

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).

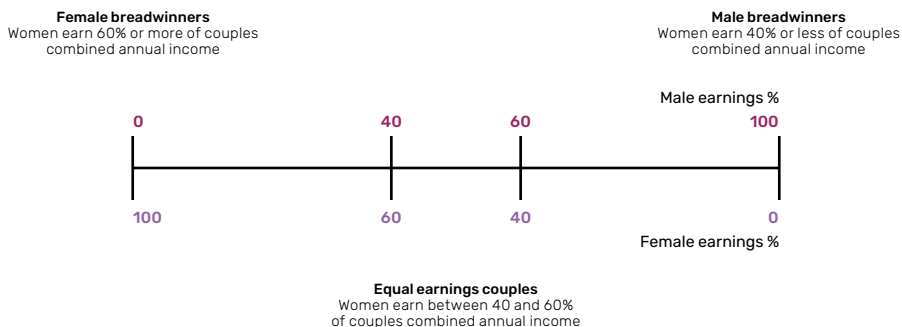
Consistent with previous research (Bittman *et al.*, 2003; Chesley, 2016; Foster and Stratton, 2021; Klesment and Van Bavel, 2017; Raley *et al.*, 2006; Wilkins, 2019; Wooden and Hahn, 2014), our analytic sample was restricted to respondents in an opposite-sex relationship where (i) at least one partner 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-earner 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.

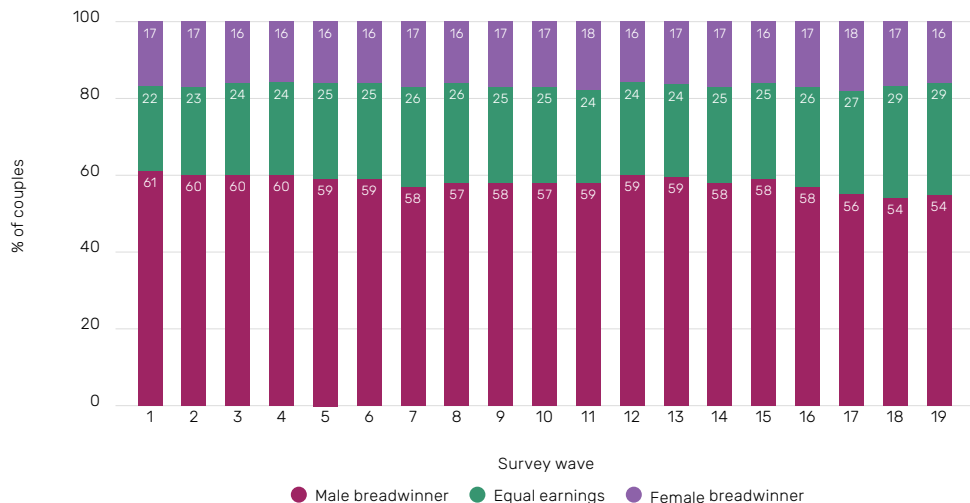
Table 1. Percentage of couples in each earnings category

	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

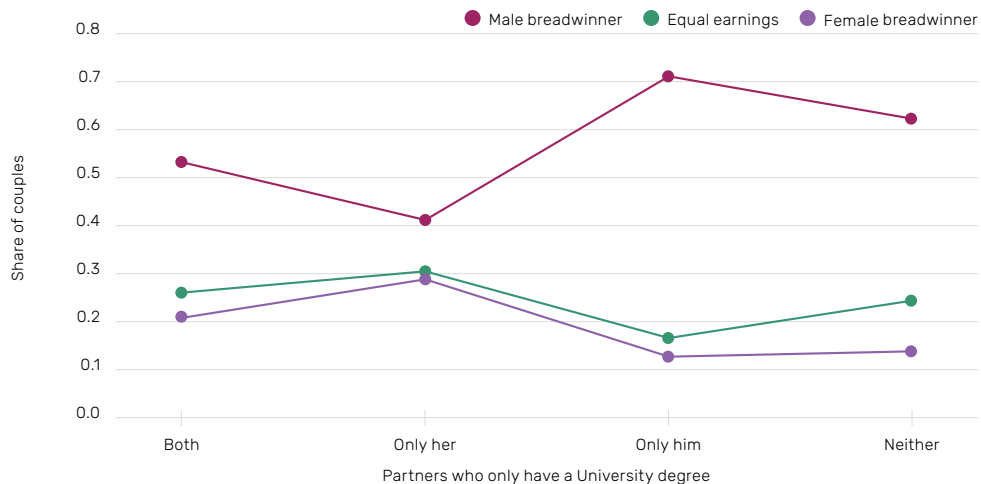
Notes: HILDA Survey data, 2001–2019. Relative risk ratios. Standard errors clustered across individuals.
Significance levels: * p<0.1, ** p<0.05, *** p<0.01.

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



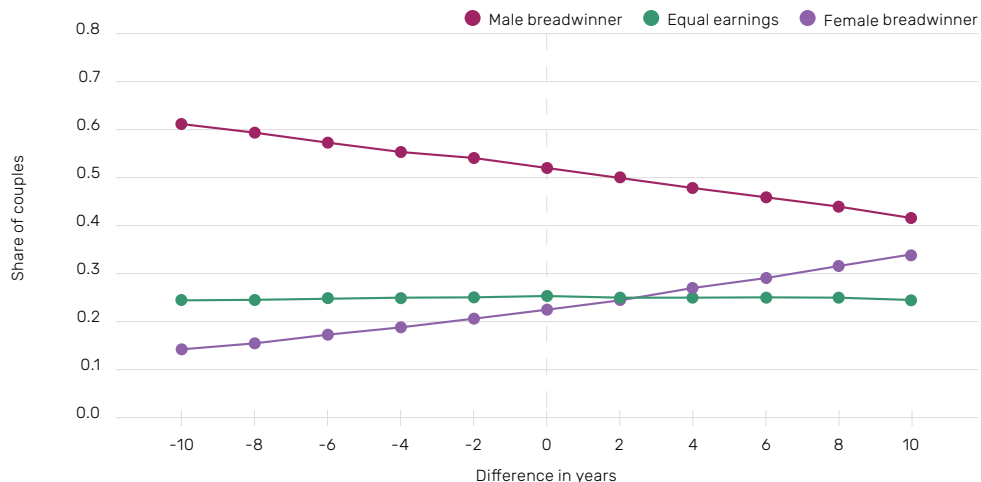
Note: HILDA Survey data, 2001–2019. Based on the regression results models presented in Table 3. Covariates held at their actual sample values.

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



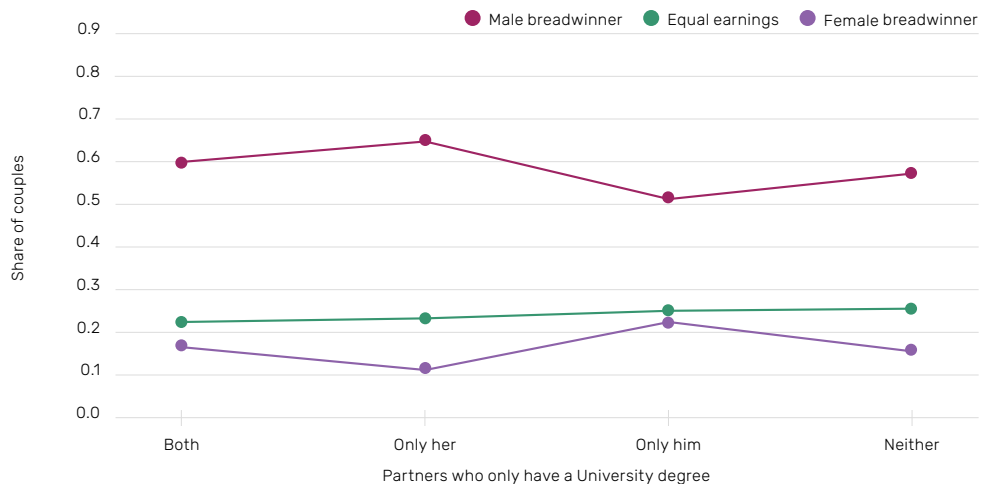
Notes: HILDA Survey data, 2001–2019. Based on the regression results models presented in Table 3. Covariates held at their actual sample values.

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

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

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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