

AJLE

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*A journal of labour economics
& labour relations*

From the
Managing Editor
Phil Lewis

The value of policy
relevant research in
education, training,
jobs and skills
Peter Dawkins

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male-breadwinner,
female-breadwinner
and equal-earner
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From the Managing Editor

Welcome to the second issue of the *Australian Journal of Labour Economics* (AJLE) for 2023. The year has been a busy one for the editorial team given that we have not just had to carry out the usual roles involved in supporting the AJLE, but also organising, refereeing and collating papers for the 32nd *Australia Labour Market Research* (ALMR) Workshop and the annual meeting of the Australian Society of Labour Economists (ASLE). Following on from the success of previous year's event, the 32nd ALMR Workshop was held at Jobs and Skills Australia (JSA), in Canberra on 4-5 December 2023 with excellent support from JSA staff. The Workshop was supported by Jobs and Skills Australia, the Australian Bureau of Statistics and the Department of Employment and Workplace Relations. The purpose of the Workshop is to disseminate high quality research in labour economics and labour relations and to promote informed public debate about current labour market issues. This year's Workshop certainly met this objective.

Participants and discussants included senior academic economists and labour economists in the public and private sectors. Early career researchers, including PhD students close to completing, were particularly encouraged to submit papers and made up a healthy proportion of participants. Any theoretical, applied or policy related papers on any aspect of the labour market were welcome and the Workshop contained a good mix of papers of interest to researchers and practitioners in labour market issues and policy. Papers related to a number of labour market areas including the following themes:

- 1) Employment, education, training and skills shortages
- 2) Labour markets and demographic changes
- 3) New ways work is organised
- 4) Gender equity
- 5) Contemporary labour market issues
- 6) Applied labour econometrics
- 7) Work, welfare and the disadvantaged

A full list of authors and abstracts of papers delivered can be found at <https://bcec.edu.au/events/32nd-australian-labour-market-research-workshop-2023/>. If you would like to read any of the papers, please contact the authors directly.

As well as submitted papers the Workshop also included an invited address by Emeritus Professor Peter Dawkins AO. Peter has made an enormous contribution to labour economics and policy development in Australia and we were privileged that he accepted our invitation to address the Workshop. The first article in this issue is based upon Peter Dawkins' invited address to the ALMR Workshop, in which he was asked to draw on his forty years of experience of working in Australia as a researcher, teacher, research institute director, public policy advisor, senior public servant, university vice-

chancellor, and, most recently, leading the establishment of Jobs and Skills Australia (JSA) as its Interim Director and Acting Commissioner.

The paper highlights some key significant changes in the labour market and educational context over recent years that give rise to some important modern policy issues incorporating the following three questions. How can we better match labour supply with labour demand? Is our tertiary education system providing the skills we need? Are our migration settings supporting the enhancement of labour market outcomes?

The paper proposes that policy-relevant research is critical to helping answer such questions. It is maintained that Australia is in a strong position to take advantage of such research, given the increasing quantity and quality of data bases that can be used for this research, and the number and quality of well-trained analysts to interrogate the data. And, in the author's view there are good signs in the current policy environment that such analysis will be an important input into the decision making process about the above questions.

Finally, the paper concludes with the view that the JSA will play a key role in developing a national jobs and skills strategy drawing on its own research work together with engagement with key stakeholders and the research community.

The second paper in this issue is by Ruth Steinbring, Francisco Perales, Janeen Baxter and Dr Jack Lam, of the University of Queensland on the 'Characteristics of male-breadwinner, female-breadwinner and equal-earner households in Australia: The role of couple-level human capital'.

The paper reflects on the observed phenomenon that as women's participation in the labour market increases, so does the number of women who out-earn their male partner. However, despite this, male-breadwinning persists and Australian households remain highly gendered in terms of the division of labour. Women continue to undertake the bulk of unpaid labour and care and most men out-earn their female partner. It has been argued that there is value, both economic and social, in changing these patterns such that men and women share equally in paid and unpaid work, ensuring that women have equal access to quality education and representation in leadership and decision making. Given change over recent decades in men's and women's labour market investments the paper seeks to examine how today's couples negotiate household earnings arrangements.

Using a human capital theory framework, the paper examines associations between household characteristics and couples' relative earnings. Drawing on longitudinal data from the Household, Income and Labour Dynamics in Australia Survey spanning the 2000 to 2019 period, couple-level human capital characteristics of female-breadwinner, male-breadwinner and equal-earner households, are compared. The analysis reveals an increase in the share of equal-earner households over the first two decades of the 2000s, coinciding with a decline in male-breadwinner households.

The authors find that women in female-breadwinner households have greater levels of human capital than their partner and women in other household types; men with a long-term health condition are more likely to be in female-breadwinner households; and female-breadwinner households have the lowest overall earnings of all household types.

The results offer broad support to the directions taken by the Australian Government's 2023 White Paper on Jobs and Opportunities, indicating that policies that enable women to invest in their human capital may reduce the disproportionate number of male-breadwinner households.

The third paper in this issue is 'The contented Australian female worker: Paradox lost, paradox found' by Mike Dockery of Curtin University. The paper examines the phenomenon of the 'paradox of the contented female worker', identified in the UK, whereby women report higher job satisfaction than their male counterparts, despite generally holding inferior jobs. It has been argued that this was due to women having lower expectations than men, and that the phenomenon would disappear as women's positions in the labour market improved. This prediction appears to be supported by later evidence, again in the UK.

The paper seeks to examine whether this phenomenon is observable in Australia, using data from the Household, Income and Labour Dynamics in Australia survey to investigate how the differential in women's job satisfaction, relative to that of men, evolved in Australia between 2001 and 2022. Dockery's modelling suggests that there was a substantial job satisfaction premium for women in 2001 but this gradually diminished over the first decade of this century. Unlike in the UK, however, the job satisfaction premium re-emerged and remained relatively constant from around 2013. The paper then controls for the effects of variables, rather than differences in the mean characteristics of male and female workers or of their job. This decomposition suggests changes in preferences relating to working hours, and the effects of educational attainment on job satisfaction, have particularly shaped the evolution of differences in job satisfaction by gender.

Despite a convergence in the raw means of men's and women's job satisfaction assessments in recent years, the paradox of the contented female worker appears to be alive and well in the Australian labour market. No doubt, this paper will stimulate further research on this topic.

I think you will agree that all the articles in this issue will be of interest to anyone researching or practising labour economics. I would like to thank authors, the anonymous referees and co-editors for their contributions to the AJLE. Once again special thanks go to the AJLE's editorial assistant, Sandie Rawnsley, for doing an excellent job in making this issue possible.

Phil Lewis
Managing Editor

The value of policy relevant research in education, training, jobs and skills*

PETER DAWKINS[†] *Emeritus Professor of Economics, Mitchell Institute, Victoria University and Special Advisor, Jobs and Skills Australia*

Abstract

This article is an edited version of an invited address to the 2023 Australian Labour Market Workshop. The author draws on his four decades of experience in academia and government, to highlight some major changes that have occurred in the Australian labour market and the education and training system and associated key policy issues that have arisen as a result. These changes raise the following questions. How can we better match labour supply with labour demand? Is our tertiary education system providing the skills we need? Are our migration settings supporting the enhancement of labour market outcomes? The article highlights why the current environment in Australia is well placed to pursue evidence-based policy solutions to these questions. In particular, the establishment of *Jobs and Skills Australia* (JSA) is a significant development in the history of evidence-based policy making in the areas of labour markets, education and training. The early work of JSA has already shed significant light on these key policy questions and opens up a path to an evidence-based national jobs and skills roadmap.

* This article is based upon Peter Dawkins' invited address to the Australian Labour Market Research Workshop in December 2023, in which he was asked to draw on his forty years of experience of working in Australia as a researcher, teacher, research institute director, public policy advisor, senior public servant, university vice-chancellor, and, most recently, leading the establishment of *Jobs and Skills Australia* as its Interim Director and Acting Commissioner.

† I am grateful to David Turvey and his colleagues in JSA's senior leadership team for discussions about the matters canvassed in this article, and to JSA colleagues who have undertaken research described in this article. Thanks also to participants in the 2023 Australian Labour Market Research (ALMR) Workshop for their comments and questions. A special thank you, also, to Kate Johnston of JSA, for her assistance in the development of my presentation to the ALMR workshop and the preparation of figures and tables for this article.

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Introduction



This article is an edited version of my address to the Australian Labour Market Research Workshop in December 2023. I was invited to discuss the value of policy relevant research, drawing upon my experience over the last four decades, in both academia and government, in relation to the Australian labour market and the education and training system. Most recently, I led the establishment of *Jobs and Skills Australia* as its Interim Director and Acting Commissioner from December 2022 to October 2023.

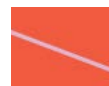
First, I make some observations about the changes in the Australian labour market and the education and training system since I arrived as an immigrant from the UK in 1984. In the process, I draw out some key policy questions that arise from the current landscape.

Second, I comment on the importance of evidence-based policy as someone who has been a champion of it, both as a researcher and as a policy maker.

Third, I make some observations about *Jobs and Skills Australia* (JSA), the establishment of which is a very positive development in the history of evidence-based policy in education, training, jobs and skills. JSA has been established with a core focus on providing evidence-based policy advice about Australia's skill needs and the adequacy of the national skills training system in meeting those needs.

Fourth, I draw some conclusions about the value of policy relevant research in education, training, jobs and skills.

Changes in the Australian labour market, education and training since the 1980s



There have been many changes in the Australian labour market, and education and training system, since the 1980s. There are three that I would like to highlight.

First, we have moved from a world of substantial unemployment to one of full, or at least close to, full employment. This makes a big difference to the focus of policy as well as to the focus of research.

When I was the director of the Melbourne Institute at the University of Melbourne, in the late 1990s and early 2000s, unemployment was Australia's major economic policy challenge. It was in the range of 7 to 10 per cent, and the central focus of our research agenda at the Institute. It also led to huge interest in our welfare system and research about welfare dependency.

Now we are in a world of 3 to 4 per cent unemployment¹, which is a wonderful turnaround, and is reminiscent of the 1960s. Looking back at the 1960s gives cause to be optimistic that we might be able to reduce unemployment further to the 2 to 3 per cent range. But the current high rate of employment shifts the emphasis of policy away from unemployment as the core problem, to skills shortages and the improvement of matching supply and demand as the job to be done.

Second, in the 1980s only 30 per cent of young people completed year 12. That has now grown to over 80 per cent. Tertiary education is now central to supporting young people to move from school to work, whereas in the 1980s it was an add-on for only about half the population.

Third, while a large immigration program was, and continues to be a core feature of Australian population dynamics, the composition of immigration has changed substantially from a focus primarily on permanent migration to a primary focus on temporary migration and also a substantial increase in the proportion of migrants who are international students. This dominance of temporary migration, or 'guest workers', has come under major scrutiny by the recent review of the migration system and the government's response, which has foreshadowed a significant change in migration policy settings.

Some key policy questions that arise from the current landscape are:

- i. How can we better match labour supply with labour demand?
- ii. Is our tertiary education system providing the skills that are needed?
- iii. Are our migration settings supporting the enhancement of labour market outcomes?

These questions are a core theme of this article.

Evidence-based policy



There has been a great deal written about evidence-based policy. I have been involved in two substantial publications on this theme (Productivity Commission, 2010; Dawkins and Payne, 2022). The first was based on a conference convened by the Productivity

1 Since delivering this address, unemployment has crept up, following a big hike in interest rates as a result of an outbreak of inflation sparked by supply shocks associated with COVID-19 and the war in the Ukraine. There is, however, speculation that interest rates might be reduced again this year and it is to be hoped that a soft landing followed by less restrictive monetary policy, combined with a range of strategies to improve the operation of the labour market, will enable unemployment to go down again.

Commission in 2009. The second was a compendium put together by the University of Melbourne's Melbourne Institute of Applied Economic and Social Research, as part of its sixtieth anniversary celebrations in 2022.

In 2010 the Productivity Commission defined evidence-based policy as "a process that transparently uses rigorous and tested evidence in the design, implementation and refinement of policy to meet designated policy objectives." (Productivity Commission, 2010 Vol 2 p.3).

At the Productivity Commission Conference, Head (2010) argued that three things are needed for evidence-based policy to operate successfully:

- i. high quality information data bases on relevant topics
- ii. cohorts of professionals with skills in data analysis; and
- iii. political incentives for utilising evidence-based analysis in government decision-making processes.

In a 2022 monograph celebrating the 60th anniversary of the Melbourne Institute, with my co-editor Abigail Payne, we observed that:

"On these three counts, the current environment in Australia would appear to be quite hopeful. There are more extensive high quality information bases available now than ever before. There are also many professionals with skills in data analysis in universities, government, and the private sector. There are also reasons to be hopeful about the political incentives for utilising evidence-based analysis." (Dawkins and Payne, 2022, p.12).

As evidence about optimism around the political environment, we highlighted the 2022 Jobs and Skills Summit, as representing keen interest in identifying evidence-based solutions to Australia's skills challenges. The subsequent establishment of Jobs and Skills Australia, whose role is a major focus of this article, I believe represents a significant development in evidence-based policy making in Australia.

Further to the three preconditions for evidence-based policy, the Productivity Commission argued that eight principles should be adopted:

- i. carefully define the problem;
- ii. consider all options for addressing it;
- iii. rigorously assess the quality of existing evidence;
- iv. consider the counterfactual issues;
- v. consider attribution issues;
- vi. consider selection bias, optimism bias, model misspecification and other sources of bias in evaluation;
- vii. account for all the effects across the community and the economy; and
- viii. use a cost benefit framework.

(Productivity Commission, 2010 Vol.2 p.10)

This is a good checklist for those engaged in evidence-based policy. One more that could be added, based on the early experience of *Jobs and Skills Australia*, is deep stakeholder

engagement. If evidence-based policy is to be successful, a strong dialogue with key stakeholders in industry and governments is important, not just to ensure that they consider research evidence, but also that researchers gain the benefit of the on-the-ground experience of key stakeholders.

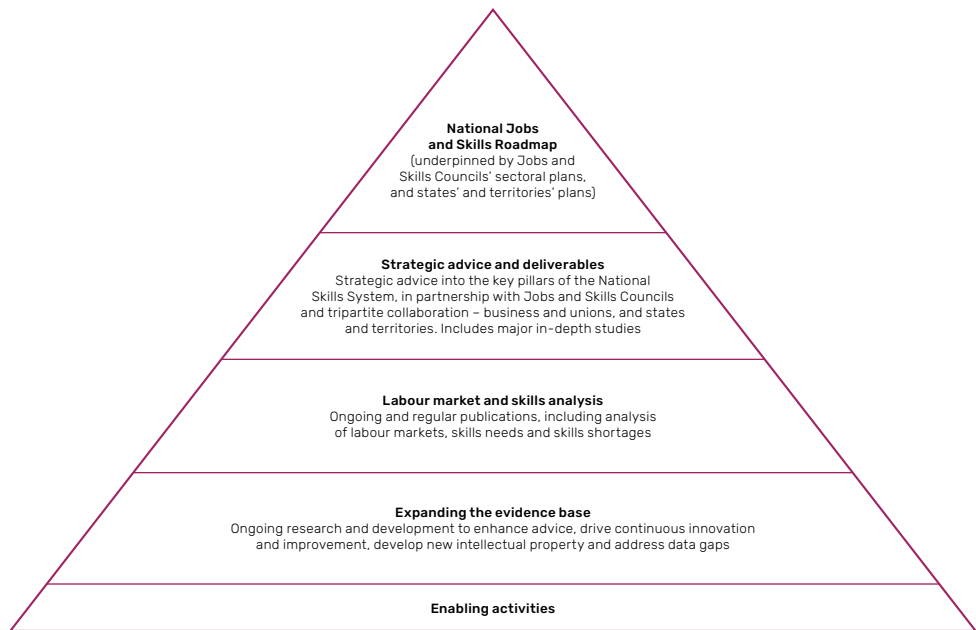
Jobs and Skills Australia

Towards an Evidence-Based National Jobs and Skills Roadmap

Jobs and Skills Australia (JSA) was established in November 2022 with a core mission to provide advice on Australia’s skills needs and the adequacy of the skills system in meeting those needs.

In 2023 JSA developed a conceptual framework for shaping its work program, which is presented in Figure 1 as a pyramid. It is based on the idea that JSA, in partnership with its key stakeholders, develop an evidence-based National Jobs and Skills Roadmap, which is therefore positioned at the pinnacle of the pyramid.

Figure 1. Towards an Evidence-Based National Jobs and Skills Roadmap



Source: Jobs and Skills Australia, Jobs and Skills Report, October 2023.

The next layer of the pyramid is strategic advice into the key pillars of the national skills system, especially the vocational education and training (VET) sector, the higher education sector and the migration system, in partnership with Jobs and Skills Councils and with tripartite consultation with business, unions, education and training providers and state and territory governments and other Commonwealth Government agencies. This includes major in-depth studies of key issues, such as the skills and workforce implications of the clean energy transformation (Jobs and Skills Australia, 2023a) and the skills and workforce needs of the early childhood education and care sectors, which is the subject of a current study.

The Commonwealth Government has negotiated a National Skills Agreement with the states and territories. *Jobs and Skills Australia* is well placed to provide advice on the implementation and outcomes of this agreement. It has also commissioned the Australian Universities Accord panel, chaired by Mary O’Kane, to produce a report on reforms needed to improve the higher education system. Their interim report (Department of Education, 2023) also sees an important role for *Jobs and Skills Australia* in providing ongoing evidence to inform the reform process.²

The Commonwealth Government has also reviewed the migration system (Department of Home Affairs 2023a). The review, chaired by Martin Parkinson, identified five objectives one of which was “building Australia’s prosperity by lifting productivity, meeting labour supply needs and by supporting exporters” (Department of Home Affairs, 2023a, p.3.) It recommended major reform and proposed an important role for *Jobs and Skills Australia*, in “providing critical information, data and input to allow consideration of whether migration is an appropriate and necessary solution to domestic skills needs and training gaps” (Department of Home Affairs 2023a, p.4).³

The next layer of the pyramid is labour market and skills analysis. This layer includes, for example, the measurement and analysis of skills shortages, the measurement and analysis of job vacancies and forecasting future skills demand. There are a range of regular publications which present these analyses and data updates, as well as analysis of one-off projects.

-
- 2 Since delivering this address, the final report of the Accord panel has been released (Department of Education, 2024) and outlines a suggested major reform agenda for the decades ahead. It identifies a significant role for *Jobs and Skills Australia* in the monitoring of progress of such a reform agenda. It also proposes the establishment of an Australian Tertiary Education Commission as a public sector steward for the tertiary education system, which if adopted has the potential to be another major stimulus to the development and implementation of evidence-based policy.
 - 3 Shortly after my address, the Minister for Home Affairs released its Migration Strategy for Australia (Department of Home Affairs, 2023b), strongly based on the review’s recommendations and confirmed that “the key body for advising on Australia’s skill needs, *Jobs and Skills Australia*, will help ensure local workers’ skills and job opportunities are prioritised, and the migration system is guided to areas of best use” (Department of Home Affairs, 2023b, p.81).

Expanding the evidence base is the next layer. As part of JSA's commitment to continuous improvement, it has an ongoing focus on enhancing the data base for analysis of the supply and demand for skills and the operation and impact of the skills system. Examples of recent and current projects are the development of the VET National Data Asset (VNDA) and the development of a national skills taxonomy.

The bottom layer of the pyramid is enabling activities, which includes, amongst other things, deep stakeholder engagement.

Analysing Skill Shortages

A key role for JSA is analysing skill shortages and developing the annual Skills Priority List. In its first year of operation, significant progress has been made in understanding skill shortages by adapting a typology developed by labour market economist, Sue Richardson, (Richardson, 2007).

Table 1 outlines the categories of skill shortage proposed by Richardson (2007), and how JSA has adapted this typology and used available data to categorise actual skills shortages (Jobs and Skills Australia, 2023a).

The first two categories are where the main prospect for filling the shortages (other than by attracting migrants from overseas) is to train more workers, as the existing stock of trained workers are heavily utilised and there are few applicants for available jobs.

The third category (the suitability gap) is where there are substantial numbers of qualified applicants for available jobs, but many of them are not hired by employers, as they are not thought to be suitable for the available jobs. Interrogation of employers seeking to fill these vacancies reveals that the problem is often a lack of work experience and employability skills.

The fourth category (the retention gap) is where there is a high level of employees leaving jobs, and insufficient applicants to fill the resultant vacancies, suggesting that something needs to be done to keep employees in the jobs for longer.

Table 1. The causes of skills shortages

Professor Sue Richardson's 2007 skills shortages classification	JSA adaptation of this framework
<p>In a 2007 paper for the National Centre for Vocational Education Research (NCVER), Professor Sue Richardson suggested a scheme for classifying skills shortages:</p> <ul style="list-style-type: none"> • Level 1 (or Level 2) shortage: shortage of people who have the essential technical skills who are not already using them, and either a long training time (Level 1) or short training time (Level 2) to develop the skills. • Quality gap: there are sufficient people with the essential technical skills who are not already using them and who are willing to apply for the vacancies, but they lack some qualities that employers consider are important. • Skills mismatch: there are sufficient people who have the essential technical skills who are not already using them, but they are not willing to apply for the vacancies under current conditions. 	<p>JSA has adapted this framework to develop a typology which has 4 similar categories to Professor Richardson:</p> <ul style="list-style-type: none"> • Longer training gap: there are fewer than average qualified applicants per vacancy with above average qualification requirements (apprenticeship, Certificate IV or above in the AQF). • Shorter training gap: there are fewer than average qualified applicants per vacancy with below average qualification requirements (Certificate III or below). • Suitability gap: there are above average qualified applicants per job, but a low proportion of suitable applicants compared with the number of qualified applicants. • Retention gap: there is above average job mobility (employees leaving these jobs), potentially reinforced by a low number of total new applicants per vacancy.

Source: Jobs and Skills Australia.

Table 2 shows how JSA used this typology to analyse data about the top 20 occupations in demand nationally, to categorise them accordingly (Jobs and Skills Australia, 2023a).

Table 2. Top 20 occupations in demand nationally

Classification of skills shortages	Occupations (from top 20 occupations in demand nationally)
<p>Longer training gap Few qualified applicants per vacancy, bachelor degree, Certificate IV or above, or apprenticeship required</p>	<ul style="list-style-type: none"> • Early Childhood (Pre-primary School) Teachers • Occupational Therapists • Physiotherapists • Registered Nurses • Solicitors • Social Workers • Metal Fitters and Machinists • Electricians
<p>Shorter training gap Few qualified applicants per vacancy, Certificate I to III or less required</p>	<ul style="list-style-type: none"> • Retail Managers
<p>Suitability gap Many qualified applicants per vacancy, but few suitable applicants per qualified applicant</p>	<ul style="list-style-type: none"> • Advertising, Public Relations and Sales Managers • Construction Managers • Advertising and Marketing Professionals • Civil Engineering Professionals
<p>Retention gap Above average job mobility (below average rates of retention), potentially reinforced by a low number of total new applicants per vacancy</p>	<ul style="list-style-type: none"> • Human Resource Professionals • Chefs • Child Carers • Aged and Disabled Carers

Table 2. continued

Classification yet to be determined	<ul style="list-style-type: none"> • General Practitioners and Resident Medical Officers • Software and Application Programmers • Motor Mechanics
--	--

Source: Jobs and Skills Australia, Jobs and Skills Report, October 2023.

The occupations listed in the Longer Training Gap category include some important occupations in the health sector, such as nurses and physiotherapists, and in the trades, such as electricians and metal fitters. Retail managers were the one occupation in the top twenty in-demand occupations who should be able to be trained relatively quickly.

In the Suitability Gap category, the listing of civil engineering professionals and construction managers indicates this is an important issue in the construction sector, alongside professionals and managers in advertising, public relations and marketing. When other occupations outside the top twenty that fall in this category are added, for example, other types of engineers and IT professionals, there appears to be a problem in a range of occupations that require a tertiary degree and where substantial numbers of students are graduating but finding it difficult to be employed because of a lack of employability skills and work experience. This suggests a need for the higher education sector to work together with industry to obtain the necessary work experience and employability skills for their students, through such initiatives as degree apprenticeships.

The Retention Gap category includes, amongst others, childcarers and aged and disabled carers. Wages and working conditions appear to be a major impediment to retaining sufficient workers to avoid substantial shortages. Moves have been made to start addressing these issues, especially for aged care workers.

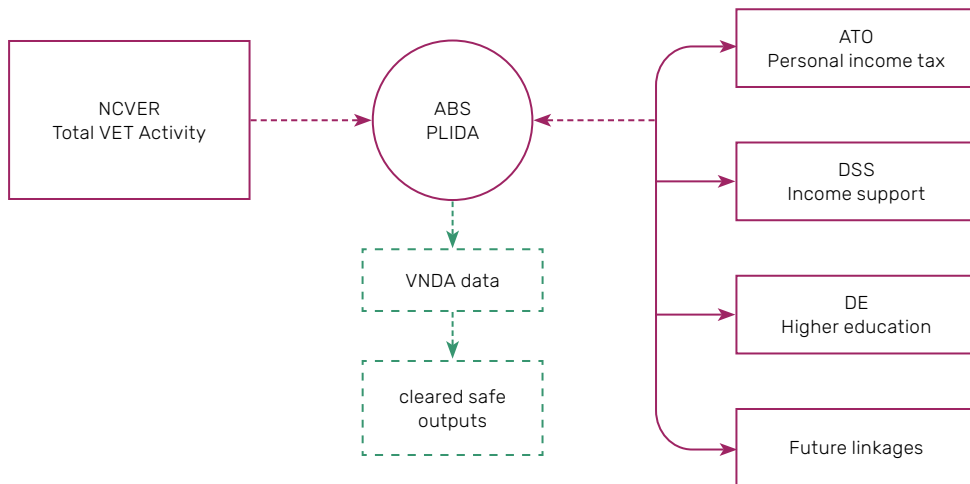
Alongside the various policy implications referred to above, another significant issue relating to skill shortages, confirmed by JSA research (Jobs and Skills Australia, 2023a), is that occupations in shortage tend to be disproportionately in areas where there is occupation gender segregation, such as electricians and childcare workers. This acts to restrict a large part of the population from which workers with requisite skills can be recruited. Actions to make the work of an electrician more attractive to women, for example, would not only help enhance equality of opportunity between genders, but also help to address skill shortage issues.

Development and Analysis of the VET National Data Asset

JSA has been working with the Australian Bureau of Statistics (ABS) on the development of the new VET National Data Asset (VNDA) as part of the PLIDA (person level integrated data asset) initiative of the ABS. This creates a greatly enhanced capability for JSA and others conducting research and analysis about the impact of VET qualification completion on students' employment, social and economic outcomes. Figure 2 shows how the VNDA combines VET activity data with a range of government administrative datasets,

including personal income tax data and income support data, to enable analysis of how VET graduates fare in the labour market and the extent to which they move into or out of reliance on income support. In principle, this data asset could be expanded to enable a similar analysis of students and graduates of the higher education system.

Figure 2. VET National Data Asset (VNDA)



Source: Jobs and Skills Australia.

Figure 3 illustrates the longitudinal nature of the data and how it can be used to examine changes in the student’s employment, income and income support status after a VET course completion.

Figure 3. VNDA methodology

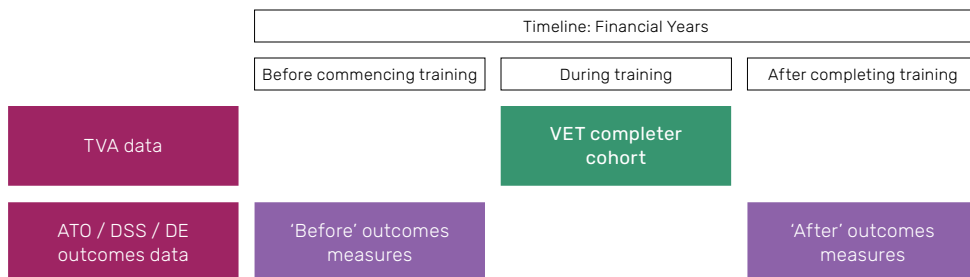


Table 3 presents some published cross tabulations from the VNDA data on the employment status of VET graduates from selected Certificate II and Certificate III qualifications (Jobs and Skills Australia, 2023b). For example, data reveal that 87.5 per cent of VET students who completed a Certificate III in Individual Support were employed after completion (a 34.5 percentage point uplift compared with their employment status before undertaking the qualification). The Certificate III in Early Childhood Education and Care, Certificate III in Education Support, Certificate II in Hospitality and Certificate III in Spoken and Written English are the other qualifications in the top five courses with the highest employment change rates after training. Table 3 also indicates that most completers from these courses are women.

Table 3. Courses with highest employment change rates after training

Program Title	Field of Education	Employed after training (%)	Employment change (pp)*	Female completers (%)	Median age
Certificate III in Individual Support	Society and Culture	87.5	34.5	80.9	35
Certificate III in Early Childhood Education and Care	Society and Culture	84.5	31.1	96.4	28
Certificate III in Education Support	Education	86.8	29.0	92.9	38
Certificate II in Hospitality	Food, Hospitality and Personal Services	65.0	26.7	60.5	21
Certificate III in Spoken and Written English	Mixed Field Programmes	45.3	26.2	79.5	35

Source: Jobs and Skills Australia, Person Level Integrated Data Asset (PLIDA), VET National Data Asset (VNDA) Phase 1 – Measuring the outcomes of Vocational Education and Training (VET) students (2021), ABS DataLab.

Notes: *pp denotes percentage points.

Care needs to be taken in interpreting these findings, as they are from preliminary analysis and represent descriptive statistics only. To understand the drivers of these results, we need to consider the VET graduates' previous experience, skills and other endowments. Sophisticated multivariate analysis of this longitudinal data may help reveal the range of factors that give rise to these results.

Exploratory work has been undertaken to compare outcomes achieved by students with similar characteristics, as well as incorporating key variables such as location, part-time work and caring arrangements into the VNDA methodology.

Table 4 presents some cross tabulations from the VNDA data on those courses that are associated with the highest exit rates from income support. For the Certificate II in Applied Digital Technologies, 50 per cent of students pre-training relied on income

support, and this decreased to about 20 per cent after course completion. The other four courses with the highest exit rates were: Certificate III in Community Services; Certificate IV in Community Services; Certificate I in Spoken and Written English; and Certificate II in Skills for Work and Vocational Pathways.

Table 4. Courses with highest income support exit rates

Program Title	Field of Education	Income support reliance rate (%)	Income support exit rate (pp)*	Student with disability (%)	< Year 12 attainment (%)
Certificate II in Applied Digital Technologies	Information Technology	87.5	34.5	80.9	35
Certificate III in Community Services	Society and Culture	84.5	31.1	96.4	28
Certificate IV in Community Services	Society and Culture	86.8	29.0	92.9	38
Certificate I in Spoken and Written English	Mixed Field Programmes	65.0	26.7	60.5	21
Certificate II in Skills for Work and Vocational Pathways	Mixed Field Programmes	45.3	26.2	79.5	35

Source: Jobs and Skills Australia, Person Level Integrated Data Asset (PLIDA), VET National Data Asset (VNDA) Phase 1 – Measuring the outcomes of Vocational Education and Training (VET) students (2021), ABS DataLab.

Notes: *pp denotes percentage points.

Again, care needs to be taken in interpreting these results and sophisticated multivariate analysis will provide more insights. But, a priori, these results are suggestive of significant value in these courses in helping people to exit income support payments.

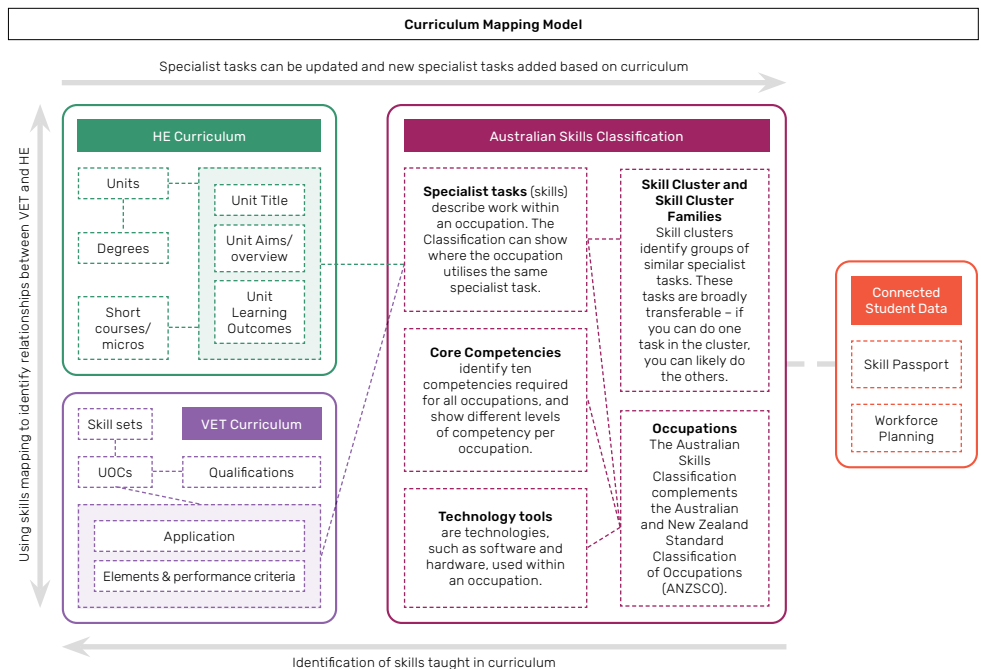
Towards an Australian Skills Taxonomy

JSA inherited the Australian Skills Classification (ASC) from the National Skills Commission. The ASC is Australia's first attempt to develop a comprehensive stocktake of the range of skills that are required across all occupations in the Australian labour market.

As outlined in Figure 4, JSA has been using the ASC to map the skills that are required in the curriculum of tertiary education institutions that enable graduates to successfully move into different qualifications. In turn, the idea is that it should be possible to identify the additional skills people will need to develop as they move from one occupation to another and thus inform the education and training system and their providers about the content of credentials and qualifications that can assist labour market mobility.

The Interim Report of the Universities Accord (Department of Education, 2023) saw considerable value in this work and recommended further development in the context of their interest in the idea of an Australian Skills Passport, to provide greater focus and transparency in tertiary education curriculum and assessment on the skills that students obtain.⁴ This in turn should help to improve the efficiency of matching people to jobs and the labour market and support their job mobility by making it clearer what additional skills they need to move into new jobs requiring additional skills.

Figure 4. Using the Australian Skills Classification to identify skills taught in the curriculum

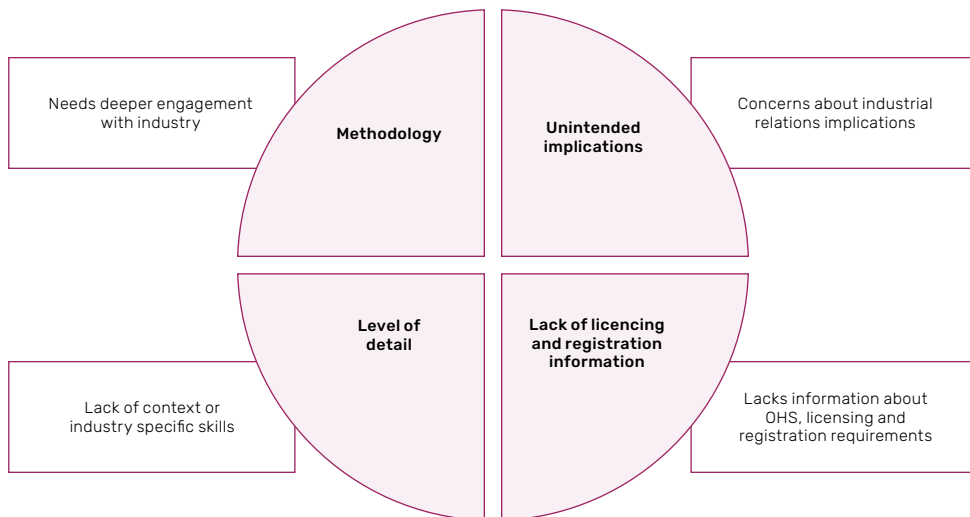


Source: Jobs and Skills Australia.

After consulting with key stakeholders, JSA has identified the opportunity to improve the way skills in demand are defined by developing a National Skills Taxonomy from the learnings of the ASC. The purpose, scope and principles underpinning the new taxonomy will be determined in partnership with industry and key stakeholders of the tertiary education system. The key issues identified in this consultation are presented in Figure 5.

4 This became a recommendation in the Universities Accord Final Report (Department of Education, 2024).

Figure 5. Issues raised by stakeholders about the current approach



Source: Jobs and Skills Australia.

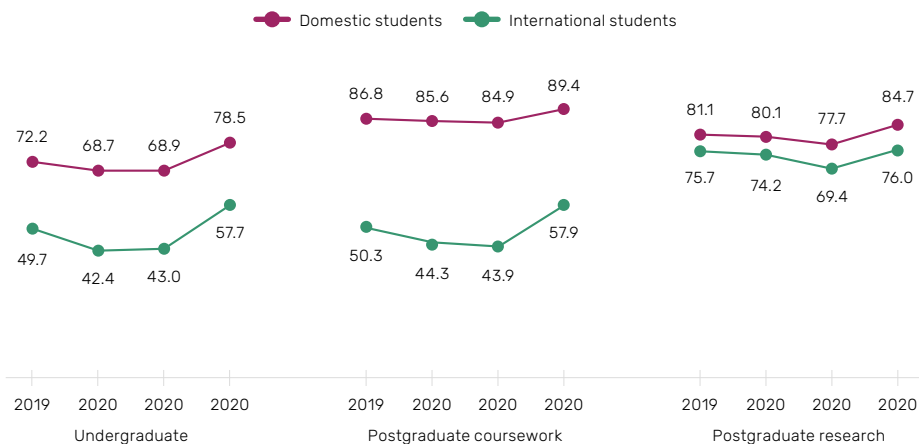
The shift in focus to start from first principles in the development of a new Australian Skills Taxonomy is a good example of where deep stakeholder engagement in the research process can have an important impact on evidence-based policy development.

International Students and the Labour Market

JSA's core role is to advise government and key stakeholders on Australia's skills needs and the adequacy of the national skills system in meeting those needs, especially VET, higher education, and migration. One important and relevant policy issue is how international students fare in the Australian labour market, both during study and after graduation and the extent to which they are able progress to permanent residency in order to increase the stock of skills in Australia. This topic is relevant to each of the three key pillars of the national skills system.

Figure 6 presents data from the graduate outcomes survey on the employment outcomes of international higher education students. It is clear from this data that despite higher completion rates and domestic labour market pressures, international student graduates tend to lag behind domestic student graduates in securing work in the Australian labour market, especially those who have completed postgraduate coursework.

Figure 6. Percentage of graduates in full-time employment four to six months after finishing their studies (not necessarily in an occupation aligned to field of study)



Source: The Social Research Centre, Graduate Outcomes Survey – Report Tables.

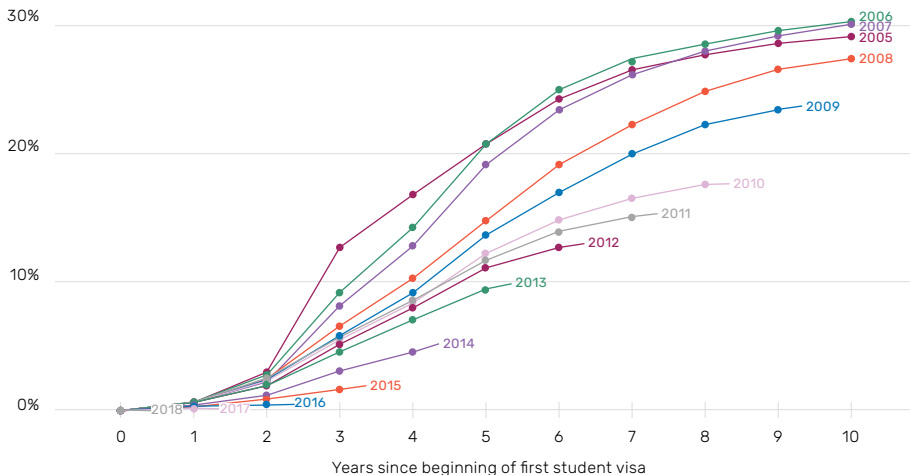
In other data from the graduate outcomes survey, international student graduates of higher education also report that their skills are under-utilised in the Australian labour market more than domestic student graduates. When asked why they think this is the case, the most common response is that they do not have permanent residency and the second most common response is that they do not have enough work experience.

The data in Figure 6 relates to higher education international students. There are a different set of issues that relate to VET students, where there have been major concerns that a significant proportion use VET study to gain entry to Australia. Some providers that supply courses in areas that are not necessarily critical to Australia’s skill shortage need to be placed under greater scrutiny.

This is a matter that has resulted in a recent policy initiative to remedy this situation. Areas of critical shortage, such as the trades, do not at present attract international students, because the work requirements of apprenticeships are not permitted by student visas. Given the shortage of trades such as electricians that are going to be critical in the transition to net zero, this may need to be looked at alongside other measures.

Figure 7 provides some historical context to the pathway to permanent residency for international student visa holders.

Figure 7. Share of student visa-holders who have received a permanent visa, by year of first student visa approval



Source: Coates, B., Wiltshire, T., and Reysenbach, T. (2022). Australia’s migration opportunity: how rethinking skilled migration can solve some of our biggest problems. Grattan Institute.

It reveals that successive cohorts of international students since 2007 have been less successful in gaining permanent residency, and that it takes longer for those who do.

The Migration Review and new Migration Strategy (Department of Home Affairs, 2023a and 2023b) seeks to reform the migration system in a way that would give increased clarity to international students about their pathway to permanency.

It is clear, however, that as well as uncertainty about visa status, lack of work experience is a significant issue, in areas like engineering and IT. This is a problem shared, perhaps to a slightly lesser extent, by domestic Australian students, as highlighted in section 4.2 above.

Given JSA’s role in advising government, both about the education and training system and migration settings, continuing research in this area will be important to support good policy.⁵

5 Since the address, there have been some significant changes in the profile of the intake of international higher education students for the 2024 academic year that has caused concern for a significant number of Australian universities. This appears to have resulted, at least in part, from changes in Chinese domestic policy favouring some Group of Eight Universities, as well from the tightening of student visa allocations. This has caused a heightened focus on the issue of how best to manage and regulate international education in Australia and its interaction with migration policy.

Conclusions



Let me draw out some conclusions about the value of policy relevant research on education, training, jobs and skills.

First, I have highlighted some key significant changes in the labour market and educational context over the last four years that give rise to some important modern policy issues incorporating the following three questions. How can we better match labour supply with labour demand? Is our tertiary education system providing the skills we need? Are our migration settings supporting the enhancement of labour market outcomes?

Second, policy relevant research is critical to helping answer such questions.⁶ Australia is in a strong position to take advantage of such research, given the increasing quantity and quality of data bases that can be used for this research and the number and quality of well-trained analysts to interrogate the data. And there are good signs in the current policy environment that such analysis will be an important input into the decision-making process about such questions.

One of these signs is the establishment of JSA, a very significant development in evidence-based policy making. The three questions highlighted above are central to the research work of JSA in its engagement with key stakeholders and with the research community, as it develops a national jobs and skills roadmap.

6 The Australian Labour Market Workshop to which my address was presented included a number of papers relevant to these questions.

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Characteristics of male-breadwinner, female-breadwinner and equal-earner households in Australia: The role of couple-level human capital

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Abstract



Changes in men's and women's labour market investments over recent decades raise questions about how today's couples negotiate household earnings arrangements. Using insights from human capital theory, we examine associations between household characteristics and couples' relative earnings. Drawing on longitudinal data from the *Household, Income and Labour Dynamics in Australia Survey* spanning the 2000 to 2019 period, we compare couple-level human capital characteristics of female-breadwinner, male-breadwinner and equal-earner households. Our analyses reveal an increase in the share of equal-earner households over the first two decades of the 2000s, coinciding with a decline in male-breadwinner households. We also find that women in female-breadwinner households have greater levels of human capital than their partner and women in other household types; men with a long-term health condition are more likely to be in female-breadwinner households; and female-breadwinner households have the lowest overall earnings of all household types. These results offer broad support to the directions taken by the Australian Government's 2023 White Paper on Jobs and Opportunities, indicating that policies that enable women to invest in their human capital may reduce the disproportionate number of male-breadwinner households.

JEL Codes: J21, J22, J24, J7

Keywords: labor market; female labor; dual earners; division of labor; human capital

Introduction



As women's participation in the labour market increases, so does the number of women who out-earn their male partner (Wilkins, 2019). Despite this, male-breadwinning persists and Australian households remain highly gendered in terms of the division of labour. Indeed, women continue to undertake the bulk of unpaid labour and care and most men out-earn their female partner (Baxter, 2023a; Baxter *et al.*, 2023; Blom and Hewitt, 2020). Scholars have long argued that there is value in disrupting these patterns. Enabling men and women to share equally in paid and unpaid work, and ensuring that women have equal access to quality education and representation in leadership and decision making leads to more productive and harmonious societies. This includes increases in GDP and economic growth through expanding labour supply and mitigating skills shortages (European Institute for Gender, 2017; Kingma and Vandeplass, 2022) and mid- to long-term fiscal returns by reducing the number of women on government allowances and age pensions (Kalb, 2017). Further, more gender-equal societies tend to be associated with better health outcomes for women and men (King *et al.*, 2020; Holter, 2014) and greater life satisfaction (Audette *et al.*, 2019). There is strong evidence of an economic and social rationale for progressing towards gender equality.

Successive Australian governments have incorporated measures to address gender imbalances pertaining to employment (Department of Prime Minister and Cabinet, 2023) and there has been progress according to multiple indicators (Workplace Gender Equality Agency [WGEA], 2023). Yet the Australian Government's 2023 White Paper on Jobs and Opportunities (hereon referred to as 'the White Paper') identifies several entrenched barriers to further improving women's labour market participation. These barriers include access to and the cost of childcare, gender inequity in unpaid care work, occupational segregation, and financial disincentives for secondary earners (usually women) to engage in paid work (Treasury, 2023). There is also evidence that, through phasing out income-support payments based on effective marginal tax rates, Australia's tax and transfer system encourages women to work part-time (Kalb, 2017; Kitchen

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and Wardell-Johnson, 2018). Current policies relating to equal wages, flexible work, paid parental leave and gender-based discrimination appear to have been insufficient in successfully removing barriers to women's full participation in employment. Indeed, compared to other developed countries, Australia has sometimes been characterised as having a strong male-breadwinner culture when it comes to paid and unpaid work (Baxter and Hewitt, 2013; Richardson *et al.*, 2014).

We argue that achieving progress toward gender equity requires greater knowledge of why some couples manage to achieve earnings equality within their household, while others do not. An important step in this direction is to better understand the factors that contribute to partnered individuals being in households with different earnings arrangements, specifically female-breadwinner, equal-earner, and male-breadwinner arrangements. Consistent with human capital perspectives (Becker, 1981), a key focus of the White Paper pertains to how education, skills and training can contribute to increasing women's workforce participation within a dynamic labour market (Treasury, 2023, p.74). Human capital and rational choice theories posit that it makes financial sense for the partner with the greatest earnings potential—as signalled by their human capital—to specialise in paid employment, and for the partner with lower earnings potential to specialise in unpaid domestic work and childrearing (Himmelweit *et al.*, 2013). Notwithstanding, since Australian women across all age groups are more likely than men to complete a degree (Australian Bureau of Statistics [ABS], 2023), it is increasingly clear that human capital is not the only factor driving labour market participation and gender earnings gaps.

As we elaborate on below, a well-established literature has shown that, in Australia, men's and women's labour supply and earnings increase with their level of education and years of work experience, and decrease when they are subject to health conditions (see e.g., Dobbie *et al.*, 2014, 2012; Herault and Kalb, 2020; Leigh and Ryan, 2008). Therefore, one may expect that these human capital factors will also bear an ensuing influence on the probability that individuals live in male-breadwinner, female-breadwinner, or equal-earner households—which represent significant social constructs. However, the impact of education, work experience, and health on household earnings arrangements has been examined much less than their impact on individual labour market outcomes. The present study represents a timely empirical application to shed light over this social reality within the contemporary Australian context. Indeed, we argue that a focus on couples' relative share of within-household earnings is both complementary and important for at least two reasons. First, there is evidence that decision making within different-sex households is heavily influenced by partners' relative earnings. For example, the main breadwinner within a household has greater leverage when making significant decisions affecting all household residents. This includes life-course decisions such as residential relocation (see e.g., Mincer, 1978; Cooke, 2003) and financial decisions such as banking arrangements or major household purchases (see e.g., Huang *et al.*, 2019). Second, emerging research indicates that household-level earnings arrangements have flow-on consequences on important individual outcomes. For instance, recent Australian studies have connected relative household earnings to individuals' mental health, family

violence, relationship dissolution, and parenting practices (Blom and Hewitt, 2020; Foster and Stratton, 2021; King *et al.*, 2020; Zhang and Breunig, 2021).

Despite the importance of understanding couples' household earnings arrangements, few Australian studies have focused on examining the factors that predict these—with the exception being a brief, descriptive report by Wilkins (2019). The present study expands on this work, contributing to building the Australian evidence-base on household earnings arrangements. Specifically, we examine the characteristics of male-breadwinner, female-breadwinner and equal-earner households focusing on key human capital factors including education, work experience, and health. While many studies within labour economics demonstrate that partners' characteristics influence individuals' labour market outcomes (Bertrand *et al.*, 2015; Keldenich and Knabe, 2022; Verbakel and Graaf, 2009), this thinking has rarely been brought into scholarship focusing more specifically on household earnings arrangements. In contrast to other studies within this subfield that restrict their focus to individual-level measures (see e.g., Vitali and Mendola, 2014; Wilkins, 2019), we incorporate couple-level measures of these human capital factors. Doing so, allows us to emulate previous studies from labour economics focusing on individual processes, and recognise and interrogate the relational nature of household processes. Our empirical approach relies on longitudinal data from the Household, Income and Labour Dynamics in Australia Survey spanning the 2000 to 2019 period.

Our analyses reveal an increase in the share of equal-earner households over the first two decades of the 2000s, coinciding with a decline in male-breadwinner households. We also find that women in female-breadwinner households have greater levels of human capital than their partner and women in other household types; men with a long-term health condition are more likely to be in female-breadwinner households; and female-breadwinner households have the lowest overall earnings of all household types. These results offer important insights and evidence for the issues raised by the White Paper (Treasury, 2023), indicating that policies that enable women to invest in and maintain their human capital throughout their childbearing years may reduce the disproportionate number of male-breadwinner households.

Literature review



The Australian context

The current study is concerned with the financial circumstances of households in Australia, a country that serves as an interesting case study internationally. Australia in 2023 looks very different to the 1950s, a decade widely considered as the pinnacle of the male-breadwinner model and the traditional gender-based division of labour (Coontz, 2011; Murphy, 2002). Family life at this time was largely organised in line with Becker's

(1981) economic rational model of the family, where men specialised in paid employment and women specialised in housework and unpaid work at home—particularly for middle-class couples who could afford to live on one income. After World War II, women's participation in the Australian labour market increased dramatically, mainly due to wage growth, the decline of manufacturing jobs, the increase in service sector employment, women's increasing educational attainment, and changes in labour supply preferences (Herault and Kalb, 2020). More recently, policy changes including equal pay legislation, enhanced access to early childhood education, government-funded paid parental leave schemes and anti-discrimination laws have had positive effects on women's labour market participation (Treasury, 2023).

The White Paper (Treasury, 2023) also identifies broader societal changes that have affected Australia's economy and labour market, including population ageing and the associated increase in demand for care and support services, advances in technology, climate change and shocks to the global economy and supply chains. In response to these broad societal changes, individual employment patterns have shifted, with precarious employment increasing for both men and women; more people—mainly women—being employed part-time; non-standard work hours becoming more common; and workers increasingly likely to have multiple jobs (Cassells *et al.*, 2018; Hancock, 2016). The COVID-19 pandemic has also affected employment patterns, exerting a particularly negative influence on mothers' compared to fathers' employment due to gendered caregiving dynamics (Scarborough *et al.*, 2023). How these changing social and economic contexts have translated into different earnings arrangements within Australian households remains an unanswered question.

Household earnings arrangements: Definitions, operationalisations and prevalence

Most existing scholarship in sociology and economics typically differentiates three household types according to their earnings arrangements: female-breadwinner households, equal-earner households, and male-breadwinner households. Empirical operationalisations of these household types typically rely on comparing information on the earnings of the two partners. This is accomplished by either using proxy reports from a single individual within standard surveys, or more sophisticated approaches involving the combination of self-reported income from both partners' household surveys. Household earnings arrangements are usually measured as the share of the partner's earnings relative to either the couple's combined income (Blom and Hewitt, 2020; Foster and Stratton, 2021; Klesment and Van Bavel, 2017; Steinbring *et al.*, 2023; Zhang and Breunig, 2021) or their partner's income (Drago *et al.*, 2005; Kanji, 2013; Kanji and Schober, 2014; Wilkins, 2019; Wooden and Hahn, 2014). These approaches are mathematically equivalent. In a seminal study by Raley and colleagues (2006), female-breadwinner couples were defined as dual-income couples where women contributed 60 per cent or more of the couple's joint income, equal-earning couples as those where

women contribute between 40 per cent and 60 per cent, and male-breadwinner couples as those where they contribute less than 40 per cent.¹ While the concrete thresholds used to define household earnings arrangements differ across studies, there appears to be broad consensus in the literature that households in which women earn 40–60 per cent of earnings may be defined as equal-earner households, with households in which women earn more (less) than this percentage, defined as female-breadwinner households (male-breadwinner households) (Blom and Hewitt, 2020; Winslow-Bowe, 2006).

In Australia, data for 2017 showed that around 20 per cent of working-age different-sex couples were in female-breadwinner households (compared to 19 per cent in 2001), 16.5 per cent of couples were in equal-earner households (14 per cent in 2001), and 63 per cent were in male-breadwinner households (67 per cent in 2001) (Wilkins, 2019). These proportions are broadly comparable to those reported in studies for other developed countries (Vitali and Mendola, 2014; Winkler *et al.*, 2005). For example, Vitali and Mendola (2014) showed that, in a 2010 survey of 18 European countries, 13.7 per cent of dual-earner couples were in female-breadwinner households (compared to 14 per cent in 2004), 58 per cent were in male-breadwinner households (59.5 per cent in 2004), and 28.3 per cent were in equal-earner households (26.5 per cent in 2004). Of the countries included in their analysis, Anglo-Saxon countries (Ireland and the UK) appeared most similar to Australia, arguably due to similarities in their institutional and policy context. Overall, two common findings in the literature are that the share of male-breadwinner households remains larger than the share of female-breadwinner households and that the share of households where both partners earn around the same has been increasing (Blom and Hewitt, 2020; Vitali and Mendola, 2014; Wilkins, 2019; Zhang and Breunig, 2021).

Household earnings arrangements: The role of spousal human capital

Human capital theory has often been used to explain the increasing numbers of equal-earner and female-breadwinner households over recent decades (Bruesch and Gray, 2004; Raley *et al.*, 2006). Broadly speaking, Becker's (1981) human capital approach suggests that female-breadwinner couples are those in which women have greater levels of productive resources relative to their partners, which enhances their ability

1 Other studies rely on answers to survey questions using textual labels to quantify one's contribution to the household income (Miller *et al.*, 2021; Pinho and Gaunt, 2021; Pinho *et al.*, 2021; Vitali and Arpino, 2016; Vitali and Mendola, 2014). For example, Vitali and Arpino (2016) define female breadwinners as couples where the female respondent contributed "over half of the household income", "a very large share of the household income", or "all of the household income". This approach is arguably less precise and more susceptible to reporting biases than the objective approach described before.

to out-earn their partner. Against the backdrop of cultural norms promoting male-breadwinning, some strands of the theory underscore that women may become main or equal earners out of economic necessity when their husbands are unable to bring sufficient income to the household (Drago *et al.*, 2005; Kowalewska and Vitali, 2020; Raley *et al.*, 2006). Human capital, however, is a multidimensional concept, comprised of several characteristics and resources that increase individuals' earnings capacities. The distribution of each of these human capital assets across couple members may in turn shape household earnings arrangements. In this manuscript, we focus on three key human capital characteristics: education, total years of work experience and health.

The role of education

Education is a critical aspect to human capital, equipping individuals with specific, high-level and/or sought after skills that can be converted into earnings within the labour market. In Australia, a higher proportion of both men and women with postgraduate qualifications are employed full-time, compared to men and women with non-school qualifications (ABS, 2023), and each additional year of education increases annual pre-tax income by approximately 10 per cent (Leigh and Ryan, 2008). Over the past few decades, women in Australia have become more highly educated, and Australian women now have higher rates of tertiary education attainment than Australian men (36 per cent vs 28 per cent) (ABS, 2022). Although this means that women have "an increasing potential to earn more than their partner" (Kanji, 2013, p.328), a visible gender wage gap (estimated at 22.8 per cent) remains within the Australian labour market (WGEA, 2022). Hence, for multiple reasons, education does not always translate into higher earnings for women. Factors such as bias and discrimination, responsibilities for unpaid work and care, wage penalties for mothers, occupational segregation, and field-of-study earnings differentials have been cited as possible explanations (Budig and England, 2001; Cukrowska-Torzewska, and Matysiak, 2020; Kahn *et al.*, 2014; Koshy *et al.*, 2016; Perales, 2013; WGEA, 2022).

Nevertheless, the broad principle that women with greater education levels than their partners—and therefore greater earnings potential—should be more likely to specialise in paid employment stands. Indeed, earlier studies examining household earnings arrangements have found that more highly educated women are more likely to be in female-breadwinner and equal-earner households than women with lower education levels (Kanji, 2013; Raley *et al.*, 2006; Vitali and Mendola, 2014). This is true for women's overall education levels, as well as for women's education levels relative to those of their male partners (Bloemen and Stancanelli, 2013; Klesment and Van Bavel, 2017). For example, in Germany and the Nordic countries, couples where women have either high or low education levels were more likely than those with medium education levels to be in female-breadwinner households and less likely to be in male-breadwinner households (Vitali and Mendola, 2014). This study also found that women with more education relative to their partner are more likely to be in equal-earner households (Vitali and Mendola, 2014). Likewise, using data from 27 European countries, Klesment

and Van Bavel (2017) found that women's educational attainment and their attainment relative to their male partner increased the likelihood that they are the main earner. While these studies use older data from European countries with different policy settings, their findings suggest that—also in Australia—*women with a higher level of education relative to their partner will be more likely to be in female-breadwinner or equal-earner households (Hypothesis 1).*

The role of work experience

While education is clearly pivotal to men's and women's human capital, it is by no means the only important human capital factor influencing earnings. Another important aspect is years of work experience, with "the idea that compensation rises with seniority argued to be the most fundamental prediction of the theory of specific human capital" (Topel, 1991, p.172). Work experience contributes to an individual's human capital through the accumulation of work-related skills, knowledge and capabilities. Further, as people acquire work experience, they become increasingly exposed to opportunities for promotion, movement into higher paying managerial roles, and transfers into jobs with higher salaries (Burdett *et al.*, 2011). For example, using US panel data, Topel (1991) found evidence that 10 years of work experience increased wages by over 25 per cent. And past employment increases the likelihood of being employed. For example, Baxter (2008) showed that mothers who were employed before having children exhibited a greater likelihood of returning to work after birth. Through these and other mechanisms, work experience has been demonstrated to increase individuals' earnings (Baxter, 2013), with recent evidence indicating that it contributes up to 60 per cent of the returns to individuals' human capital (Madgavkar *et al.*, 2022). While work experience, firm tenure and occupational tenure all have positive effects on individuals' wages, overall work experience has been shown to exert the strongest influence of all three (Dobbie and MacMillan, 2012).

Importantly though, women have fewer opportunities than men to acquire work experience due to career interruptions starting from young adulthood (Baxter, 2023b). Parenthood is a particularly pronounced contributor, with women substantially more likely than men to take parenthood-related career breaks, move into part-time work after parenthood, and spend more time on unpaid work and care than men (Baxter *et al.*, 2023; Cukrowska-Torzewska and Matysiak, 2020; Gibb *et al.*, 2013). Women are also more likely to care for elderly, ill or disabled family members in an unpaid capacity (WGEA, 2016) and to cease employment to migrate as 'tied movers' to benefit their male partner's career (Vidal *et al.*, 2017). Few studies have explicitly considered work experience and even fewer have utilised couple-level measures. Wilkins (2019) considers tenure in the current job, finding that women in female-breadwinner couples had a mean of 8.5 years of tenure *in their current job*, compared with 6.3 years in male-breadwinner couples, and 7.8 years in equal-earnings couples. Arguably though, a measure of total years of work experience would provide a more holistic indicator of a person's working life than tenure in the current job (Cassells *et al.*, 2018; Hancock, 2016). Altogether, based on the theoretical

premises and empirical evidence described, we expect that *women with greater work experience relative to their partner will be more likely to be in female-breadwinner or equal-earner households (Hypothesis 2).*

The role of health

Finally, we also consider the role of health as an additional human capital factor—operationalised as whether the female and/or male partner has a long-term health condition. Although health is not always explicitly recognised as a component to human capital, scholars are progressively embracing this view (Laplagne *et al.*, 2007; World Bank, 2018). It is well known that ill health has the potential to diminish individuals' labour market opportunities—for example, through the inability to secure work or work over prolonged periods or time, or through experiences of discrimination and 'ableism' (Weismantle, 2001; Laplagne *et al.*, 2007). Therefore, expectations from human capital theory may suggest that men with poorer health than their female partners would have a lower ability to out-earn their partners, and vice versa. While previous studies have examined the interrelationships between individual markers of health and household breadwinning arrangements (King *et al.*, 2020; Springer *et al.*, 2017; Winkler *et al.*, 2005), few have considered relative health within the couple. As an exception, in the US, Winkler *et al.* (2005) found that the prevalence of either the male partner or both partners having 'fair' or 'poor' health was greatest in female-breadwinner households (a pattern that was stronger amongst couples with low levels of education). Based on these discussions, we anticipate that *female-breadwinner or equal-earner households will be comparatively more likely to include men with poorer health than their female partner (Hypothesis 3).* In the next section, we introduce the data and methods used to test our research hypotheses.

Method



Data and sample

The data for this study comes from waves 1 to 19 of the HILDA Survey, a multipurpose household panel survey that has followed the lives of more than 17,000 Australians since 2001 and is largely representative of the Australian population. The HILDA Survey uses multiple data-collection instruments, including computer assisted personal interviews and self-completed questionnaires. The questionnaires are administered through an in-person interview for those aged 15 years and over, and by self-completion for more sensitive topics. In wave 19, there were 7,633 households and 13,748 individuals in the main sample. The response rate in wave 19 was remarkably high with 96.4 per cent of eligible wave-18 respondents successfully re-interviewed (Summerfield *et al.*, 2020).

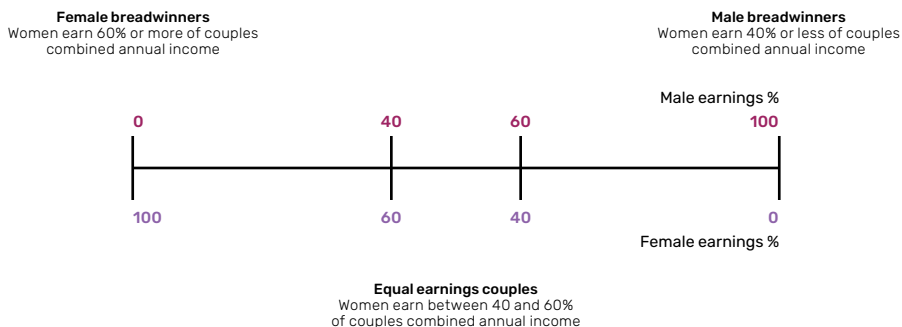
Consistent with previous research (Bittman *et al.*, 2003; Chesley, 2016; Foster and Stratton, 2021; Klesment and Van Bavel, 2017; Raley *et al.*, 2006; Wilkins, 2019; Wooden and Hahn, 2014), our analytic sample was restricted to respondents in an opposite-sex relationship where (i) at least one partner was of working-age (aged 18-64) and (ii) at least one partner had earned \$1 in annual income from wages and salaries in the previous 12 months. Non-co-resident partners, couples in which either partner did not answer the survey, and respondents that had missing data on the key analytic variables were excluded. The final analytic sample comprised 120,348 individual-level observations and 60,174 couple-level observations. These records come from 17,050 unique individuals and 8,570 unique couples.² The mean number of waves each couple contributes to the sample is 7.05, with at least 50 per cent of couples observed across at least six waves. As noted above and in keeping with earlier studies (see e.g., Klesment and Van Bavel, 2017; Raley *et al.*, 2006), the sample excludes observations from couples in which both the respondent's and the partner's annual income from wages and salaries was zero (n=11,960). Hence, both dual- and single-earner couples at the time of the survey interview were included in the sample, while couples with no labour income over the year were excluded.

Outcome variable: Couple earnings arrangements

The dependent variable in our analyses is within-couple earning arrangements and distinguishes between female-breadwinner, equal-earner, and male-breadwinner couples. As noted above, there are different approaches to operationalising this construct. In this study, we take a common approach that consists of the following steps. We first matched respondents to their co-resident partners using the partner identifier, with unmatched individuals being excluded. Each respondent's total financial year gross wages and salary (derived variable 'wsfei' in the HILDA Survey) was then added together with their partner's to generate a measure of the total joint labour income for the couple. The income variables involved in this step were adjusted for inflation using the Consumer Price Index (ABS, 2021) and expressed in 2019 prices. The couple-level data was then divided into three categories—male-breadwinner, equal-earner, and female-breadwinner households (see e.g., Blom and Hewitt, 2020; Raley *et al.*, 2006; Steinbring *et al.*, 2023; Winkler *et al.*, 2005; Winslow-Bowe, 2009). As shown in Figure 1, *male-breadwinner households* were those in which women earn less than 40 per cent of the couple's combined annual labour income, *equal-earner households* those in which women earn between 40 per cent and 60 per cent, and *female-breadwinner* those in which women earn more than 60 per cent.

2 5,358 respondents had more than one partner for the duration of the survey and all their observations were retained.

Figure 1. Operationalisation of within-couple earnings categories



As summarised in Table 1, 58 per cent of couple observations in the sample were from male-breadwinner households (n=34,871), 25 per cent were from equal-earnings households (n=15,168) and 17 per cent were female-breadwinner households. These numbers pertain to total couple observations, not unique couples in the sample, as couples may transition between different types of earnings arrangement over time.

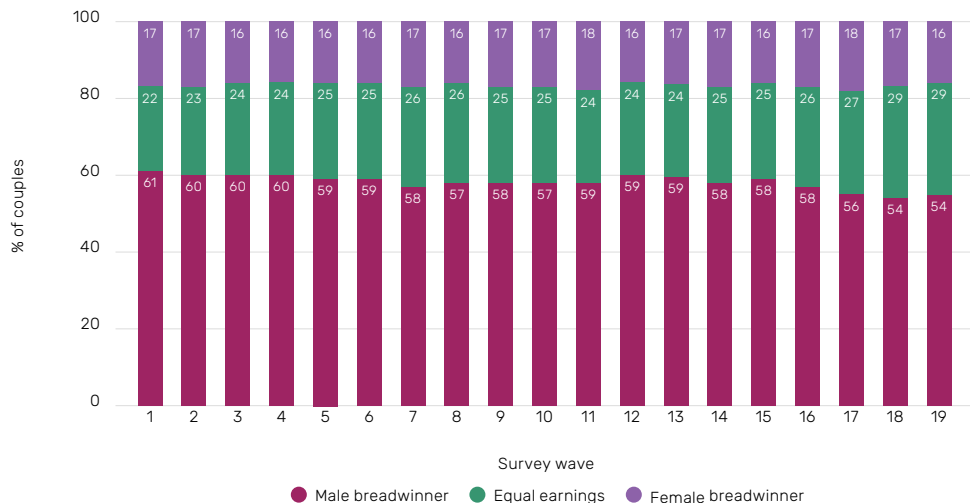
Table 1. Percentage of couples in each earnings category

	n	%
Male-breadwinner couples	34,871	58
Equal-earner couples	15,168	25
Female-breadwinner couples	10,135	17
Total	60,174	100

Notes: HILDA Survey data, 2001-2019. This table is based on data encompassing one observation per couple per year and uses information from female partners.

The share of households in each earnings category differs across survey waves, as shown in Figure 2. In wave one, 61 per cent of the couples within the sample were male-breadwinners couples, 22 per cent were equal-earner couples, and 17 per cent were female-breadwinner couples. By wave 19, the share of couples in equal-earner arrangements had increased approximately 7 percentage points, to 29 per cent. This increase occurred at the expense of reductions in the share of female-breadwinner couples (to 16 per cent, approximately -1 percentage point) and male-breadwinner couples (to 54 per cent, approximately -7 percentage points).

Figure 2. Percentage of couples in each household earnings arrangement over time



Note: HILDA Survey data, 2001–2019. This figure is based on data encompassing one observation per couple per year.

Key explanatory variables

Our analyses investigate how different measures of human capital influence within-couple earnings’ arrangements, with a focus on couple-level measures of education, work experience, and health. Educational achievement relative to one’s partner was measured by matched couple-level data on prior educational attainment up to the survey wave. The resulting variable had four categories: “1. Both partners have a bachelor’s degree or higher” (18.7 per cent of the sample); “2. Only the female partner has a bachelor’s degree” (15.4 per cent of the sample); “3. Only the male partner has a bachelor’s degree” (10.3 per cent of the sample); and “4. Neither partner have a bachelor’s degree” (55.6 per cent of the sample).³ The percentages across categories

3 More nuanced measures of respondents’ highest educational qualification may reveal greater heterogeneity in earnings. However, in this analysis, we opted for a more parsimonious operationalisation for two reasons. First, the main earnings divide is between degree and non-degree holders. Second, using more nuanced education variables within a couple-level framework exponentially multiplies the number of possible permutations, diluting analytic meaningfulness. For example, adding one more education disaggregation (i.e., 3 instead of 2) would yield 9 (compared to 4) couple-level education categories. Replicating our analyses using a more nuanced education measure could nevertheless be the focus of future work that specifically targets within-couple education differentials.

confirm that women in the HILDA sample are more highly educated than their partners (in terms of bachelor's degree attainment).

To operationalise total years of work experience, we combined information from (i) a derived variable available within the HILDA survey capturing the number of years of work experience prior to respondents entering the survey, and (ii) year-on-year information on respondents' employment after they entered the survey.⁴ This resulted in a measure of the total years of work experience for all individuals in the sample, which was included in the regression model. We subsequently used this variable to construct a comparative couple-level continuous variable measuring the difference in years of work experience by subtracting the male partner's years of work experience from the female partner's years of work experience. The mean total number of years of work experience was 23.1 years with a standard deviation of 11.8, whereas the mean within-couple difference in years of work experience was -6.1 with a standard deviation of 8.3. Therefore, men within the sampled couples tended to have an average of 6 years more work experience than their female partners.

The HILDA Survey contains a variable (*_health*) capturing information on whether each person within the sampled household has a long-term health condition, impairment or disability that restricts them in their everyday activities and has lasted or is likely to last, for 6 months or more. Using matched couple-level data, we used this information to construct a categorical variable capturing the partners' relative health status. The four categories of this measure are: "1. Both partners have a long-term health condition" (5.7 per cent of the sample); "2. Only the female partner has a long-term health condition" (12 per cent); "3. Only the male partner has a long-term health condition" (12.5 per cent); and "4. Neither partner has a long-term health condition" (69.8 per cent). The distribution for this variable suggests an even spread of health conditions between male and female partners.

Analytic strategy

We begin by examining female-breadwinner, equal-earnings and male-breadwinning households through bivariate analyses that compare the average levels of relative human capital measures in these households. To examine the associations between

4 Information on work experience prior to entering the survey was missing from some person-year records ($n=2,405$ observations; 1.6 per cent of the total). For those respondents who had at least one observation on the historical work experience, we imputed their last recorded value and added the amount of time they were observed to be employed for the missing years. The amount added equalled the proportion of any given year that people with the same gender work on average: 0.51 (i.e., 6 months) for men and 0.39 (i.e., 4.7 months) for women. For those who did not have at least one observation of their years of work experience, we imputed the gender- and age-specific average.

multiple different factors and the likelihood of individuals being in various couple earning arrangements we run a multinomial logistic regression model. The model estimates the predictors of couples being in (i) a female-breadwinner household, (ii) an equal-earner household, and (iii) a male-breadwinner household as a function of the human capital factors of interest. A multinomial logit model was required because the outcome variable is an unordered discrete variable with multiple categories (Hosmer *et al.*, 2013). In addition to the focal measures of partners' relative human capital levels described above, the model incorporates a suite of controls to account for possible confounding. These controls resemble those used in previous studies in the field (see e.g., Blom and Hewitt, 2020; Klesment and Van Bavel, 2017; Steinbring *et al.*, 2023) and include survey wave, and household-level measures of relative and average age of the couple, couple's joint annual wages, marital status, total number of children, age of youngest child, student status, area remoteness, state of residence and average gender-role attitudes. Descriptive statistics for the control variables can be found in Table A1 in the Appendix.

To account for the nesting of multiple observations from the same couples across survey waves, the standard errors in the model allow for clustering within couples (using the female partners' cross-wave identifier). This approach is commonly used in the literature and reduces the risk of overestimating the standard errors due to correlations in the explanatory and outcomes variables amongst observations for the same individuals. The model results are expressed as relative risk ratios (RRR). RRRs are the ratio of the probability—the relative risk—of being in an outcome category over the probability of being in the baseline category. A RRR less than one indicates the explanatory variable is associated with a decreased likelihood of being in the outcome category compared to the baseline category (Bernard and Perales, 2021). In our model, male-breadwinner couples are used as the baseline category of the outcome variable.

Empirical evidence



In this section, we present the results of our empirical analysis. Table 2 shows bivariate analyses comparing the characteristics of households in different earnings arrangements, with a focus on the couple-level human capital factors discussed before. Table 3 presents the results of the multinomial logistic regression model, expressed as RRRs. The remainder of this section is structured around our three hypotheses pertaining to couple's relative levels of educational attainment (Hypothesis 1, Section 1), total work experience (Hypothesis 2, Section 2), and health status (Hypothesis 3, Section 3).

Table 2. Bivariate analyses of characteristics of households in different earnings arrangements (row percentages, means)

	Male- breadwinner couples Mean/%	Equal- earner couples Mean/%	Female- breadwinner couples Mean/%
<i>Education</i>			
Couple's education (%)			
Both have degrees	54.5	30.1	15.3
The female partner has a degree	40.2	33.6	26.2
The male partner has a degree	71.0	16.7	12.4
Neither has a degree	61.5	22.9	15.6
<i>Work experience</i>			
Difference in years of work experience (women's minus men's; in years)	-7.5	-3.9	-4.7
Women's years of work experience	19.4	19.6	22.9
<i>Health status</i>			
Couple's health status (%)			
Both have a long-term health condition	56.8	22.3	25.5
The female partner has a long-term health condition	65.1	22.5	12.5
The male partner has a long-term health condition	48.4	25.2	29.1
Neither has a long-term health condition	58.0	17.7	16.8
Number of couples	34,871	15,168	10,135

Notes: HILDA Survey data, 2001–2019.

Table 3. Multinomial logistic regression model predicting couples' earnings arrangements (baseline: male-breadwinner households)

	Equal- earner couples	Female- breadwinner couples
<i>Main explanatory variables</i>		
Couple's education		
Both have degrees (ref. cat.)		
The female partner has a degree	1.61***	2.12***
The male partner has a degree	0.43***	0.37***
Neither has a degree	0.77***	0.49***
Difference in years of work experience (women's minus men's)	1.02***	1.08***
Women's years of work experience	1.07***	1.02
Couple's health status		
Both have a long-term health condition (ref. cat.)		
The female partner has a long-term health condition	0.93	0.55***
The male partner has a long-term health condition	1.37***	1.76***
Neither has a long-term health condition	1.22**	1.01

Table 3. continued

<i>Control variables</i>		
Mean age of the couple	0.94***	1.03***
Her minus his age	0.96***	0.92***
Couple's student status		
Both are FT students (ref. cat.)		
Only SHE is a FT student	0.63**	0.43***
Only HE is a FT student	1.72**	3.28***
Neither is a FT student	1.74***	1.35
Couple cohabiting or married		
Married (ref. cat.)		
Cohabiting	1.08	1.10
Total number of children ever had	0.89***	0.95**
Couple has a child aged 5 or younger		
No (ref. cat.)		
Yes	0.32***	0.38***
Couple's joint annual wages	1.00	0.84***
Survey wave	1.00	1.01
Household area remoteness		
Major city (ref. cat.)		
Inner regional	1.05	1.07
Outer reg./ (very) rem.	1.08	1.34***
State household lives in		
New South Wales (ref. cat.)		
Victoria	0.95	0.83**
Queensland	0.96	0.94
South Australia	1.04	1.01
Western Australia	0.81**	1.01
Tasmania	1.18	0.99
Northern Territory	0.85	1.23
Australian Capital Territory	0.94	1.19
Couple's mean gender role attitudes	0.98***	0.97***
N (observations)		60,174
Pseudo R ²		0.16
Wald chi ²		3,074
Prob>chi ²		<0.01

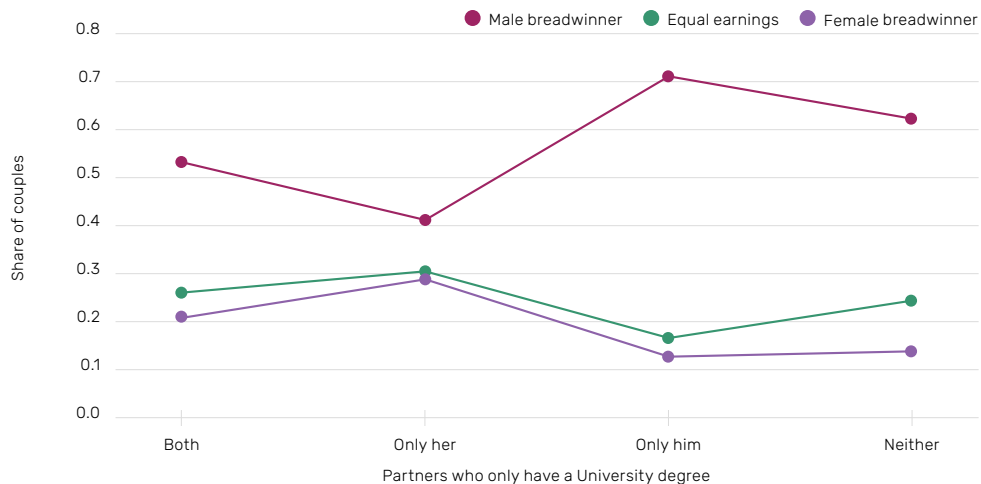
Notes: HILDA Survey data, 2001–2019. Relative risk ratios. Standard errors clustered across individuals.
Significance levels: * p<0.1, ** p<0.05, *** p<0.01.

The role of couple’s relative education

The bivariate analyses in Table 2 indicate that the share of female-breadwinner couples is highest amongst couples where only the female partner has a bachelor’s degree (26.2 per cent) and lowest in couples where only the male partner has a degree (12.4 per cent). Conversely, the share of male-breadwinner couples is lowest amongst couples where only the female partner has a bachelor’s degree (40.2 per cent) and highest in couples where only the male partner has a degree (71 per cent). The multivariable results in Table 3 indicate that—relative to couples in which both partners have a degree—couples where only women have a degree are more likely to be in female-breadwinner (RRR=2.12, $p<0.01$) and equal-earner (RRR=1.61, $p<0.01$) households than in male-breadwinner households, *ceteris paribus*.

The magnitude of these adjusted relationships is large, as can be appreciated by visual inspection of Figure 3. This shows the predicted probability of membership in different household earnings arrangement categories, by levels of relative education. For example, amongst couples where only the male partner has a degree, the difference in the predicted probabilities of being in a male-breadwinner household (71 per cent) and a female-breadwinner household (13 per cent) is 58 percentage points. In contrast, the difference is sizeably smaller (41 per cent minus 29 per cent, or 12 percentage points) amongst couples where only the female partner has a degree. These results are therefore consistent with Hypothesis 1, confirming that in the Australian context female educational attainment is an important factor influencing within-couple earnings arrangements.

Figure 3. Predicted probabilities of membership in different earnings arrangements, by relative levels of education



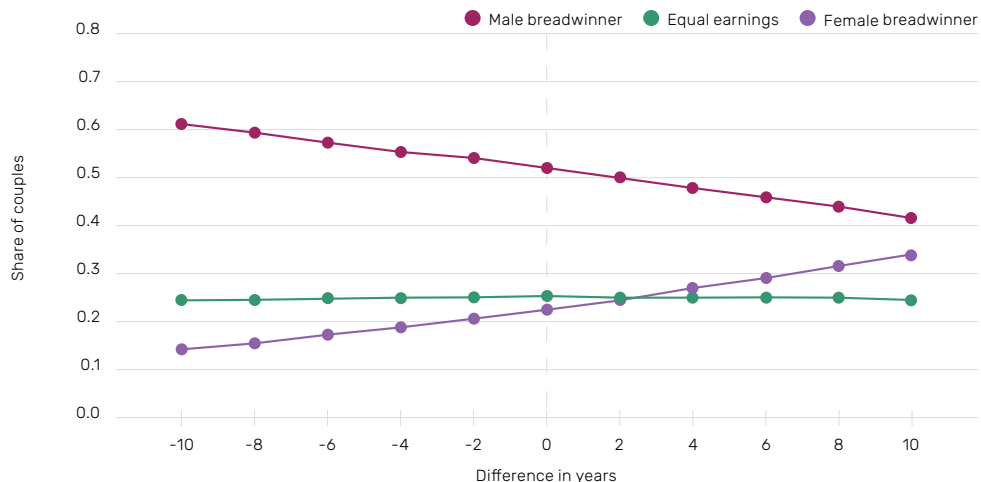
Note: HILDA Survey data, 2001–2019. Based on the regression results models presented in Table 3. Covariates held at their actual sample values.

The role of spousal work experience

Table 2 shows that the largest difference in years of work experience between men and women occurs in male-breadwinner households, with men having an average of 7.5 years more work experience than their female partner. In comparison, men in female-breadwinner and equal-earner households average 4.7 and 3.9 more years of work experience than their female partners, respectively. Table 3 shows that, all else being equal, increases in women’s years of work experience raise the odds that couples have equal-earnings household arrangements (RRR=1.07, $p < 0.01$), compared to male-breadwinner arrangements. Interestingly though, the coefficient on women’s years of work experiences is not statistically significant for female-breadwinner households (RRR=1.02; $p > 0.01$). Importantly though, as women’s years of work experience *relative to their male partners increase*, so does the likelihood that households are in female-breadwinner (RRR=1.08, $p < 0.01$) and equal-earnings (RRR=1.02, $p < 0.01$) arrangements.

The marginal effects presented in Figure 4 illustrate the magnitude of these associations. For example, when female partners have 5 less years of work experience, the difference in the predicted probability of being in a male-breadwinner (56 per cent) and a female-breadwinner (18 per cent) household is 38 percentage points, compared to 20 percentage points when male partners have 5 less years work experience (47 per cent minus 27 per cent). These results thus support Hypothesis 2, indicating that greater relative levels of work experience amongst women are a precursor for more gender-equal earnings arrangements within couples.

Figure 4. Predicted probabilities of membership in different earnings arrangements, by relative work experience



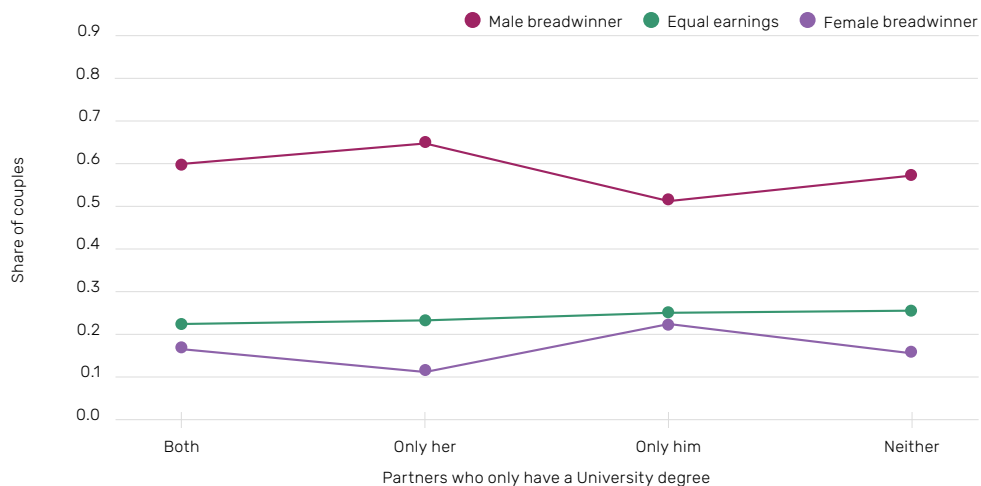
Notes: HILDA Survey data, 2001–2019. Based on the regression results models presented in Table 3. Covariates held at their actual sample values.

The role of within-couple health status

Consistent with previous research (Winkler *et al.*, 2005), the bivariate statistics in Table 2 show that the percentage of female-breadwinners couples is highest amongst couples where only the male partner has a health condition (29.1 per cent) and lowest in couples where only the female partner does (12.5 per cent). Conversely, the percentage of male-breadwinners couples is lowest when only the male partner has a health condition (48.4 per cent) and highest when only the female partner does so (65.1 per cent). Similar results emerge from the multivariable models in Table 3. These show that, *ceteris paribus*, couples where only men have a long-term health condition are more likely to be in female-breadwinner (RRR=1.76, $p<0.01$) and equal-earner (RRR=1.37; $p<0.01$) households than in male-breadwinner households. Likewise, couples where only women have a health condition are significantly less likely to fall into the female-breadwinner than the male-breadwinner category of the outcome variable (RRR=0.55, $p<0.01$).

The size of these relationships is again illustrated through marginal effects (Figure 5). These show that in couples where only the male partner has a health condition, the difference in the predicted probabilities of being in a male-breadwinner household (52 per cent) and a female-breadwinner household (23 per cent) is 29 percentage points. The difference is however much greater when it is just the female partner who has a health condition (65 per cent minus 11 per cent, or 54 percentage points). Altogether, these results align with Hypothesis 3, confirming that relative health is an important factor influencing within-couple earnings arrangements.

Figure 5. Predicted probabilities of membership in different earnings arrangements, by relative levels of health



Notes: HILDA Survey data, 2001–2019. Based on the regression results models presented in Table 3. Covariates held at their actual sample values.

Discussion



In this paper, we leveraged 19 years of data from the HILDA Survey and multinomial regression models to examine how different human capital factors (education, work experience and health) influence within-household earnings arrangements (female-breadwinning, male-breadwinning and equal-earnings). Our key contribution is to provide a novel empirical application of how these processes unfold within contemporary Australian society.

Our descriptive analyses allowed us to quantify recent trends in the share of Australian households in each earnings arrangement. A key finding was that, between 2001 and 2019, the share of male-breadwinner households decreased from 61 per cent to 54 per cent, accompanied by an increase in equal-earnings households from 22 per cent to 29 per cent. These results reflect a slow trend towards gender parity within Australian households, one that is consistent with that observed in other developed countries such as England and Ireland (Vitali and Mendola, 2014). Interestingly, the observed trend reflects a progressive tendency for male and female partners within the same households to have more equal income earnings. However, households in which women out-earn their partners are as rare today as they were nearly 20 years ago, encompassing just 16 per cent of all households. The slow pace of change in the share of equal-earnings households, coupled with the lack of change in the prevalence of female-breadwinner households, justify ongoing attention on gender (in)equality within Australian households—as featured in the Australian Government’s 2023 White Paper on Jobs and Opportunities (WGEA, 2023). They also motivate our subsequent analyses exploring factors that may result in more gender-equal household earnings arrangements.

Based on tenets from human capital theory, we proposed three research hypotheses. These hypotheses posited that households would be more likely to have female-breadwinner earnings arrangements when women had greater levels of education (Hypothesis 1), work experience (Hypothesis 2), and health (Hypotheses 3) than their male partners. Our empirical analyses yielded evidence consistent with each of these three propositions. First, we found that, all else being equal, the share of female-breadwinner households was highest amongst couples where only the female partner had a bachelor’s degree (29 per cent), and lowest in couples where only the male partner had a degree (13 per cent). The same pattern was observed for equal-earnings households (30 per cent and 17 per cent, respectively). These results align with findings from earlier European studies reporting that women with higher education levels relative to their male partners are more likely to be breadwinners (Klesment and Van Bavel, 2017; Vitali and Mendola, 2014).

Similarly, we also found that equity in years of work experience was associated with more female-dominated (or gender-equal) earnings arrangements. Women are traditionally less likely than men to accumulate work experience due to childrearing and other carer responsibilities (Baxter, 2023b, Cukrowska-Torzewska and Matysiak, 2020; Gibb *et al.*, 2013). In this regard, our findings show that each additional year of work

experience women forego in relation to their partners significantly lowers the likelihood of female-breadwinning or equal-earnings household arrangements. While previous studies found that loss of work experience contributes to a wage gap between mothers and non-mothers (Cukrowska-Torzewska and Matysiak, 2020) and that work experience contributes to increases in wages (Dobbie and MacMillan, 2012), no studies had directly examined couples' relative levels of work experience and breadwinning arrangements. Our results thus constitute first-time evidence of this association.

Finally, our results were also consistent with predictions based on human capital theory for a less investigated factor, namely couple's relative health levels. Indeed, all else being equal, households in which men but not women had a long-term health condition were more likely to feature female-breadwinner (23 per cent) or equal earnings (25 per cent) arrangements than households in which women but not men had a long-term health condition (11 per cent and 23 per cent, respectively). These results build on Winkler *et al.*'s (2005) earlier study, which documented that, in the US, the share of households in which the male partner or both partners had 'fair' or 'poor' health was greatest in female-breadwinner households. Our finding that a couple's relative health is important in explaining household breadwinning arrangements further underscores the role of health in influencing household breadwinning arrangements.

Overall, our results indicate that human capital factors play an important role in producing and reproducing gender unequal household-earnings arrangements, which lends support to some of the policy directions taken by the 2023 White Paper. Our findings on relative levels of education align with the White Paper's focus on the need to remove barriers to women's investments in foundation skills, tertiary education, and lifelong learning (WGEA, 2023). Our results for relative levels of work experience, on the other hand, highlight the need for employment programs that assist women with remaining attached to the labour market. These programs should particularly target those periods of the life course when women's unpaid caregiving usually takes place (including care for young children and ageing parents). Policies that enable men to more easily share the load of unpaid work are also warranted. The latter may include more generous paid parental leave schemes, adjustments to the tax and transfer systems, and fostering workplace cultures that support men's involvement in parenting (Kalb, 2017).

An important consideration is due here: the demonstrated relevance of men's and women's relative levels of human capital in influencing their household-earnings arrangements is not at odds with other perspectives on women's economic disadvantage. Most importantly, our results do not defy feminist perspectives that underscore the role of deeply ingrained gendered attitudes and processes in perpetuating gendered divisions of labour (Baxter *et al.*, 2015; Perales *et al.*, 2018). In fact, some of our results provide strong support for such perspectives. Specifically, our findings demonstrate that male-breadwinning represents the most likely household earnings arrangement even in couples where women have equal or greater levels of human capital than their male partners (net of a wide array of other personal-couple- and household-level factors). For example, 41 per cent of couples have male-breadwinner arrangements when women have greater levels of education than their male partners (compared to 29 per cent for

female-breadwinner arrangements and 30 per cent for equal-earnings arrangements). The same holds true for work experience, where households are only predicted to be in female-breadwinner arrangements at the same rate as male-breadwinner arrangements when women have a massive 13 years more of work experience than their male partners. These findings powerfully underscore the entrenched role that gender plays in structuring labour market and family processes, with women being at a disadvantage relative to men just by virtue of being women.

This study has provided new empirical knowledge of household earning arrangements within Australian society. In addition, our approach and analyses point to avenues for expansion and refinement. Particularly, it is important to recognise that our analyses take a 'static' view of the relative levels of human capital within couples. Future studies in the field may probe into the dynamics of human capital accumulation for men and women, both before and after entering their current partnership, and how these affect household-earnings arrangements. For example, women may show a preference for men with greater levels of human capital within the marriage market, through processes of assortative mating (see e.g., Bloemen and Stanca, 2013). At the same time, family dynamics and life course events (e.g., parenthood) may result in differential patterns of human capital accumulation for male and female partners after individuals have entered their current partnership. Understanding the relative importance of these two processes for within-couple differences in human capital factors and, as a result, for within-couple differences in earnings arrangements constitutes an interesting avenue for further research.

Conclusion



Our findings add to a growing body of evidence highlighting the importance of public policies that encourage women to invest in their education and to continue investing in their human capital, including remaining attached to the labour market over the course of their lives. This includes policies that focus on both enablers for women to pursue education and employment, but also for men to legitimately take time out of the labour market to participate more actively in unpaid work and care. Women will be much more likely to remain engaged in employment if their partners are supported to take an equal share of unpaid work and care. Such policies include reducing the financial disincentives for men who take paid parental leave by increasing leave payments, but also encouraging changes to workplace cultures that discourage men from taking leave or reducing their work hours. Rather than simply aiming to increase women's participation in the labour market, a more holistic approach that supports both men and women across the life course is needed. Further, as Kalb (2017) and Duvander (2019) argue, rather than considering policies in isolation, government needs to better consider how family policies interact with all social and tax policies that influence men and women's ability to engage with paid work.

At a broader level, our research points to the importance of continuing to tackle structural barriers to gender inequality. Women's lower earnings power in the labour market compared to men's is a major structural barrier for couples who desire more egalitarian paid and unpaid arrangements. Further, in Australia, real earnings have fallen considerably over recent decades due to low wage increases and rising inflation, while the cost of basic goods, services and housing has risen sharply (Jericho, 2022). This implies that most households are worse off financially now than a decade ago. It follows that, only when couples face no financial disadvantages to decisions around work and care, are we likely to see major changes in household earnings types.

Appendix Table 1. Means and standard deviations for all analytic variables

	All couples		Male-breadwinner couples		Equal-earner couples		Female-breadwinner couples	
	Mean %	SD	Mean %	SD	Mean %	SD	Mean %	SD
Couple's education (%)								
Both have degrees	18.6	38.9	17.5	38.0	22.2	41.6	17.0	37.6
The female partner has a degree	15.3	36.0	10.6	30.8	20.3	40.2	23.8	42.6
The male partner has a degree	10.3	30.4	12.6	33.2	6.8	25.2	7.6	26.5
Neither has a degree	55.8	49.7	59.2	49.1	50.6	50.0	51.6	50.0
Difference in years of work experience (women's minus men's; in years)	-6.1	8.3	-7.5	8.7	-3.9	6.8	-4.7	8.2
Women's years of work experience (in years)	23.1	11.8	15.7	10.0	17.6	10.3	20.5	11.0
Couple's health status (%)								
Both have a long-term health condition	5.7	23.1	5.6	22.9	4.0	19.6	8.6	28.0
The female partner has a long-term health condition	12.1	32.6	13.6	34.3	10.7	30.9	9.0	28.6
The male partner has a long-term health condition	12.5	33.0	10.4	30.5	11.1	31.4	21.5	41.1
Neither has a long-term health condition	69.8	45.9	70.4	45.6	74.2	43.8	60.9	48.8
Average age of the couple (in years)	41.0	11.1	40.8	10.7	39.4	11.2	44.1	11.6
Women's minus men's age (in years)	-2.2	4.4	-2.2	4.5	-1.9	4.2	-2.5	4.8
Couple's student status (%)								
Both are full-time students	0.4	6.4	0.3	5.8	0.4	6.3	0.7	8.2
The female partner is a full-time student	2.9	16.8	3.6	18.6	2.1	14.2	1.8	13.3
The male partner is a full-time student	1.6	12.5	1.1	10.3	1.5	12.2	3.4	18.2
Neither is a full-time student	95.1	21.6	95.0	21.8	96.0	19.5	94.1	23.6
Marital status (%)								
Total number of children ever had	1.8	1.4	2.0	1.3	1.4	1.3	1.8	1.4
Child aged 5 or younger in the household	26.8	44.3	34.9	47.7	16.8	37.4	17.0	37.6
Couple's total annual income from wages and salaries (in \$10,000)	12.2	8.5	12.6	8.8	14.1	7.1	8.2	8.3

Appendix Table 1. continued

	All couples	Male-breadwinner couples	Equal-earner couples	Female-breadwinner couples
Area remoteness (%)				
Major city	62.9	63.4	65.1	57.7
Inner regional	24.7	24.6	23.6	26.7
Outer regional, remote, very remote	12.5	12.0	11.3	15.6
State household lives in (%)				
New South Wales	28.8	28.8	28.6	28.9
Victoria	25.5	25.5	26.6	23.8
Queensland	21.6	21.9	21.2	21.1
South Australia	8.8	8.2	9.1	10.4
Western Australia	8.9	9.5	7.6	8.8
Tasmania	3.1	2.8	3.3	3.9
Northern Territory	1.0	0.9	1.0	1.1
Australian Capital Territory	2.3	2.3	2.3	2.5
Couple's ethnicity (%)				
Both are Australian born	68.2	68.5	69.6	65.4
Male Australian born—female from an ESB	5.1	5.2	5.0	5.2
Male Australian born—female from a NESB	4.4	4.8	3.3	4.6
Male from an ESB—female Australian born	7.0	6.5	7.4	8.3
Both are from an ESB	3.0	2.9	2.7	3.7
Male from an ESB—female from an NESB	1.0	1.0	0.8	1.0
Male from a NESB—female Australian born	3.3	3.2	3.1	3.9
Male from a NESB—female from an ESB	0.5	0.5	0.7	0.4
Both from a NESB	7.5	7.6	7.5	7.4
Couple's mean gender role attitudes (0–100)	40.8	42.3	37.9	39.8
Number of couples <i>n</i> = 60,174	60,174	34,871	15,168	10,135

Notes: HILDA Survey data, 2001–2019. ESB: English Speaking Background (other than Australian). NESB: Non-English-Speaking Background. Gender-role attitudes are measured through a composite index combining responses to 7 items on respondents' views towards gender roles. The mean score for couples across all participating waves is used.

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The contented Australian female worker: Paradox lost, paradox found

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Abstract



In a seminal 1997 paper, Andrew Clark observed that British women report higher job satisfaction than their male counterparts, despite generally holding inferior jobs. To become known as the ‘paradox of the contented female worker’, Clark argued this was due to women having lower expectations, and that the phenomenon would disappear as women’s positions in the labour market improved, a prediction supported by later evidence. This paper draws on data from the Household, Income and Labour Dynamics in Australia survey to investigate how the differential in women’s job satisfaction relative to men’s evolved in Australia between 2001 and 2022. Regression models suggest that a substantial job satisfaction premium for women gradually diminished over the first decade of this century. Unlike in Britain, however, it re-emerged and remained relatively constant from around 2013. Oaxaca–Blinder decompositions show the job satisfaction premium for women is primarily attributable to differences in the effects of variables, rather than differences in the mean characteristics of male and female workers or of their jobs. Changes in preferences relating to working hours and the effects of educational attainment on job satisfaction have particularly shaped the evolution of differences in job satisfaction by gender. Despite a convergence in the raw means of men’s and women’s job satisfaction assessments in recent years, the paradox of the contented female worker appears to be alive and well in the Australian labour market.

JEL Codes: J16, J28, J71

Keywords: safety, job satisfaction, related public policy, discrimination, economics of gender, non-labour discrimination

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Introduction



In a seminal 1997 paper, Andrew Clark observed that British women report higher levels of job satisfaction than their male counterparts, despite women generally holding jobs inferior to men's when assessed by objective standards, such as pay. To become known as the 'paradox of the contented female worker' (Bender, Donohue and Heywood 2005), this observation has since been the subject of scrutiny across numerous countries and over time, with some contention as to how widely the paradox holds. Job satisfaction studies based on data from the Household, Income and Labour Dynamics in Australia (HILDA) survey confirm that the contented female worker paradox applied in Australia in the 2000s and persisted well into the 2010's (Buchler and Dockery 2023; Kiffe 2014; Kiffe, Kler and Shankar 2014a; Long 2005).

Clark's (1997) preferred explanation for the paradox was that women had lower expectations for their jobs due to the disadvantage they had historically faced in the labour market, and that individuals assess job satisfaction, in part, relative to their expectations. Hence, Clark proposed the higher job satisfaction reported by women may be a transitory phenomenon, one which would disappear once women's relative labour market position improved to be more equal with men's. Clark's initial analysis was based on the first wave of the British Household Panel Survey (BHPS), taken in 1991. With the benefit of BHPS data through to 2014, Green *et al.* (2018) revisited Clark's prediction to find, indeed, the gender job satisfaction difference in Britain had vanished by 2012-14, as female workers became less satisfied as they aged and new cohorts of young female workers entered the labour market with relatively lower job satisfaction.

This paper draws on 22 waves of HILDA data to investigate how the differential in women's reported job satisfaction relative to men's evolved in Australia between 2001 and 2022. The motivation is, firstly, one of simple curiosity as to whether evidence of rising women's expectations in the labour market, as claimed for Britain, also applies to Australia. More broadly, however, understanding differences in job satisfaction by gender and the source of changes in the differential over time provides valuable insights into broader developments in gender equality in the labour market and changing social roles of men and women.

Australian women report higher average satisfaction with their jobs overall in all years up to and including 2019, with the gender gap closing in 2020, 2021 and 2022 (Figure 1). This followed a sharp upturn in average reported job satisfaction for both genders since around 2018, but which has been particularly pronounced for men. Using data from rolling 5-year intervals (2001-2005, 2002-2006, ... 2018-2022) multivariate, random-effects panel regression models are fitted to estimate the gender differential in job satisfaction after controlling for a wide range of individual- and job-specific characteristics. This also allows an Oaxaca-Blinder style decomposition of the gender gap in job satisfaction and how it has changed over time into two different sources: 1. differences in the average characteristics of men's and women's jobs, and 2. differences in the way men and women value different job attributes.

The female job satisfaction 'premium' is found to have declined substantially through the 2000s, reaching a low in around 2011, to then recover somewhat and stabilise from around 2013. There is some evidence of rising expectations among female workers contributing to the closing of the gender gap in job satisfaction, in line with Clark's hypothesis. However, other factors have significantly shaped relative job satisfaction of men and women over the first two decades of the 21st century, particularly preferences around working hours.

The results show the paradox of the contented female worker persists, or at least has re-emerged, in the contemporary Australian labour market. Some implications of these findings for gender equality, discrimination and for policy are canvassed in the conclusion.

Background



There is a growing acceptance within economics of the validity of people's subjective assessments as an indicator of utility and one that offers important implications for decision-making by economic agents and for the purposes of policy formulation, as seen in the burgeoning 'happiness' literature (see Frey, 2008). Similarly, while economists traditionally focus on wages as the key indicator of job quality and the driver of workers' choices, subjective assessment of job satisfaction offers broader insight into workers' preferences and the value placed on different job attributes (Clark 1997, Hamermesh 2001). As a pertinent example, a very large body of empirical research focuses on the gender wage gap, when gender inequality may also manifest in a range of non-wage attributes, such as job security and part-time versus full-time status. Differences in job satisfaction by gender may also help to explain important labour market phenomena, such as occupational segregation by gender (Bender, Donohue and Heywood 2005, Buchler and Dockery 2023, Crompton and Harris 1998, Hakim 2000). Indeed, Goldin (2014) has suggested the gender wage gap can be largely attributed to gender differences in preferences for working long hours given productivity benefits associated with long hours in certain occupations.

Clark (1997) observed that women consistently report higher levels of job satisfaction despite the well-established gap in wages in favour of men and widespread evidence that women's jobs are inferior to men's on a range of other attributes such as security, promotion opportunity and sexual harassment. In line with earlier studies, Clark showed that the higher job satisfaction reported by women holds after controlling for a wide range of individual and job-related characteristics using data from Wave 1 of the British Household Panel Survey (BHPS). Explanations put forward for this finding include gender differences in work values, selection bias, and women having lower expectations of their jobs due to the relative disadvantage they faced within the labour market. Given the lower labour force participation rate of women, and particularly of married women,

selection bias may create the impression women have higher job satisfaction because women are more likely than men to drop out of the labour force if they are dissatisfied with their jobs.

On the grounds of empirical tests, Clark dismissed the difference in work values and selection bias explanations, preferring the explanation that women have lower expectations, and people assess their job satisfaction, in part, relative to their expectations. Supporting this, he finds the gender satisfaction differential is not present for groups of women likely to have higher expectations: the young, more highly educated, whose mothers were professionals and who work in male dominated workplaces. Hence, Clark proposed the gender differential in job satisfaction may be a transitory phenomenon that would disappear as women's relative position in the labour market improved.

To become known as the 'paradox of the contented female worker' (Bender *et al.* 2005: 482), this observation and explanation has since been the subject of scrutiny across numerous countries. Along with the UK (Clark 1997, Gazioglu and Tansel 2006, Sloane and Williams 2000) evidence of higher job satisfaction for women has been observed in individual county studies for the US (Bender *et al.* 2005), Canada (Dilmaghani 2022), agricultural workers in Senegal (Fabry, Van den Broeck and Maertens, 2022), and Australia. For the latter, the availability of the HILDA dataset has clearly stimulated research in this area. Studies identifying higher job satisfaction for women in multivariate regressions analyses include Aletraris (2010) and Long (2005) based on Wave 1 of HILDA; Kifle (2014) using Waves 1-6; Kifle *et al.* (2014a) using Waves 1-10; and Buchler and Dockery (2023) using data from Waves 1-19. Numerous studies investigate other aspects of gender differences in job satisfaction based on the HILDA data, but without directly estimating a gender 'premium' (Booth and van Ours 2009; Buddelmeyer, McVicar and Wooden 2015; Fleming and Kler 2008, 2014; Kifle 2013; Kifle *et al.* 2014b; Mavramaros; Sloane and Wei 2012; Ong and Shah 2012).

A number of studies have found that the paradox does not apply for certain sub-groups of the workforce, notable younger cohorts and among the more educated, and this is seen to support the hypothesis that the gender differential is due to differences in expectations (Buchler and Dockery 2023; Clark 1997; Dilmaghani 2022; Donohue and Heywood 2004; Kifle *et al.* 2014a; Long 2005). There is also evidence that men's job satisfaction is more sensitive to relative or 'comparison' wages than is women's (Dilmaghani 2022, Donohue and Heywood 2004, Kifle 2013, Perugini and Vladislavljević 2019, Sloane and Williams 2000). Empirical tests undertaken in Hauret and Williams (2017) and Perugini and Vladislavljević (2019) confirm Clark's (1997) finding that the gender satisfaction differential is robust to controls for selection.

As noted, Green *et al.*'s (2018) *Paradox Lost* paper found support for Clark's suggestion that the female job satisfaction premium would disappear over time as women raised their labour market expectations to rival those of males. They find the gender job satisfaction differential had vanished by 2012-14. Cross-country studies also indicate the contented female worker paradox is not evident across all countries, and with mixed evidence on whether the paradox is disappearing over time. In a study of 28 countries based on the 1997 International Social Survey Programs (ISSP) data, Sousa-Poza and

Sousa-Poza (2000) found a gender difference in favour of women in only eight countries, with the largest difference observed for the US and the UK, leading them to suggest the contented female worker paradox is primarily an Anglo-Saxon phenomenon. Using 2015 ISSP data, however, Andrade, Westover and Peterson (2019) find a significant gender difference in job satisfaction for only one of 37 countries (Georgia), and no difference for the pooled sample (which included Australia).

Kaiser (2007) found a significant female job satisfaction premium in 10 of 14 European countries, and suggested the paradox is less likely to be observed in countries with more equal opportunities, such as the Scandinavian countries. Hauret and Williams' (2017) analysis of 2010 European Social Survey data comes to almost the opposite conclusion, finding the gender paradox to apply only in the Nordic group of the 14 countries. Finally, Perugini and Vladisavljević's (2019) analysis of gender job satisfaction differentials based on 2013 data for 32 European countries finds a significant job satisfaction difference in favour of women in the pooled data and in ten individual countries (the highest being for the UK). They also find the differential is lower for women exposed to more equal labour force participation rates by gender in their early life stages, consistent with Clark's (1997) hypothesis of women's lower expectations as the explanation for the contented female worker paradox.

In light of this on-going uncertainty over the existence, persistence and cause of the contented female worker paradox, and in the spirit of Green *et al.*'s *paradox lost* paper, this paper documents the evolution of the gender differential in job satisfaction in Australia over the past two decades. It builds on the existing literature by explicitly decomposing the gender differential in job satisfaction and the changes in that differential over time, into components attributable to observable differences in the characteristics of the jobs held by women and men, and to gender differences in preferences related to those characteristics.

Gender differences in job satisfaction in Australia



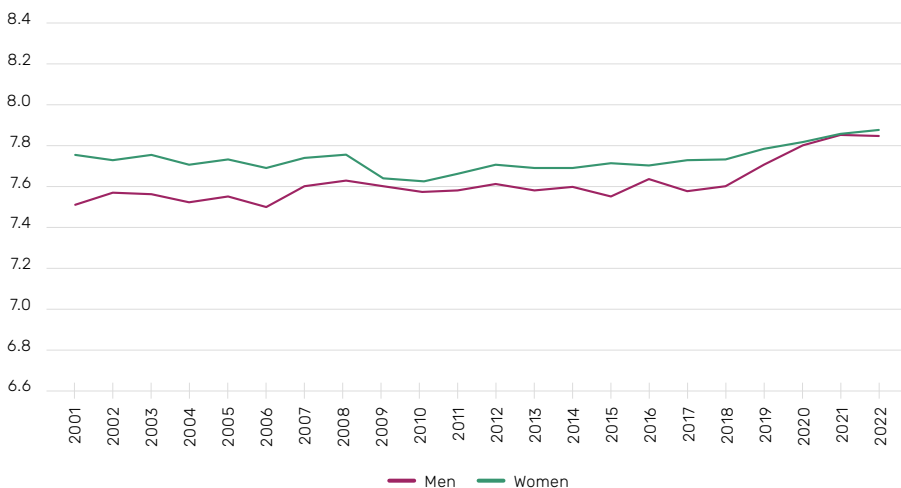
Descriptive overview

The data are from the first 22 waves of HILDA (2001–2022). HILDA is a panel survey of individuals from a representative sample of private households (Watson and Wooden, 2010). Within selected households all occupants aged 15 and over are surveyed annually. Around 13,000 individuals from over 7,000 households have responded in each year, with year-on-year attrition rates averaging below 10 per cent. In 2011 an additional top-up sample of 2,153 households encompassing 4,009 responding individuals was recruited

to the survey sample (HILDA Survey Annual Report, 2012).¹ By definition, all observations included in the analysis are for persons aged 15 and over and who were employed at the time of the relevant HILDA survey. For all analyses the sample is also restricted to exclude multiple job holders and those who work as unpaid family helpers.

In each wave, the survey asks people who are employed how satisfied they are with a number of aspects of their job, before asking ‘All things considered, how satisfied are you with your job?’. Responses are recorded on an 11-point scale ranging from 0 (totally dissatisfied) to 10 (totally satisfied). On the basis of the raw means of responses to that question, women have tended to report higher average satisfaction with their jobs. Across the full sample pooled over the 22 years the mean of people’s assessment was 7.68 with a standard deviation of 1.63, indicating workers generally report quite high satisfaction levels.² The modal response is 8, with just over 80 per cent of workers reporting 7 or higher. For women, the mean was 7.74 compared to 7.63 for men. Looking at individual years, mean job satisfaction for women has been higher than for men in all years from 2001 up to and including 2019, with the gender gap closing in 2020 and 2021 (Figure 1). This followed an upturn in average reported job satisfaction for both genders commencing in 2018, but which was particularly sharp for men.

Figure 1. Mean overall job satisfaction rating by gender and year, HILDA waves 1-22

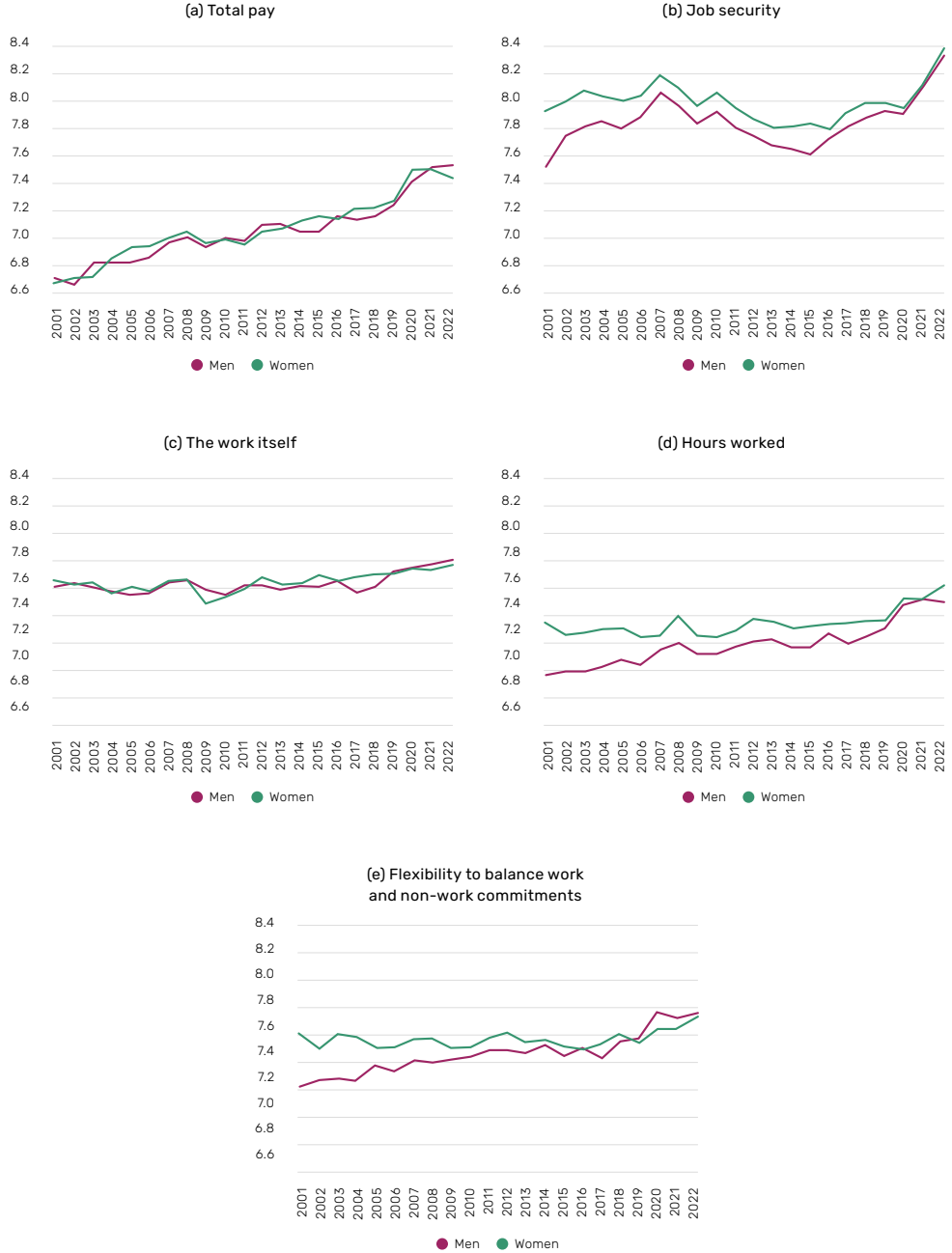


Notes: Job satisfaction assessed on an 11-point scale ranging from 0=‘totally dissatisfied’ to 10=‘totally satisfied’. Number of observations per year range from 3,244 to 4,925 for women; 3,797 to 5,411 for men.

1 see <http://melbourneinstitute.unimelb.edu.au/hilda> for further details on the HILDA survey.
 2 All reported means are calculated using HILDA’s responding-person weights.

While the focus in this analysis is on the measure of overall job satisfaction, it is interesting to also look at gender differences in other job aspects. Leading up to the 'all things considered' assessment, respondents are asked to assess their satisfaction with their total pay, job security, the work itself (or 'what you do'), hours worked, and the flexibility to balance work and non-work commitments. Figure 2 shows trends in the mean assessments of satisfaction with these individual job aspects by gender. It appears that men and women have tended to provide very similar assessments of their satisfaction with total pay and the work itself. The former is somewhat surprising given the well-established gender wage gap in favour of men in Australia, of which only a portion can be explained by observable differences in productivity-related job and worker characteristics (see, for example, Duncan, Mavisakalyan, and Salazar 2022). For almost 20 years from 2001, women have consistently reported higher average satisfaction with job security, hours worked, and flexibility to balance work and non-work commitments. However, each of these appear to have contributed to the convergence in job satisfaction by gender. Mean satisfaction with flexibility to balance work and non-work commitments has been higher for men than for women since 2019, while mean satisfaction with job security has converged to be almost identical for Australian female and male workers in those years. Mean satisfaction with hours worked for men and women also converged between 2019 to 2021, but widened again in favour of women in the most recent (2022) wave of the HILDA survey.

Figure 2. Mean satisfaction with individual job aspects by gender and year, HILDA Waves 1-22



Multivariate estimates

Comparison of the raw means does not take into account differences in characteristics of jobs undertaken by women and men, or in the personal characteristics of workers, such as educational attainment. A standard approach to identifying a gender effect after controlling for other factors that may affect workers' satisfaction with their jobs, is to estimate a multivariate regression of the following form for panel data with random-effects:

$$JS_{it} = \alpha + \theta FEMALE_{it} + \beta X_{it} + u_i + \varepsilon_{it} \quad (1)$$

where: JS_{it} denotes the job satisfaction assessment of worker i in period t ; β is a vector of coefficients associated with the vector X of control variables, and with error terms including an individual component u_i and residual ε_{it} distributed with mean of zero across individuals and over time. The coefficient θ on a dummy variable indicating whether the individual is female represents the estimated gender effect on job satisfaction independent of the other control variables.³

To provide point-in-time estimates while also exploiting the panel dimension of the data to control for unobserved individual effects, models are fitted to data from rolling 5-year intervals (2001-2005, 2002-2006, ... 2018-2022) to estimate the gender differential in job satisfaction. For convenience, these intervals are referenced by their midpoints (ie, 2003, 2004 ..., 2020).

A wide range of individual-, job- and workplace-specific control variables are included in the models, as can be seen in the Appendix Table A1, which reports results from models estimated with the full 22-year panel. Guiding factors in the selection of independent variables to include are the need to control for factors previously found to have significant effects on job satisfaction, subject to the constraint that variables must be available on a consistent basis across all 22 waves.⁴ For the key research question at hand, it is important to include variables likely to capture job expectations and, in particular, gender differences in job expectations. Among the individual-specific characteristics, marital status and the presence of dependent children are important

3 The time subscript has been included for the gender dummy to acknowledge that individuals may transition between genders. However, aside from a handful of exceptions, the variable is fixed for individuals in the HILDA panel, thereby precluding estimation by fixed-effects.

4 In Waves 1-21, employed persons were asked in the HILDA survey how many people worked at their workplace and whether their employer operates from more than one location in Australia. These questions were not included in Wave 22. To ensure consistent models are estimated across all periods, controls for these aspects of the workplace are not included in the modelling for this paper. Results relating to gender are insensitive to their inclusion or exclusion in models estimated on data from Waves 1-21.

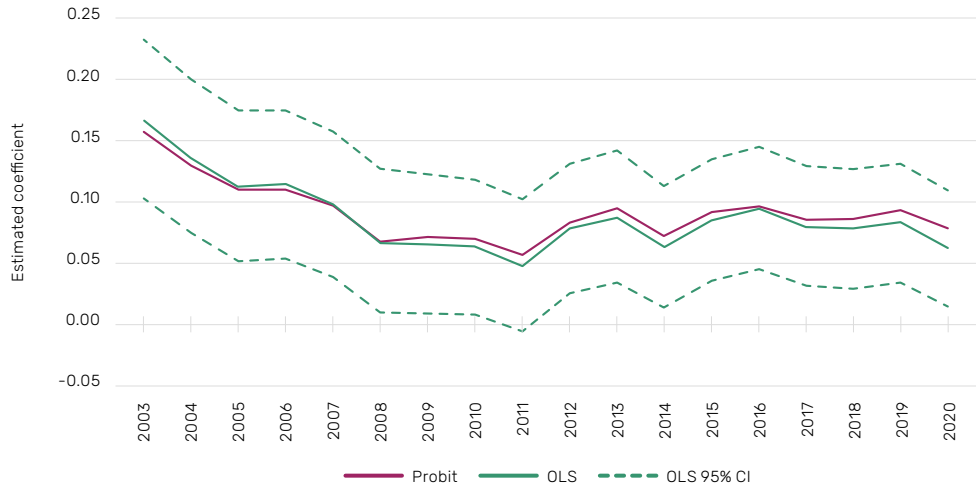
as Australian social norms around women taking on the 'secondary breadwinner' role are likely to shape expectations around work (Baxter and Hewitt 2013; Buchler and Dockery 2023). Educational attainment and neighbourhood socio-economic status are likely to affect who people compare themselves with, and therefore expectations of job quality. Region of residence has also been included as an individual effect, as Buchler and Dockery (2023) find job satisfaction is significantly higher for Australians living outside the major capital cities.

The estimated coefficients for the female dummy variable from models for the 5-yearly intervals are plotted in Figure 3. The ordered categorical nature of the dependent variable lends itself to estimation by the ordered probit model. However, the results are very similar whether the models are estimated by linear regression (ordinary least squares [OLS]) or the more technically correct ordered probit specification, as can be seen by the consistency in the significance, direction and general magnitude of the estimated coefficients reported in Appendix Table A1, and how closely the estimated gender effects from both specifications track one another in Figure 3. The subsequent analysis is therefore based on results from linear panel models, making interpretation of coefficient estimates more straightforward.

Results from OLS models with random effects return an estimated coefficient on the female dummy for the 2001-2005 sample of +0.17 ($p < 0.01$), compared to +0.06 ($p < 0.01$) for the final 2018-22 sample. It reached a low of +0.05 ($p = 0.07$) for the 2009-2013 sample. Figure 3 also plots the 95 per cent confidence intervals for the OLS estimates, highlighting that at its low point, one could not dismiss the hypothesis of no gender differential at the 5 per cent level of significance. For all other years, however, the lower limit of the interval is above zero, and the estimate is highly significant in the early and later periods.⁵ Hence, unlike Green *et al.*'s (2018) findings for Britain, the paradox of the contented female worker appears to have persisted, or at least re-emerged, in Australia.

5 The estimates from the ordered probit models also reach a low in 2011, but with a higher level of significance ($\beta = 0.06$, $p = 0.016$). This is the only interval for which the gender coefficient is not highly significant (ie. $p < 0.01$).

Figure 3. Estimated coefficient on female dummy variable, rolling 5-year OLS and ordered probit panel regression models



Notes: Plotted against the midpoint of the 5-year intervals (eg. 2003 is the estimate for the 2001-2005 sample); models estimated using STATA's XTREG and XTOPROBIT commands.

As Figure 3 illustrates, Australia appeared to be following the pattern of the UK, with the paradox of the contented female worker gradually diminishing from the turn of the century to 2011, set to vanish in a supposed tide of rising female labour market expectations. However, where Green *et al.* (2018) found no significant gender difference in Britain by 2012-14, the job satisfaction premium in favour of women in Australia appears to have rebounded slightly after 2011 and since remained relatively constant.

Differences in expectations? Evidence from Oaxaca-Blinder decompositions

As is well known following the work of Oaxaca (1973) and Blinder (1973), and most commonly applied in the case of the gender wage differential (see, for example, Blau and Kahn 2017), consider a regression model of job satisfaction estimated separately for males (M) and females (F):

$$JS_{Fi} = \beta_F X_{Fi} + u_{Fi} \quad (2a)$$

$$JS_{Mi} = \beta_M X_{Mi} + u_{Mi} \quad (2b)$$

The difference in mean job satisfaction between women and men ($\bar{JS}_F - \bar{JS}_M$) can be decomposed into three components:

- Differences in the mean characteristics between women and men (differences in the X's: $\bar{X}_F - \bar{X}_M$).
- Differences between women and men in the estimated coefficients, or in the effects of characteristics on job satisfaction (differences in the β 's: $\hat{\beta}_F - \hat{\beta}_M$).
- Residual interaction effects capturing simultaneous differences in characteristics and coefficients.

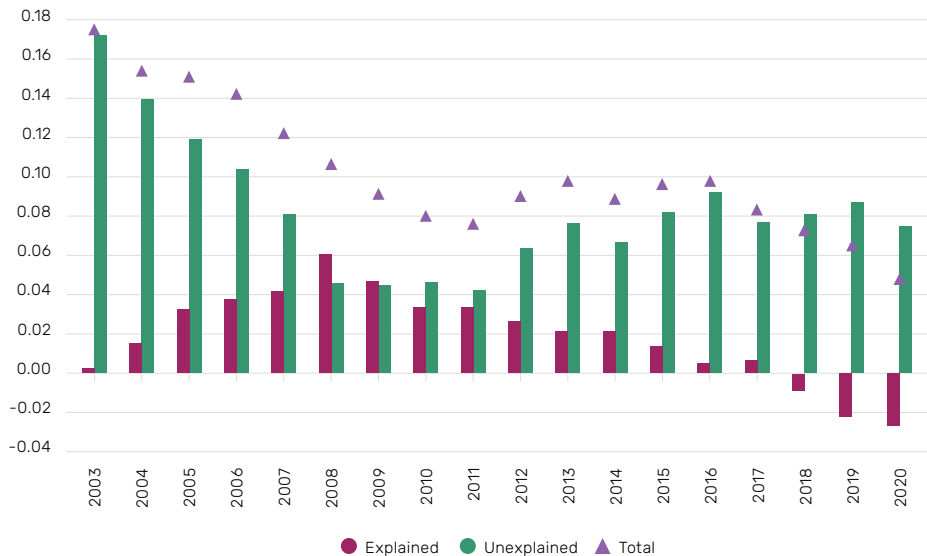
Differences in the effects of variables on job satisfaction (i.e. differences in the coefficient estimates) can be seen as differences in women's and men's preferences for particular job attributes, or differences in the way individual characteristics, such as level of education or marital status, shape job satisfaction for men and women. In the literature on the gender wage gap, the earnings difference that can be attributed to differences in mean characteristics (differences in the X's) is often called the 'explained' component of the gender wage gap. The portion associated with differences in the coefficients is termed the 'unexplained' component, and often considered to proxy gender discrimination in wage setting. In the context of job satisfaction, the unexplained portion could be interpreted as differences in job preferences and expectations between male and female workers, rather than discrimination. However, experiences of discrimination may lower workers' expectations, so the two cannot be seen as unrelated.

The Oaxaca-Blinder decomposition was applied to each of the 5-year rolling samples of workers in the HILDA data. This allows the gender differences in mean job satisfaction in each 5-year interval to be decomposed into explained and unexplained portions. Specifically, the user-written OAXACA command for STATA is used (Jann 2008). Initially the 'pooled' option is used for the decomposition in which the benchmark $\hat{\beta}$'s are estimated from a pooled regression over all persons, rather than choosing coefficients from either a regression for males or for females. This means there is no interaction component to the decomposition.

As shown in Figure 4, in the early 2000s the higher job satisfaction reported by women was due almost entirely to the differences in coefficients (the 'unexplained portion'), with differences in observed characteristics of individuals and their jobs contributing virtually nothing. That is, women's higher reported job satisfaction was due to different *effects* of characteristics rather than different characteristics of jobs and workers. The proportion of the gender gap in job satisfaction attributable to differences in preferences declined to reach a minimum in 2011, and in fact was statistically insignificant in models for samples centred from 2008 to 2011, before then increasing again.

In contrast, the proportion of the satisfaction differential attributable to differences in mean characteristics increased from close to zero to peak in 2008, before then declining such that, for the 2018–2022 sample, differences in mean characteristics worked to reduce the job satisfaction premium observed for women relative to men. That is to say, in the 2018, 2019 and 2020 samples (2016–2020 to 2018–22 intervals), women’s job satisfaction would have been even higher if they were to have otherwise identical characteristics of men and their jobs. Possibly, the quality of women’s jobs relative to men’s jobs improved between 2001 and 2008, but that difference in job quality has since steadily eroded to now favour men.

Figure 4. Oaxaca-Blinder decomposition – explained and unexplained components of the female job satisfaction premium, HILDA Waves 1-22



It is possible to look in more detail at the specific characteristics and associated effects that drove these changes in relative job satisfaction. To do so the estimated gender job satisfaction differential can be decomposed down to the contribution of each individual variable in terms of the differences in means for men and women for that variable (contribution to the explained portion), and the difference in that variable’s coefficients in models estimated separately for men and women (contribution to the unexplained portion). As gender differences in coefficients make the largest and most volatile contribution to the job satisfaction gap, we first consider how the contribution of coefficients for individual variables changed over time, and then turn the focus to the detailed effects of changing individual and job related characteristics (differences in means). Full results of OLS models estimated separately for male and female workers

and associated variable means by gender are presented in appendix Tables A2-A5 for the pooled samples for 2003, 2008, 2011, and 2020, respectively.

'Unexplained' difference in job satisfaction – differences in the effects of variables



As noted above, the female job satisfaction premium was estimated to be largest for the initial 2001-2005 sample, with a difference of 0.174 points in favour of female workers on the 11-point scale used to assess job satisfaction. This may seem a small effect, but in fact represents a sizeable shift. As noted, the distribution of responses is highly clustered with almost one in three workers selecting a value of '8' near the highly satisfied end of the scale. The Oaxaca-Blinder decomposition indicates the female premium observed for the 2003 sample can be attributed almost entirely to gender differences in the coefficients: 0.172 of the 0.174 point difference. This declines to a minimum in 2011 and then rebounds over the timeframe of the study.

We can broadly group the explanatory variables into two categories: characteristics relating to the individual (e.g. age, level of education, family status etc.) and those relating to their job and working arrangements. Following this split, it is differences in coefficients on individual characteristics that drove the female job satisfaction premium in the early 2000s, with differences in those coefficients raising women's job satisfaction by an estimated 0.63 points on the scale. Differences in coefficients on job-related characteristics actually worked to increase men's job satisfaction relative to women's (by 0.10 pts). The difference in the intercept terms in the models estimated separately for men and women was also associated with higher satisfaction for men (0.36), but it is important to note this will also capture effects of omitted variables, not just differences in reporting tendencies between genders. The net gender differential attributable to differences in coefficients is comprised of these three components as shown in Table 1.

Table 1. Female job satisfaction 'premium': contribution of differences in coefficients (the β s)
[a positive effect is associated with higher job satisfaction for women compared to men]

Interval	Estimated effects of coefficients on:			Total 'unexplained' component
	Individual characteristics	Job-related characteristics	Intercept terms	
2003 (2001-05)	+0.634	-0.100	-0.361	+0.172
2011 (2009-13)	+1.093	-0.306	-0.744	+0.042
2020 (2018-22)	+0.709	+0.257	-0.892	+0.075

The major contributing differences in coefficient estimates from the 2003 sample that were associated with higher job satisfaction for women included:

- Age – age was included in the regression model along with its quadratic to capture second order effects. The resulting coefficients show both men and women's job satisfaction declining with age before recovering. The literal interpretation of the coefficients is consistent with men's job satisfaction reaching a minimum at 35.9 years of age, around two years later than for women (33.8). However, the first order (negative) effect for males is over twice the magnitude, indicating job satisfaction declines more rapidly for men after they enter the workforce than for women. This contributes a 1.90 gap in reported job satisfaction. The difference in the quadratic term offsets this (-1.04), but still leaves differences in the effects of age making a large net contribution (0.85), a multiple of around five times the total gender differential.
- Hours worked – usual weekly hours worked were included in the models as a series of mutually exclusive dummies: 0-15 hours, 16-30 hours, 31-38 hours, 45-54 hours and 55 hours or more. The omitted reference category is people who usually worked 39-44 hours per week. Effects associated with working up to 38 hours a week favoured women, with those working arrangements associated with higher job satisfaction than is the case for men. The effects of working long hours (45-54 hours, or 55 hours or more per week) partially offset this, as women appeared to have a lower preference (or greater distaste) for such working weeks, but the differences are very minor. The overall effect of coefficients on hours worked is to increase women's job satisfaction relative to men's.
- A smaller negative impact of casual status on job satisfaction for women.
- A slower decline in job satisfaction with time spent in the current occupation.

Differences in coefficients offsetting these effects in the 2003 model are:

- Wages – men's job satisfaction increased more rapidly with their hourly wage rate (modelled in logs)
- Union membership⁶ – in the 2003 sample, being a member of a union membership was associated with significantly lower reported job satisfaction for women. The association for men was also negative, but much smaller and insignificant.
- Level of qualification – job satisfaction decreases with workers' level of education, so more highly qualified workers are less satisfied with their

6 Union membership status has been classified here as a job characteristic, although arguably it could be considered as a characteristic of the individual.

jobs, other things being equal. However, the gradient follows a much steeper decline for women.

- Neighbourhood socio-economic status – *ceteris paribus*, job satisfaction also declines with the SEIFA⁷ decile of the neighbourhood in which the worker lives, presumably reflecting comparison effects. This decline was sharper for women in the 2003 sample, and in fact is only significant in the model for female workers ($\beta = -0.02$; $p < 0.05$).

Changes in the unexplained component: 2003 to 2011

The 'unexplained' component of the female job satisfaction premium fell from 0.172 in 2003 to a low of just 0.042 in 2011. The largest contribution to this change in the coefficient estimates related to the constant (or intercept) terms for men and women, and hence the shift is largely unexplained by effects of the included variables (see Table 1). Potentially, it may capture growing expectations of women relative to men with respect to the general quality of their jobs, and hence lower satisfaction reported by women in 2011, relative to 2003, for given job characteristics. However, note again that those differences will include any effects of omitted variables. The change in the intercept terms equates to a 0.383 point reduction in job satisfaction for women compared to men from 2003 to 2011. This more than accounts for all of the fall in the unexplained component between 2003 and 2011 (down by 0.129), so we cannot ascribe that development to any particular change in the effects of individual characteristics or relative preferences relating to job characteristics.

Aside from the effects of the intercept terms, coefficients on individual characteristics served to increase women's job satisfaction relative to men's (+0.460), while changes in the effects of job-related characteristics reduced the gap (-0.206). Changes in estimated coefficients for age and qualifications between 2003 and 2011 in fact accentuated the female satisfaction premium, as did the effect of being married with children aged 5-14 years, which was associated with higher job satisfaction among women in the later period.

Some of that effect was offset by changes in the effect of time spent in current occupation, primarily a negative and significant effect observed for men in 2003 became insignificant in 2011. Changes in the estimated preferences for working hours also played a small role (-0.055), primarily through the estimated effect of working 16-30 hours per week (as opposed to 39-44 hours) converging for men and women. In 2003 women were significantly more satisfied working 16-30 hours per week than with full-time work, but this was not the case in 2011.

7 Socio-economic Indices for Areas (SEIFA) are measures generated from census data by the Australian Bureau of Statistics (see Adhikari 2006). SEIFA deciles of respondents' postcode are available as derived variables in the HILDA data. The decile for the 2001 SEIFA index of relative socio-economic advantage and disadvantage is used in the modelling in this paper.

The negative effect of living in a neighbourhood of higher socio-economic status that was observed in 2003 had vanished in the estimates for 2011, such that the estimated effect was small and insignificant for both men and women. So while this effect acted to reduce women's job satisfaction relative to men's in 2003, no such effect was present in 2011.

Changes in the unexplained component: 2011 to 2020

So, if there was a general fall in women's reported satisfaction with otherwise 'like' jobs between 2003 and 2011, what would account for the subsequent rebound in women's relative satisfaction? The unexplained portion of that total gender gap rebounded from 0.042 to 0.092 in 2016 and stood at 0.075 at the end of the analysis time frame (2020, estimated for the 2018-22 sample).

Changes in the intercept terms of the models for men and women were associated with a further deterioration in relative job satisfaction for women between 2011 and 2020. Differences in the effects of individual characteristics continued to make a positive contribution to the female job satisfaction premium in 2020, but to a lesser degree than in 2011, such that changes in the effects of individual characteristics between 2011 and 2020 reduced women's job satisfaction relative to men's. However, changes in the effects of job characteristics offset both those effects, such that in total the 'unexplained' female premium increased back to 0.075 (see Table 1). Unlike in 2003 and 2011, estimated coefficients on variables capturing aspects of jobs and workplaces contributed positively to women's relative jobs satisfaction in 2020. Recall, this relates to differing preferences for job characteristics, not differences in the actual characteristics of those jobs.

In terms of the effects of individuals' characteristics, a more rapid decline in job satisfaction with age for women in the 2020 sample was the main source of the fall in the female satisfaction premium associated with individual characteristics. Working against this, the effects of qualifications further moved to increase women's job satisfaction. In the early 2000s, having a degree or post-graduate qualification was associated with lower job satisfaction for both genders, but the effect was stronger for women. Those coefficients for men remained quite stable across the period, but by the end of the analysis timeframe the coefficients for women had converged toward the male coefficients. Highly qualified women no longer faced a steeper decline in job satisfaction. Optimistically, this may reflect a reduced 'glass ceiling' effect.

The differential effect of living in a neighbourhood of higher socio-economic status again contributed to the female premium. Between 2011 and 2020, the change was in the estimated coefficient for men, such that living in a higher status neighbourhood had a significant and negative effect on men, with the estimate for females insignificant. In summary, neighbourhood comparison effects shifted from women to men over the period of analysis. What appear to be the negative effects on satisfaction from neighbourhood 'rivalry' were observed only for women in 2003; for neither men nor women in 2011, and only for men in 2020.

In terms of the effects of job characteristics, the estimated elasticity of job satisfaction associated with hourly wages was higher for women than for men in 2020, whereas in 2003 and 2011 the estimate was larger for men. The results for the earlier periods are consistent with previous literature suggesting women place higher relative value on intrinsic job rewards, such as the nature of the work, while men place higher relative value on extrinsic rewards, such as pay and promotion (see Andrade, Westover and Peterson 2019; Dilmaghani 2022). This shift in responsiveness to wages contributed substantially to the growing female premium between 2011 and 2020. Changing effects of time spent in the current occupation and of having supervisory responsibilities also contributed. In the latter case, in the initial (2003) period having supervisory responsibilities had a significant and positive effect on job satisfaction for men, but was smaller and insignificant for women. In 2011 the effects were almost identical for both genders, and by 2020 were positive and significant for women only. Again, optimistically, this shift in the effect of managerial responsibilities on job satisfaction from one which favoured men to one which favoured women may also reflect a lessening of 'glass ceiling' effects in the labour market.

For the latter interval, men also appear to have developed a stronger preference for working standard full-time hours. In 2020, job satisfaction was significantly lower for men who worked part-time compared to those who worked roughly 40 hours per week, an effect that was not evident in either 2011 or 2003. By 2020 men were also more dissatisfied when working long hours, with significant negative effects observed for men working 45 to 54 hours per week and particularly those working 55 or more hours per week. This effect was also more pronounced than in the earlier years, though women still display a stronger distaste for longer working hours.

Explained difference in job satisfaction – differences in means



As outlined above, the gender gap in job satisfaction that could be 'explained' in an Oaxaca-Blinder decomposition by gender differences in the mean characteristics of individuals and their jobs was close to zero in 2003 (+0.003), increased to a peak in 2008 (+0.060), and then fell to -0.026 in the final period (2018-2022) such that differences in observable characteristics favoured men. The summary provided in Table 2 shows that the increase in the explained component of the female job satisfaction premium to 2008 and subsequent decline can primarily be attributed to changes in the mean characteristics of men's and women's jobs. Differences in mean individual characteristics shifted to reduce the female premium over the full period.

**Table 2. Female job satisfaction 'premium': contribution of differences in means (the Xs)
[a positive effect is associated with higher job satisfaction for women compared to men]**

Interval	Contribution of differences in means of:		Total 'unexplained' component
	Individual characteristics	Job-related characteristics	
2003 (2001-05)	-0.014	+0.017	-0.003
2008 (2006-10)	-0.018	+0.078	+0.060
2020 (2018-22)	-0.039	+0.013	-0.026

While the net effect of the differences in means across all variables was close to zero in 2003, some individual variables did make substantial but offsetting contributions. The higher proportion of women with a degree qualification (25 per cent versus 18 per cent for men) contributed to lower average job satisfaction for women, but this was offset by the much lower proportion of women holding a certificate level III/IV qualification. The higher proportion of women working 0–15 hours per week and in the public sector contributed to greater women's job satisfaction, since in the pooled sample both those characteristics are associated with higher job satisfaction. The higher proportion of women working as casuals detracted from women's satisfaction.

Changes in the explained component: 2003 to 2008

From 2003, the contribution of differences in coefficients declined while the contribution of differences in means to the female satisfaction premium increased, suggesting either the characteristics of female workers were changing or the quality of women's jobs were improving. Comparing the change in the 'explained' contributions from 2003 to 2008, when the effects of differences in means peaked, there were two main developments. Both appear to arise from changes in preferences between the two periods, rather than changes in characteristics of workers or jobs:

- Hours worked – between 2003 and 2008 there was very little change in the gender distribution across hours worked, with women clearly over-represented in part-time work and under-represented among long hours workers in both periods (see Table 3). However, in 2008, part-time work attracted a marginally higher job satisfaction premium than was the case in 2003, and long hours of work a marginally greater penalty. Hence, in the 2008 model, the differences in working times between men and women, notably the higher proportion of women working 1–15 hours, accounted for substantially more of the overall female job satisfaction premium. Essentially a shift in preferences towards a shorter working

week and away from long hours of work meant that the pre-existing hours distribution was now more favourable to female workers.

- The smaller proportion of women working in the occupation of machinery operators and drivers – for both the 2003 and 2008 samples, 11 per cent of men and just one per cent of women worked in jobs in this major occupational grouping. However, for the latter period, working in this occupation was significantly associated with lower job satisfaction, and hence women's under-representation in the occupation contributed to higher job satisfaction relative to men.

Changes in the explained component: 2008 to 2020

As shown in Figure 3, from 2008 the component of the female job satisfaction premium that could be explained by gender differences in means steadily declined. By 2020 the differences in mean characteristics are estimated to favour men. Again, that change can be traced primarily to gender differences in means of job characteristics, with only a minor contribution from changes in differences in person characteristics by gender (see Table 2). Based on the coefficients for the pooled sample for 2008, differences in the means of the job characteristics of men and women contributed +0.78 points to women's job satisfaction relative to men. This fell to a contribution of +0.013 for women in 2020, a net change of -0.065 corresponding to a lower job satisfaction premium for women in 2020 compared to 2008. Over the same period, there was a net change of -0.021 associated with differences in the means of individual characteristics, further adding to the shift in job satisfaction in favour of men.

Again, the major shift related to gender differences in hours of work with preferences playing a key role, and this continued the shift observed from 2003 to 2008. Compared to the sample for the 2008 estimates, women in the 2020 sample were less likely to be working 0-15 hours per week: 18 per cent in 2008 compared to 13 per cent in 2020 (see Table 3). The proportion of women working 31-38 hours increased by 5 percentage points (25 per cent to 30 per cent). More importantly, while part-time workers reported substantially higher job satisfaction in 2008, this no longer applied in 2020, as reported in Table 3. This was most apparent for short hours workers: the estimated coefficient on working between 0 and 15 hours per week in the pooled 2008 sample was +0.337 ($p < 0.01$), but was small and insignificant for the pooled 2020 sample ($\beta = +0.043$, $p = 0.31$). Hence, the major factor driving the rise and then fall of the 'explained' component of the female job satisfaction premium was an initial growing preference for part-time work, which favoured women's satisfaction but vanished between 2008 and 2020, aided by a decline in the proportion of women working part-time. Growing dissatisfaction with long working weeks partially offset this effect. By 2020, the difference in distribution of males and females across all hours of work categories only marginally favoured women in terms of the association between those working hours and job satisfaction (+0.023 points), whereas in the earlier periods it had substantially favoured women (+0.052 in 2003 points and +0.082 points in 2008).

Table 3. Distribution of hours worked by gender, and associated estimated coefficients

Usual hours worked/week	Interval	Mean		Coefficient (signif.)
		Women	Men	
0 to 15 hours	2003 (2001-05)	0.19	0.07	0.32*** (0.00)
	2008 (2006-10)	0.18	0.07	0.34*** (0.00)
	2020 (2018-22)	0.13	0.07	0.04 (0.31)
16 to 30 hours	2003 (2001-05)	0.26	0.07	0.15*** (0.00)
	2008 (2006-10)	0.25	0.07	0.18*** (0.00)
	2020 (2018-22)	0.27	0.09	-0.05* (0.08)
31 to 38 hours	2003 (2001-05)	0.23	0.18	0.05 (0.20)
	2008 (2006-10)	0.25	0.19	0.00 (0.89)
	2020 (2018-22)	0.30	0.24	0.02 (0.48)
39 to 44 hours	2003 (2001-05)	0.18	0.26	n.a. ^a
	2008 (2006-10)	0.18	0.27	
	2020 (2018-22)	0.17	0.27	
45 to 54 hours	2003 (2001-05)	0.11	0.26	0.03 (0.35)
	2008 (2006-10)	0.11	0.26	-0.03 (0.34)
	2020 (2018-22)	0.10	0.23	-0.13*** (0.00)
55 hours or more	2003 (2001-05)	0.04	0.15	-0.12** (0.02)
	2008 (2006-10)	0.04	0.14	-0.15*** (0.00)
	2020 (2018-22)	0.03	0.10	-0.29*** (0.00)

Notes:

*** p<0.01, ** p<0.05, * p<0.10;

a. No coefficient estimate as 39-44 hours per week is the omitted or comparison category in the regressions.

In terms of individual characteristics, the contribution of differences in means was to decrease women's job satisfaction relative to men's, and this became more pronounced over time. This can largely be attributed to nuanced changes relating to educational attainment. The satisfaction 'penalty' associated with higher level qualifications fell over time, and this change was driven by a changing association between educational attainment and job satisfaction among women. However, the proportion of female workers with post-school qualifications at all levels increased, including certificate III/IV, diplomas, bachelor degrees and post-graduate qualifications, and each of these is associated with lower job satisfaction relative to workers who had not completed Year 12.

A sudden convergence?



As shown in Figure 1, the raw means of job satisfaction assessments of men and women converged to be virtually identical in 2020 and 2021, before very marginally drifting in favour of women again in 2022. Trends in satisfaction with individual aspects of workers' jobs (Figure 2) suggest growing satisfaction of male workers with their hours of work, job

security, and the flexibility to balance work and non-work commitments all contributed to this convergence. With mean assessments of men's and women's job satisfaction finally equalising in 2020 and 2021, an appealing first explanation is that COVID-19 had an effect on men's expectations around work, and possibly led to changes in working arrangements that enhanced satisfaction. However, there seems to have been a quite general up-tick in male workers' satisfaction across all domains starting from around 2017, well before the impacts of COVID-19 hit the Australian labour market in 2020.

Having selected rolling 5-year intervals as the basis for analysis, the change within this interval will be only partially captured in the reported estimates. Cross-sectional regressions based only on the 2022 HILDA sample do still suggest a positive and moderately significant female worker premium in ordered probit models ($\beta=0.06$; $p=0.02$), but the estimate is not significant in the linear model ($\beta=0.06$; $p=0.13$).

To investigate this more recent development in detail, the Oaxaca-Blinder decomposition was conducted using the sample of male workers from 2017 and comparing them to the sample of male workers in 2022. On the 11-point scale, mean job satisfaction for male workers increased from 7.58 in 2017 to 7.86 in 2021 (+0.28), by far the largest jump over a four-year period in the 22 years of HILDA data. Again, changes in mean characteristics play a trivially small role (+0.03), and most of the rise in job satisfaction is associated with the differences in the estimated effects of person or job attributes.

Among the differences in mean characteristics contributing to the small 'explained' component of the change between 2017 and 2022 are an increase in the proportion who do some of their usual hours of work from home (from 20 per cent in 2017 to 30 per cent in 2022), a small increase in real hourly wages, and a drop in the proportion of males working 55 hours or more per week (from 12 per cent to 9 per cent). The higher incidence of working from home, which is associated with higher job satisfaction, is likely to be a legacy of the pandemic. However, it did not substantially contribute to gender differentials analysed above, indicating this change in working arrangements had a similar effect on job satisfaction for men and for women.

The differences in estimated coefficients are the source of most of the increase in job satisfaction for men between 2017 and 2022 (+0.51 excluding the intercept term). There is a decline in the elasticity of job satisfaction with respect to real hourly wages that reduces job satisfaction in 2022 (-0.23), and that more than offsets the effect of the actual increase in wages. The largest effect comes from a lower decline in job satisfaction with age for the 2022 sample of men (+1.28 net effect when combined with the change in the estimate for the quadratic terms). The intercept term (+0.65) for 2021 compared to 2017) is also a major contributor, reflecting either changes in men's assessments for like jobs (expectations), or changes in the means and effects of omitted variables.

On the evidence here, the convergence in the raw means in job satisfaction ratings of male and female workers in 2020 and 2021 may constitute another fluctuation in the magnitude of the female job satisfaction premium, but probably not its demise. Future waves of data will be needed to see if the increase in male job satisfaction observed since around 2017 continues, and continues beyond what can be accounted

for by observable characteristics and changing preferences. Indeed, data from the very latest wave of HILDA (2022) show male job satisfaction levelling off to be marginally eclipsed by female's assessments of their jobs.

Conclusion



The paradox of the contented female worker was alive and well in the 2018–2022 period, the most recent of the 5-year intervals analysed in this paper. This is in the sense that, after controlling for a wide range of individual, job, and workplace characteristics, the estimated effect of a worker being female was to increase job satisfaction, and that estimate is highly significant using both linear and ordered probit models. For that interval, higher female job satisfaction can be primarily attributed to gender differences in the effects of workers' own characteristics on job satisfaction, notably the differential effect of age for men and women.

In line with reported developments in the UK and other countries, and with Clark's (1997) prediction, the female satisfaction premium in Australia appeared to be steadily dissipating over the first decade of this century. Moreover, given the variables included, the modelling approach used here could not attribute that fall in the female worker premium to either changes in observable characteristics or their estimated effects, with much of the change associated with differences in the gender intercept terms. This is consistent with the hypothesis that the narrowing gender gap was a result of women's rising expectations around their position in the labour market, but it may also reflect changing effects of variables that have not been included in the modelling.

However, the paradox did not continue to fade away in the second decade of the 2000s. Rather, it re-emerged and remained relatively constant from around 2013, albeit with the gender gap still smaller than at the turn of the century. Results of Oaxaca–Blinder decompositions are potentially consistent with female expectations continuing to rise, however, other factors have been at work to maintain a positive female job satisfaction premium. In terms of labour market developments, the most important of these appear to be changes relating to working hours and educational attainment. In both cases, it is changes in the effects of these variables on job satisfaction that most impact upon the overall gender difference in job satisfaction, rather than changes in the distributions of working hours or educational attainment. Presumably, in the case of hours of work, this reflects the changing preferences of workers and, in the case of educational attainment, changing expectations of workers.

The actual distribution of working hours by gender did not drastically change over the two decades of the HILDA survey. Both women and men saw an increase of around 6 percentage points in the proportion working 31–38 hours per week; but for women this was associated with a decline in the proportion working 0–15 hours per week, and for men a decline in the proportion working 55 hours per week or more. However,

initial preferences for part-time work enhanced women's job satisfaction in 2003 relative to men's, and more so in 2008. Preferences then changed in favour of typical full-time working weeks, including an apparent growing distaste for long working weeks. With the proportion of women working 0-15 hours per week declining significantly between 2008 and 2020, these changing preferences over the time period contributed to the proportion of the female job satisfaction premium that could be explained by gender differences in working hours increasing up until 2008, but then falling again.

There were offsetting effects with regard to educational attainment. In all periods, and for both male and female workers, higher levels of educational attainment are associated with lower job satisfaction. This is to be expected given we are controlling for job characteristics: due to expectations, a worker with higher educational attainment is likely to be less satisfied with a given job than a less educated worker. However, this effect was much larger for women in the earlier part of the timeframe with, in particular, a relatively larger negative effect of having university level qualifications. By the final interval the effects (coefficients) of different levels of education were similar for men and women. However, average educational attainment of women continued to rise, adding to the reduction in the 'explained' component of the female satisfaction premium.

In addition to potential changes in the expectations of female workers, the results suggest a possible amelioration of 'glass ceiling' effects for women. The falling penalty associated with higher educational qualifications for women suggests a closer fit of actual job quality to expectations for men and women with higher qualifications in more recent times. A job satisfaction premium associated with having supervisory duties was also observed only for men in the initial period, but had emerged for women in the 2018-22 interval. Both may reflect women becoming more comfortable – or less likely to feel discomfort – when taking on more senior or authoritative roles.

Much of the focus on gender equity in the Australian labour has been on the gender wage gap (Duncan *et al.* 2022) and rates of promotion to more senior or executive positions (Cassells and Duncan 2021). The results relating to job satisfaction provide added insights into the nature of labour market inequality. If indeed the disappearance of the 'paradox of the contented female worker' in Britain was because women improved their relative position in the labour market, and thus revised their expectations to be equal to those of men, the same has not occurred in Australia. Does this mean Australian women's relative positions in the labour market have not improved as it may have in other countries?

Lower expectations of job quality for women could arise due to systemic discrimination in the workplace, or from differences in social norms around gender division in work and home production. There is evidence that lower expectations due to discrimination within the labour market ameliorated over the first two decades of this century. Between the 2001-05 to the 2018-22 samples, the gender gaps in mean wages, the proportion with supervisory responsibilities, and the proportion working part-time reduced marginally. As noted, there is some evidence of reduced 'glass ceiling' effects. Recall also, the female satisfaction premium at the end of the period can be attributable purely to differences in coefficients rather than mean characteristics of

individuals and their jobs. These findings suggest policy to promote gender equity by targeting discrimination within the labour market must be accompanied by policies that address social expectations of women as secondary breadwinners, particularly after having children (see Buchler and Dockery 2023, Kifle *et al.* 2014b). Such policies may include provisions to provide greater flexibility to balance caring roles with paid work, and to encourage men to take up such provisions in greater proportion.

Limitations and avenues for further research

Changing estimates of the effect of age on job satisfaction for men and women had substantial effects on the estimates. Whether this represents genuine gender differences or genuine changing social trends, as opposed to sensitivity of the estimates to model specification, warrants further research. Estimates may be less sensitive if a series of dummy variables capturing age categories were used instead of the inclusion of years of age as a linear variable and its quadratic. More detailed analyses of changes in job satisfaction for university educated women also seems a potentially fruitful avenue for further research. There have clearly been important changes in relative job satisfaction of women and men with university and higher qualifications. What is not clear is the extent to which this change is due to changes in the quality of jobs secured by university qualified men and women, or revised expectations associated with gaining a degree.

A possible explanation for the higher job satisfaction observed for women is selection. Given wider social acceptance of roles outside of paid employment for women, women may be more likely than men to leave employment when they are dissatisfied with their jobs. As noted above, a number of other studies have formally tested for selection effects and found these not to be important (Clark 1997; Hauret and Williams 2017; Perugini and Vladisavljević 2019), but this study does not directly test for selection effects. This is a limitation of the current paper and a potential extension for future work.

The sudden convergence of mean job satisfaction ratings for male and female workers in Australia from 2020 to 2022 also warrants further investigation as future waves of HILDA data become available. The timing of the increase in relative job satisfaction for men suggests it is not associated with the COVID-19 pandemic. There is no clear evidence, as yet, that this convergence will mark the demise of the paradox of the contented Australian female worker.

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Appendix Table A1. Job satisfaction: OLS and ordered probit regression results, HILDA Waves 1-22

Independent variable	OLS	Ordered Probit ^a
Female	0.073*** (0.000)	0.073*** (0.000)
Age	-0.037*** (0.000)	-0.032*** (0.000)
Age-squared	0.001*** (0.000)	0.001*** (0.000)
Has disability	-0.093*** (0.000)	-0.065*** (0.000)
Born in:		
Australia	—	—
English speaking country	-0.122*** (0.000)	-0.068*** (0.005)
Non-English speaking country	-0.113*** (0.000)	-0.080*** (0.000)
Highest qualification:		
Post-graduate	-0.500*** (0.000)	-0.475*** (0.000)
Degree	-0.465*** (0.000)	-0.441*** (0.000)
Diploma	-0.292*** (0.000)	-0.285*** (0.000)
Certificate III/IV	-0.217*** (0.000)	-0.209*** (0.000)
Completed Year 12	-0.214*** (0.000)	-0.215*** (0.000)
Did not complete Year 12	—	—
Lives in:		
Major capital city	—	—
Inner regional	0.124*** (0.000)	0.109*** (0.000)
Outer regional/remote	0.180*** (0.000)	0.169*** (0.000)
SES of neighborhood (decile)	-0.006** (0.019)	-0.006*** (0.001)
Family status:		
Married, no children	—	—
Married, child aged 0-4	0.078*** (0.000)	0.065*** (0.000)
Married, child aged 5-14	0.100*** (0.000)	0.082*** (0.000)
Married, child age 15-24	0.093*** (0.000)	0.071*** (0.000)
Single, no children	0.024 (0.119)	0.009 (0.442)
Single, child aged 0-4	0.138** (0.018)	0.127*** (0.008)
Single, child aged 5-14	0.107*** (0.003)	0.094*** (0.002)
Single, child age 15-24	-0.010 (0.794)	0.004 (0.898)

Appendix Table A1. continued

Independent variable	OLS	Ordered Probit ^a
Occupation:		
Manager	-0.057*** (0.001)	-0.044*** (0.002)
Professional	—	—
Technician/trade worker	-0.012 (0.595)	0.002 (0.918)
Community/personal service worker	-0.028 (0.207)	-0.014 (0.464)
Clerical/administrative worker	-0.078*** (0.000)	-0.052*** (0.001)
Sales worker	-0.209*** (0.000)	-0.180*** (0.000)
Machinery operator/driver	-0.165*** (0.000)	-0.125*** (0.000)
Labourer	-0.278*** (0.000)	-0.206*** (0.000)
Firm sector:		
Private for-profit	—	—
Private not-for-profit	0.200*** (0.000)	0.160*** (0.000)
Government business	0.191*** (0.000)	0.161*** (0.000)
Public sector	0.252*** (0.000)	0.205*** (0.000)
Other	0.182*** (0.001)	0.184*** (0.000)
Employment contract:		
Self-employed/employer	0.257*** (0.000)	0.223*** (0.000)
Fixed term contract	-0.029** (0.046)	-0.025** (0.035)
Casual contract	-0.084*** (0.000)	-0.065*** (0.000)
Permanent/ongoing	—	—
Other	-0.173* (0.067)	-0.062 (0.393)
Usual no. hours worked per week:		
0 to 15 hours	0.053** (0.015)	0.083*** (0.000)
16 to 30 hours	-0.002 (0.903)	0.017 (0.214)
31 to 38 hours	-0.016 (0.201)	-0.011 (0.284)
39 to 44 hours	—	—
45 to 54 hours	-0.054*** (0.000)	-0.058*** (0.000)
55 hours or more	-0.167*** (0.000)	-0.151*** (0.000)

Appendix Table A1. continued

Independent variable	OLS	Ordered Probit ^a
Real hourly wage (log of)	0.251*** (0.000)	0.198*** (0.000)
Union member	-0.095*** (0.000)	-0.083*** (0.000)
Years in current occupation	-0.014*** (0.000)	-0.013*** (0.000)
Years in occupation squared/100	0.028*** (0.000)	0.028*** (0.000)
Years with current employer	-0.023*** (0.000)	-0.022*** (0.000)
Years current employer squared/100	0.041*** (0.000)	0.040*** (0.000)
Works non-standard hours	-0.145*** (0.000)	-0.123*** (0.000)
Works some hours from home	0.123*** (0.000)	0.105*** (0.000)
Employed by labour hire firm	-0.115*** (0.000)	-0.079*** (0.001)
Has supervisory responsibilities	-0.017* (0.092)	-0.020** (0.012)
Constant ^a	7.739*** (0.000)	
Observations	169,728	169,728
Number of individuals	24,609	24,609
Obs/individual: min	1	1
Average	6.9	6.9
Max	22	22
Wald chi-square	2,852 (0.000)	3,044 (0.000)

Notes: Robust p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.10; a. The ten intercept terms for the cut-points in the ordered probit model not reported.

Appendix Table A2. OLS regression coefficients and means by gender, pooled 2001-2005 sample

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Job satisfaction					7.55	7.73
Age	-0.094	0.00	-0.043	0.00	37.47	37.25
Age-squared	0.001	0.00	0.001	0.00	1,569	1,547
Has disability	-0.162	0.00	-0.272	0.00	0.13	0.12
Born in:						
Australia	–		–		0.79	0.80
English speaking country	-0.129	0.06	0.059	0.41	0.10	0.09
Non-English speaking country	-0.072	0.30	-0.063	0.34	0.11	0.11
Highest qualification:						
Post-graduate	-0.439	0.00	-0.723	0.00	0.04	0.03
Degree	-0.455	0.00	-0.618	0.00	0.18	0.25
Diploma	-0.263	0.00	-0.496	0.00	0.09	0.10
Certificate III/IV	-0.189	0.00	-0.296	0.00	0.27	0.13
Completed Year 12	-0.119	0.05	-0.292	0.00	0.16	0.18
Did not complete Year 12	–		–		0.26	0.32
Lives in:						
Major capital city	–		–		0.69	0.69
Inner regional	0.140	0.01	0.198	0.00	0.20	0.20
Outer regional/remote	0.225	0.00	0.217	0.00	0.11	0.11
SES of neighborhood (decile)	-0.006	0.45	-0.019	0.01	5.77	5.92
Family status:						
Married, no children	–		–		0.27	0.27
Married, child aged 0-4	0.129	0.03	0.144	0.04	0.15	0.10
Married, child aged 5-14	0.046	0.47	-0.038	0.57	0.16	0.17
Married, child age 15-24	0.116	0.13	0.137	0.07	0.07	0.08
Single, no children	0.023	0.66	-0.052	0.35	0.33	0.30
Single, child aged 0-4	0.634	0.09	-0.162	0.36	0.00	0.01
Single, child aged 5-14	0.157	0.45	-0.058	0.56	0.01	0.04
Single, child age 15-24	-0.200	0.47	-0.076	0.58	0.01	0.03
Occupation:						
Manager	0.056	0.34	-0.044	0.57	0.14	0.08
Professional	–		–		0.19	0.26
Technician/trade worker	0.048	0.45	0.118	0.22	0.21	0.04
Community/personal service worker	0.088	0.35	-0.032	0.66	0.06	0.14
Clerical/administrative worker	-0.245	0.00	-0.053	0.38	0.08	0.25
Sales worker	-0.105	0.22	-0.256	0.00	0.07	0.13
Machinery operator/driver	-0.025	0.76	0.118	0.49	0.11	0.01
Labourer	-0.187	0.02	-0.244	0.01	0.13	0.08

Appendix Table A2. continued

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Firm sector:						
Private not-for-profit	–		–		0.76	0.62
Private not-for-profit	0.342	0.00	0.241	0.00	0.03	0.08
Government business	0.079	0.33	0.124	0.15	0.06	0.05
Public sector	0.262	0.00	0.252	0.00	0.14	0.23
Other	0.192	0.20	0.339	0.00	0.01	0.02
Employment contract:						
Self-employed/employer	0.307	0.00	0.309	0.00	0.08	0.04
Fixed term contract	0.065	0.26	-0.035	0.54	0.08	0.09
Casual contract	-0.224	0.00	-0.070	0.19	0.16	0.26
Permanent/ongoing	–		–		0.67	0.60
Other	0.067	0.80	-0.793	0.03	0.00	0.00
Usual no. hours worked per week:						
0 to 15 hours	0.162	0.08	0.280	0.00	0.07	0.19
16 to 30 hours	-0.083	0.30	0.145	0.01	0.07	0.26
31 to 38 hours	-0.012	0.81	0.070	0.18	0.18	0.23
39 to 44 hours	–		–		0.26	0.18
45 to 54 hours	0.054	0.22	0.036	0.56	0.26	0.11
55 hours or more	-0.088	0.15	-0.106	0.29	0.15	0.04
Real hourly wage (log of)	0.232	0.00	0.198	0.00	3.42	3.33
Union member	-0.048	0.29	-0.239	0.00	0.29	0.28
Years in current occupation	-0.013	0.04	-0.007	0.31	9.40	7.87
Years in occupation squared	0.000	0.05	0.000	0.06	186	137
Years with current employer	0.009	0.18	0.005	0.53	6.91	5.79
Years current employer squared	0.000	0.12	0.000	0.46	114	79
Works non-standard hours	-0.190	0.00	-0.252	0.00	0.25	0.25
Works some hours from home	0.021	0.65	0.100	0.04	0.21	0.20
Employed by labour hire firm	-0.294	0.01	-0.114	0.30	0.03	0.03
Has supervisory responsibilities	0.084	0.03	0.016	0.67	0.53	0.42
Constant	8.424	0.00	8.062	0.00		
Observations	16,277		14,913			
Individuals	5,537		5,311			
R-squared	0.05		0.05			

Notes: p-values based on robust standard errors.

Appendix Table A3. OLS regression coefficients and means by gender, pooled 2006-2010 sample

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Job satisfaction					7.61	7.71
Age	-0.091	0.00	-0.025	0.02	37.83	37.87
Age-squared	0.001	0.00	0.000	0.00	1,614	1,615
Has disability	-0.073	0.13	-0.222	0.00	0.12	0.13
Born in:						
Australia	–		–		0.82	0.83
English speaking country	-0.189	0.01	0.020	0.78	0.09	0.08
Non-English speaking country	-0.005	0.94	-0.059	0.32	0.09	0.09
Highest qualification:						
Post-graduate	-0.411	0.00	-0.466	0.00	0.04	0.04
Degree	-0.359	0.00	-0.415	0.00	0.19	0.26
Diploma	-0.305	0.00	-0.278	0.00	0.08	0.10
Certificate III/IV	-0.073	0.19	-0.180	0.00	0.27	0.16
Completed Year 12	-0.140	0.02	-0.148	0.01	0.17	0.18
Did not complete Year 12	–		–		0.24	0.26
Lives in:						
Major capital city	–		–		0.68	0.68
Inner regional	0.131	0.01	0.138	0.00	0.20	0.20
Outer regional/remote	0.104	0.07	0.181	0.00	0.12	0.11
SES of neighborhood (decile)	0.002	0.78	-0.020	0.01	5.84	5.86
Family status:						
Married, no children	–		–		0.30	0.29
Married, child aged 0-4	-0.044	0.42	0.069	0.25	0.15	0.10
Married, child aged 5-14	-0.016	0.78	0.059	0.34	0.14	0.15
Married, child age 15-24	-0.082	0.24	-0.008	0.91	0.07	0.09
Single, no children	-0.063	0.18	-0.082	0.11	0.33	0.29
Single, child aged 0-4	-0.248	0.62	0.060	0.67	0.00	0.01
Single, child aged 5-14	-0.171	0.38	0.020	0.85	0.01	0.04
Single, child age 15-24	-0.367	0.17	-0.095	0.39	0.01	0.03
Occupation:						
Manager	0.036	0.50	-0.126	0.05	0.14	0.08
Professional	–		–		0.19	0.27
Technician/trade worker	0.029	0.62	-0.098	0.34	0.23	0.04
Community/personal service worker	0.062	0.46	-0.060	0.34	0.06	0.15
Clerical/administrative worker	-0.223	0.00	-0.040	0.46	0.08	0.24
Sales worker	-0.176	0.03	-0.207	0.00	0.07	0.14
Machinery operator/driver	-0.268	0.00	-0.187	0.23	0.11	0.01
Labourer	-0.124	0.09	-0.316	0.00	0.12	0.07

Appendix Table A3. continued

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Firm sector:						
Private for-profit	–		–		0.77	0.61
Private not-for-profit	0.392	0.00	0.173	0.00	0.04	0.09
Government business	0.160	0.04	0.111	0.13	0.05	0.05
Public sector	0.253	0.00	0.172	0.00	0.14	0.24
Other	0.412	0.05	0.259	0.06	0.01	0.01
Employment contract:						
Self-employed/employer	0.177	0.01	0.351	0.00	0.09	0.04
Fixed term contract	-0.028	0.58	-0.133	0.02	0.09	0.09
Casual contract	-0.251	0.00	-0.065	0.23	0.16	0.24
Permanent/ongoing	–		–		0.67	0.62
Other	-0.243	0.40	-1.250	0.00	0.00	0.00
Usual no. hours worked per week:						
0 to 15 hours	0.206	0.01	0.322	0.00	0.07	0.18
16 to 30 hours	0.080	0.27	0.169	0.00	0.07	0.25
31 to 38 hours	-0.067	0.14	0.035	0.43	0.19	0.25
39 to 44 hours	–		–		0.27	0.18
45 to 54 hours	-0.018	0.65	-0.038	0.49	0.26	0.11
55 hours or more	-0.090	0.09	-0.288	0.00	0.14	0.04
Real hourly wage (log of)	0.225	0.00	0.206	0.00	3.52	3.41
Union member	-0.052	0.21	-0.205	0.00	0.25	0.26
Years in current occupation	-0.006	0.31	-0.021	0.00	9.50	8.14
Years in occupation squared	0.000	0.63	0.001	0.00	196	152
Years with current employer	0.008	0.22	0.005	0.52	6.90	6.07
Years current employer squared	0.000	0.47	0.000	0.88	114	88
Works non-standard hours	-0.207	0.00	-0.179	0.00	0.23	0.24
Works some hours from home	0.066	0.09	0.092	0.04	0.20	0.19
Employed by labour hire firm	-0.219	0.02	-0.036	0.76	0.03	0.02
Has supervisory responsibilities	0.064	0.05	0.081	0.02	0.53	0.44
Constant	8.538	0.00	7.638	0.00		
Observations	17,308		16,269			
Individuals	5,520		5,351			
R-squared	0.05		0.05			

Notes: p-values based on robust standard errors.

Appendix Table A4. OLS regression coefficients and means by gender, pooled 2009–2013 sample

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Job satisfaction					7.61	7.69
Age	-0.110	0.00	-0.054	0.00	38.426	38.403
Age-squared	0.001	0.00	0.001	0.00	1,664	1,665
Has disability	-0.082	0.08	-0.211	0.00	0.113	0.125
Born in:						
Australia	–		–		0.80	0.82
English speaking country	-0.159	0.01	0.043	0.49	0.094	0.080
Non-English speaking country	-0.052	0.39	-0.123	0.03	0.102	0.103
Highest qualification:						
Post-graduate	-0.364	0.00	-0.511	0.00	0.050	0.054
Degree	-0.336	0.00	-0.375	0.00	0.197	0.268
Diploma	-0.228	0.00	-0.310	0.00	0.085	0.098
Certificate III/IV	-0.086	0.09	-0.155	0.01	0.285	0.179
Completed Year 12	-0.157	0.01	-0.137	0.01	0.175	0.183
Did not complete Year 12	–		–		0.21	0.22
Lives in:						
Major capital city	–		–		0.69	0.69
Inner regional	0.172	0.00	0.195	0.00	0.194	0.200
Outer regional/remote	0.188	0.00	0.245	0.00	0.112	0.107
SES of neighborhood (decile)	-0.004	0.54	-0.007	0.33	5.793	5.832
Family status:						
Married, no children	–		–		0.31	0.30
Married, child aged 0–4	0.043	0.38	0.130	0.02	0.160	0.103
Married, child aged 5–14	0.047	0.37	0.183	0.00	0.132	0.133
Married, child age 15–24	0.019	0.76	0.084	0.17	0.076	0.095
Single, no children	-0.028	0.53	-0.098	0.03	0.309	0.289
Single, child aged 0–4	-0.171	0.56	0.200	0.09	0.001	0.012
Single, child aged 5–14	0.074	0.69	-0.069	0.48	0.008	0.041
Single, child age 15–24	-0.061	0.75	-0.063	0.56	0.008	0.025
Occupation:						
Manager	0.066	0.17	-0.116	0.05	0.154	0.090
Professional	–		–		0.20	0.27
Technician/trade worker	0.030	0.57	-0.083	0.33	0.219	0.042
Community/personal service worker	0.057	0.47	0.005	0.93	0.062	0.153
Clerical/administrative worker	-0.158	0.01	-0.027	0.59	0.077	0.237
Sales worker	-0.074	0.30	-0.155	0.02	0.061	0.132
Machinery operator/driver	-0.127	0.07	-0.070	0.63	0.108	0.012
Labourer	-0.101	0.13	-0.205	0.02	0.119	0.063

Appendix Table A4. continued

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Firm sector:						
Private not-for-profit	–		–		0.77	0.60
Private not-for-profit	0.394	0.00	0.172	0.00	0.041	0.109
Government business	0.125	0.07	0.083	0.23	0.047	0.046
Public sector	0.252	0.00	0.158	0.00	0.140	0.244
Other	0.598	0.06	-0.081	0.76	0.001	0.002
Employment contract:						
Self-employed/employer	0.175	0.00	0.310	0.00	0.080	0.037
Fixed term contract	-0.071	0.12	-0.065	0.16	0.087	0.095
Casual contract	-0.323	0.00	-0.116	0.02	0.157	0.226
Permanent/ongoing	–		–		0.67	0.64
Other	0.003	0.99	-0.324	0.33	0.002	0.001
Usual no. hours worked per week:						
0 to 15 hours	0.125	0.09	0.192	0.00	0.070	0.168
16 to 30 hours	0.072	0.27	0.056	0.23	0.078	0.262
31 to 38 hours	-0.085	0.04	-0.017	0.68	0.208	0.261
39 to 44 hours	–		–		0.27	0.17
45 to 54 hours	-0.067	0.06	-0.096	0.07	0.245	0.100
55 hours or more	-0.164	0.00	-0.354	0.00	0.129	0.037
Real hourly wage (log of)	0.280	0.00	0.239	0.00	3.577	3.458
Union member	-0.092	0.02	-0.197	0.00	0.245	0.264
Years in current occupation	0.002	0.75	-0.016	0.01	9.725	8.417
Years in occupation squared	0.000	0.74	0.000	0.01	202	158
Years with current employer	0.009	0.11	0.000	0.99	7.030	6.434
Years current employer squared	0.000	0.16	0.000	0.85	117	96
Works non-standard hours	-0.179	0.00	-0.121	0.00	0.226	0.222
Works some hours from home	0.120	0.00	0.118	0.00	0.194	0.188
Employed by labour hire firm	-0.193	0.03	-0.212	0.09	0.025	0.018
Has supervisory responsibilities	0.058	0.06	0.056	0.07	0.525	0.439
Constant	8.700	0.00	7.955	0.00		
Observations	20,619		19,326			
Individuals	6,847		6,674			
R-squared	0.05		0.05			

Notes: p-values based on robust standard errors.

Appendix Table A5. OLS regression coefficients and means by gender, pooled 2018-2022 sample

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Job satisfaction					7.80	7.85
Age	-0.068	0.00	-0.046	0.00	39.43	39.50
Age-squared	0.001	0.00	0.001	0.00	1,748	1,756
Has disability	-0.178	0.00	-0.203	0.00	0.11	0.12
Born in:						
Australia	–		–		0.83	0.82
English speaking country	-0.065	0.25	-0.091	0.10	0.08	0.07
Non-English speaking country	-0.033	0.54	-0.087	0.09	0.09	0.11
Highest qualification:						
Post-graduate	-0.353	0.00	-0.353	0.00	0.07	0.09
Degree	-0.325	0.00	-0.234	0.00	0.22	0.31
Diploma	-0.203	0.00	-0.171	0.01	0.09	0.11
Certificate III/IV	-0.115	0.03	-0.057	0.33	0.29	0.19
Completed Year 12	-0.165	0.00	-0.067	0.24	0.18	0.16
Did not complete Year 12	–		–		0.16	0.13
Lives in:						
Major capital city	–		–		0.69	0.69
Inner regional	0.069	0.06	0.171	0.00	0.21	0.21
Outer regional/remote	0.147	0.01	0.269	0.00	0.10	0.10
SES of neighborhood (decile)	-0.015	0.01	-0.001	0.79	5.70	5.75
Family status:						
Married, no children	–		–		0.31	0.30
Married, child aged 0-4	0.061	0.13	0.066	0.17	0.17	0.13
Married, child aged 5-14	0.044	0.33	0.085	0.08	0.14	0.15
Married, child age 15-24	-0.066	0.22	0.114	0.04	0.07	0.08
Single, no children	-0.065	0.10	-0.044	0.26	0.29	0.27
Single, child aged 0-4	-0.133	0.72	-0.057	0.67	0.00	0.01
Single, child aged 5-14	-0.245	0.17	0.030	0.70	0.01	0.04
Single, child age 15-24	-0.211	0.25	-0.205	0.03	0.01	0.03
Occupation:						
Manager	0.041	0.34	-0.067	0.16	0.17	0.11
Professional	–		–		0.21	0.31
Technician/trade worker	0.022	0.65	0.115	0.13	0.21	0.04
Community/personal service worker	0.065	0.36	0.059	0.23	0.07	0.16
Clerical/administrative worker	-0.145	0.02	0.028	0.54	0.06	0.20
Sales worker	-0.160	0.02	-0.036	0.54	0.06	0.10
Machinery operator/driver	-0.057	0.36	0.104	0.50	0.11	0.01
Labourer	-0.030	0.63	-0.053	0.51	0.11	0.05

Appendix Table A5. continued

	Males		Females		Mean	
	Coef.	P>t	Coef.	P>t	Males	Females
Firm sector:						
Private not-for-profit	–		–		0.77	0.58
Private not-for-profit	0.276	0.00	0.096	0.03	0.05	0.12
Government business	0.155	0.03	0.118	0.08	0.04	0.04
Public sector	0.210	0.00	0.129	0.00	0.14	0.26
Other	0.237	0.41	0.370	0.15	0.00	0.00
Employment contract:						
Self-employed/employer	0.309	0.00	0.538	0.00	0.08	0.04
Fixed term contract	-0.114	0.01	0.041	0.30	0.07	0.10
Casual contract	-0.073	0.13	0.064	0.14	0.16	0.19
Permanent/ongoing	–		–		0.69	0.67
Other	0.372	0.15	0.199	0.40	0.00	0.00
Usual no. hours worked per week:						
0 to 15 hours	-0.134	0.06	0.082	0.14	0.07	0.13
16 to 30 hours	-0.195	0.00	-0.023	0.57	0.09	0.27
31 to 38 hours	-0.024	0.47	0.046	0.20	0.24	0.30
39 to 44 hours	–		–		0.27	0.17
45 to 54 hours	-0.107	0.00	-0.150	0.00	0.23	0.10
55 hours or more	-0.262	0.00	-0.338	0.00	0.10	0.03
Real hourly wage (log of)	0.220	0.00	0.271	0.00	3.65	3.57
Union member	-0.096	0.01	-0.183	0.00	0.19	0.24
Years in current occupation	-0.007	0.08	-0.009	0.06	9.96	8.95
Years in occupation squared	0.000	0.17	0.000	0.04	208	175
Years with current employer	0.002	0.76	-0.005	0.37	7.30	6.83
Years current employer squared	0.000	0.77	0.000	0.45	124	106
Works non-standard hours	-0.157	0.00	-0.208	0.00	0.20	0.20
Works some hours from home	0.121	0.00	0.082	0.01	0.27	0.30
Employed by labour hire firm	-0.109	0.17	-0.143	0.17	0.02	0.01
Has supervisory responsibilities	-0.030	0.27	0.057	0.04	0.50	0.42
Constant	8.634	0.00	7.742	0.00		
Observations	21,584		21,527			
Individuals	6,630		6,798			
R-squared	0.03		0.04			

Notes: p-values based on robust standard errors.



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