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Does marriage improve the wages of men and women in Australia?

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Abstract

It has often been observed that married men have higher wages than unmarried men, in what is described as a 'marriage premium'. For women, the evidence is much less conclusive, with various researchers reporting positive but small, or zero or even negative effects of marriage on women's remuneration. We explore these issues in Australia using data from the HILDA survey collected in 2001. Our finding for men is consistent with the bulk of other evidence, and for women we find a smaller but nevertheless substantial positive premium. We further examine the concept of 'marriage', which has broadened in recent years, and explore the differences in wage outcome between legal-, de facto- and ex-marriage states. There is never a significant difference in the premium between men in the various marriage states, while for women the differences between marriage states are numerically large and sometimes statistically significant.

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1. Introduction

It has often been observed that married men have higher wages than unmarried men, in what is commonly referred to as the ‘marriage premium’ (Korenman and Neumark, 1991; Gray, 1997). There is a vast amount of literature on the marriage premium for men from research in the United States and Europe, but there is a surprisingly small amount of Australian research (one exception is Chalmers, 2002). While the research has concentrated on men and marriage, there has been less interest in a women’s premium, and what evidence there is on women is decidedly mixed. In recent decades, rising rates of cohabitation and marital breakdown have brought change to the concept of ‘marriage’, which further questions what is being rewarded and who receives the rewards.

So why might a married man earn more than a single man? There are two major theoretical explanations of the premium to a man’s wage from being married. The first is that marriage makes a man more productive through intrahousehold specialisation between husbands and wives (Becker, 1981; 1985; Korenman and Neumark, 1991). Men are freed from household labour by the traditional division of responsibilities, and hence allowed to pursue specialisation in the labour market. Now able to maximise their potential in the workplace, they obtain higher wages (and perhaps work longer hours) and thus bring additional income to the household. Wives are also better off in this model, not through higher wages of their own, but rather through access to their husbands’ higher incomes.

The second explanation describes a selection effect whereby a man who is favoured in the labour market is also favoured as a potential marriage partner (and vice versa) (Becker, 1981).¹ Here it is argued that men with certain characteristics—notably qualities of their human capital and personality that may not be obvious to an outside observer—are more likely to marry and also more likely to be successful in employment. This explanation is not as widely supported in the literature as the specialisation mechanism, but it does emphasise the importance of controlling for other characteristics associated with earnings when comparing the wages of men in different relationship states (whether they be single, widowed or divorced, cohabiting or married).

While the intrahousehold specialisation argument is dominant in the literature, some research has cast doubts on this explanation. For example, Hersch and Stratton (2000) find the wage premium for being married is the same for men regardless of the amount of time they spend on

¹ A third theoretical proposition is found in the literature, suggesting positive discrimination toward married men as compared to unmarried men (see Hill, 1979).

housework. There have, however, been reports of recent declines in the marriage premium, which have been attributed to declining productivity effects as household specialisation decreases (Gray, 1997).

It is apparent that the male breadwinner model of the family is less applicable to modern marriages. The social changes in western societies since the middle of last century have brought declines in intrahousehold specialisation. The main marker of these changes is the strong increase in women's labour force participation, particularly that of married women. This participation by women in the public sphere of paid work has had other consequences for intrahousehold dynamics. As women have increased economic independence, the time spent on housework and family responsibilities by husbands and wives has converged. Men's participation in domestic duties has increased—albeit it marginally²—although the convergence of time spent on domestic tasks is primarily driven by a decrease in the amount done by women (Gershuny and Robinson, 1988). The changes evident within marriage relationships are also reflected in society more generally. Attitudinal research shows that over 65 per cent of 18 to 54 year olds in Australia disagree that the husband should be the principal breadwinner and the wife should have primary responsibility for the home and children (McDonald, et al. 1999).

If the premium that has been observed for men is the result of favourable selection, then married women should receive similar premia to their male counterparts. It is argued that if a 'symmetric model' of marriage is favoured over a 'specialisation model', then women are valued for their earnings potential rather than as simply a support person for a breadwinner (Cherlin, 2000). Hence in societies where women and men are expected to contribute to both the household income and household tasks, women's economic potential would be seen as an important factor in marriage formation. This would suggest that a marriage premium should be found for women.

Some of the decline in intrahousehold specialisation may be attributed to the large increases in the proportion of people cohabiting both before, and as an alternative to, legal marriage. In 2002 it was reported that 70 per cent of marriages were preceded by cohabitation (ABS, 2003), compared to 22 per cent in 1978 (ABS, 1999). This widespread change in family formation is also associated with revised responsibilities in the household. It is suggested that cohabiting couples share the division of household labour more than married couples do (South and Spitze, 1994), and that married couples who cohabit prior to marriage are less likely to embrace the traditional division of household labour upon marriage (Baxter, 2001). The increase in cohabitation and the different

² Hence the predictions by social scientists that as women's labour force participation increased, so too would men's involvement in domestic duties, have largely not been fulfilled (Hochschild, 1989).

behaviour evidenced in cohabiting relationships suggest that this relationship type should be identified separately in analyses of the marriage premium.

Cohen (2002) suggests there are two main reasons cohabiters have been treated as single or unmarried in previous research in the United States. First, cohabitation in the past was relatively rare and hence not considered to have a major influence on findings, and second, cohabitation information was just not available in the data on earnings. Cohen finds that the apparent decline in the male marriage premium in the US is not as prominent if cohabiters are not included as unmarried men.

Recent US research examines differences in the marriage and cohabitation income premium including women as well as men (Light, 2004). Although the focus of that paper is on changes in total family income according to movement between marital states, the author finds that there is no difference for women according to their own income in different marital states, while married men have substantially higher income than single or cohabiting men.

We should not assume that results in the dominant US literature will carry over to Australia. There are substantial differences in the social and legal frameworks in these two countries, which may make for important variations in behaviour between cohabiting and married couples. Such differences in institutional settings have been found important in related research, such as Heimdal and Houseknecht (2003) who examine differences in cohabiting and married couples' income organisation between Sweden and the US.

This paper examines the marriage premium in Australia. We consider women as well as men, and we examine the other marriage states of cohabitation and ex-married in addition to the traditional dichotomy of legally married and single. In support of the selection explanation for the premium, we find married men continue to enjoy a strong premium in their wages despite the reported decline in intrahousehold specialisation, and that women too have a substantial positive marriage premium. The women's premium is smaller than for men, suggesting that some of the premium that is observed for men may be due to specialisation that is not available to working women.

We hypothesise that as intrahousehold specialisation is less pronounced in cohabiting couples than married couples, we should find a lesser premium for cohabitation than marriage. However, we suggest that the difference between the premium of marrieds and cohabiters may not be a strong effect as reported in US studies, because cohabitation is such a common and legally recognised institution in Australia. Indeed in the case of men, we find that cohabiters have a wage premium that is not significantly different from the legally married, although we find the premium for cohabiters is markedly less in the case of women.

We also find that ex-married men have a wage premium over those who are single and never married that is quite large, although it is considerably less than the premium of the currently partnered men (whether married or cohabiting). However, ex-married women have a premium over the singles that is trivially small and insignificant.

2. Data

HILDA is a longitudinal survey of Australian households that has been funded by the Commonwealth Government. It investigates life in Australia, focussing on income, labour market, and family dynamics. We use the second release of the Wave 1 data, collected between August 2001 and January 2002. See Watson and Wooden (2002) for overview.

The survey used four questionnaires, including a household form, a household questionnaire, a person questionnaire for all household members aged 15 years and over, and a self-completion questionnaire. In Wave 1, all components were administered by personal interview except for the self-completion questionnaire.

The reference population is all members of private dwellings with some exceptions. A multi-stage approach is used to select households. There are 11,693 in-scope households of which 6,872 (59 per cent) fully-responded and 810 (7 per cent) partially-responded. Of potentially eligible adults in the households involved, 92 per cent of individuals responded (13,969 respondents). A smaller proportion of individuals completed the self-completion questionnaire (87 per cent).

HILDA is generally representative of the Australian population although there are some differences. Sydney residents are somewhat underrepresented, as are males, unmarried persons and immigrants from a non-English-speaking background.

3. Model

We want to estimate the effects on a person's potential wage of hypothetically changing some of their characteristics, where this person is a typical man or woman from the population, and not just someone who is observed to be working at the time of the survey. This is a version of the well-known 'selectivity' problem, and brings an estimation problem associated with the zero wage rate recorded for anyone who is not working when sampled. The statistical model we use has the standard form of a Tobit Type II selection (or Heckman) model consisting of two equations, one for the wage rate and the other for selection into employment,

$$\begin{aligned} y_i^* &= \beta' x_i + \varepsilon_i \\ z_i^* &= \gamma' x_i + v_i \end{aligned} \quad \text{where} \quad \begin{bmatrix} \varepsilon_i \\ v_i \end{bmatrix} \sim N \left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_\varepsilon^2 & \rho\sigma_\varepsilon \\ \rho\sigma_\varepsilon & 1 \end{bmatrix} \right)$$

and a rule for observability of the wage variable

$$w_i = \begin{cases} \exp(y_i^*) & \text{if } z_i^* > 0 \\ 0 & \text{otherwise.} \end{cases}$$

Here y_i^* and z_i^* are latent variables, the former representing ‘potential wage’ (actually the natural logarithm of the potential wage rate) and the latter representing something like ‘the propensity to be employed’. The indicator that the person is employed is the event $z_i^* > 0$. Wage w_i is formed by exponentiating log-wage and it is observed only when the person is employed. The two parts of the model are tied together through the joint error process, which is represented as a bivariate normal distribution in which the correlation is determined by the parameter ρ . For simplicity the explanatory variables x_i are written the same in both equations, which implies that each of the coefficient vectors β and γ may need some restriction imposed on it for the other coefficient vector to be well identified. See Verbeek (2000, p. 207) for an exposition of this class of models.

There are many factors that determine a worker’s wage rate, just as there are many factors that influence whether a person is working or not. We largely follow the received literature when specifying the variables to control for in our joint model of employment and wage rates. Much of the observed variation in wages between people can be explained by differences in general education, job-specific training, experience in the workforce, and tenure in the same position (or with the same employer). These measures are usually grouped together as contributions to the person’s human capital, which in turn is interpreted as the productive resource that influences their rewards in employment. Several studies underscore the importance of distinguishing between a person’s age and their actual labour market experience: advancing age without addition to experience is a marker of the depreciation of human capital. The impact of a higher stock of human capital is to increase the productivity of employment, and hence to increase both the person’s wage rate and the chances of finding them in paid employment.

For women, a factor associated with wage rates is whether they have ever had a child or not. Children have no impact on the wage rates of men. The reason why wage rates are different for women who have had children have been widely examined, and the general consensus is that having children causes women to exit the labour force, hence reducing their investment in the workplace (Mincer and Polachek, 1974), and reducing their workplace skills (Mincer and Ofek, 1982). These factors can be linked to the labour market experiences explained previously, and so it is worth explicating what other factors may depress wage rates for mothers as compared to women who do not have children. One common explanation is that workers who are not involved in the

full-time worker model are discriminated against by employers (for example, by having lesser access to training and responsibilities) leading to lower wage rates (Waldfoegel, 1997).

A final characteristic that is important in understanding employment and wage rates is whether people come from a non-English-speaking background (NESB). We include NESB in our model, as it has been found that such people have lower levels of both labour force participation and employment (Wooden, 1994: 221–222).

The HILDA data set is rich with explanatory variables for the present purpose. There are direct observations on labour market experience, so we do not have to use the inferior construct from age and years of schooling that characterises many early studies of labour demand. We can include both age and experience (and also tenure in the present job) in the model as explanatory factors to represent human capital accumulation and its depreciation, with possibly nonlinear effects, and we can base the decisions of which variables to include in the model and their functional form on the empirical evidence. Similarly, different quantities and qualities of education can be distinguished in as much detail as appropriate to the current purpose (we classify into four levels).

4. Definitions of variables and descriptive statistics

Summary statistics for the variables used in our analysis are given in the first column of Table 1 (for men) and Table 2 (for women). There are 4,259 men in the estimation sample, of whom 79.9% have current wage and salary income, and there are 5,059 women of whom 64.4% have current earnings. The men who are working have an average wage rate of \$20.62 an hour, while the working women earn \$18.52 an hour on average.

A number of variables are defined to represent the various qualitative states into which the respondents can be classified. ‘Employed’ is a binary (1,0) dummy variable that records whether the person has current wage and salary income. ‘Experience’ is their time in the labour force since leaving full-time education, while ‘Tenure’ is time with the current employer, both measured in years but including fractions of a year where that information is available. Age is the respondent’s age last birthday, in years. Marital status is divided into four categories that are represented by (1,0) dummies. ‘Married’ means currently living in a legally married relationship, which is distinguished from those who are cohabiting and from those who have previously been married but are now widowed, divorced or separated. A fourth category of currently single and never married is omitted, and this becomes the base in subsequent comparisons. The three stated educational categories of ‘Degree’, ‘Trade’ and ‘Year 12’ record the highest attained level of education. As with the marital status variables, these form a set of mutually exclusive (1,0) dummy variables. The omitted fourth

category in educational attainment is incomplete high school. The acronym ‘NESB’ stands for non-English-speaking background and is again coded as a binary dummy variable.

The presence and ages of children who live with the respondent more than half the time are coded as four (1,0) dummy variables. These categories are not all mutually exclusive, since there are separate variables for whether the person has ever had children and for children in the younger age categories. ‘Ever had children’ means ever fathered, or given birth to, or adopted a child. ‘Infant’ means under one year old, ‘Toddler’ means one to two years, while an ‘older child’ is aged three to 14. For the children in the three to 14 age group, there are separate categories for the presence of only one, or two or more such children, so these two categories are mutually exclusive. As an example of the operation of the children variables, a person with a baby and one child at primary school will be recorded in three categories, viz. ‘Ever had children’, ‘Infant’ and ‘One older child’, while someone whose children are all aged over 15 will be recorded only for ‘Ever had children’.

The variable ‘Wage’ is calculated by dividing the imputed current wage and salary income by the hours the respondent usually works per week in all their jobs. Interestingly the sample average wage rates for working men and women are not that much different, at \$20.62 and \$18.52 respectively. The method of calculating the wage rate produces some outliers, presumably due to mismatches between the base for collecting ‘current’ wage and salary data and the response to the question about ‘usual’ hours. To avoid undue influence from the outliers on the modelling, the sample for estimation is trimmed to exclude those with calculated wage rates below \$5 or above \$150 per hour. This loses a little over one per cent of the sample that would otherwise have been available for estimation. The average wage rates are almost unchanged in the trimmed sample, at \$20.77 and \$18.53, respectively. It makes almost no difference to the modelling results (or to the estimation sample) if the trimming is weakened to exclude only those outside the range \$2 to \$250 an hour.

5. Estimation results

Separate models for men and women are estimated by the Heckman maximum likelihood procedure in Stata 8, using the option to calculate robust standard errors by the sandwich method. Detailed estimation results are presented in Table 3 (for men) and Table 4 (for women). Both experience and tenure enter these models as their squares as well as in levels, which permits the effects of these variables to be nonlinear. Dividing the squared variables by 100 just scales their coefficients; it is done so that a reasonable number of informative digits can be seen within the fields of the table. In an initial version of the models, age of respondent was specified to enter in the

same nonlinear way, but the effects of multicollinearity among age, experience and tenure forced some decisions to be made. Collinearity was most severe in the case of men, where it might be expected that their more continuous employment histories make for a stronger relationship between age and experience. The quadratic age term has been dropped from the employment equation in both cases, because of confounding with the experience variable in the case of men and its insignificance in the case of women. For women only, age itself is important in the wage equation although including age squared causes collinearity problems, so it is omitted. Tenure is absent from the selection equation for employment in both cases, because that variable is not observed for respondents who are not in current employment. For males, the NESB variable appears only in the employment equation, both because of its insignificance when included and from a requirement to specify some variables that affect employment but not wage. In both of the gender-specific models, each equation contains some variables that are not in the other equation, which contributes to identification of the separate equations.

It is difficult to interpret many of the coefficients in the estimation equations because of the nonlinear effects of some variables. More accessible summaries of the results are given in Tables 1 and 2, which present the marginal effects of each variable, holding all of the other variables constant. These effects are measured separately for impact on potential wage (which is the same as actual wage for someone who is employed) and on the probability of being employed. In the case of a continuous variable (such as experience) the effect is measured by incrementing the variable by one unit (one year in this case) from just below the sample mean to just above the sample mean (thus from 18 to 19 years for men and from 14 to 15 years for women) while holding all other variables at their sample mean values.

With the binary dummy variables, the marginal effects of a change in category from the base is calculated for both wage and the probability of employment. The base for the educational variables is incomplete high school, while for the marital status variables the base is currently single and never married. The four variables representing the presence of younger children are measured from a base of a child who is older than 14. As a ready reference, the central column of Tables 1 and 2 indicate the change that is measured in the marginal effect (for a continuous variable) or the base for the discrete change of state (for a binary dummy variable).

There are few surprises in the estimated marginal effects presented in the last two columns of Tables 1 and 2. For the men in Table 1, experience and tenure have effects that are positive with plausible magnitudes in both equations. An extra year of experience or tenure are worth about the same, at \$0.16-0.17 an hour for someone who is employed, and another year of experience is associated with a 3.4 percentage point higher chance of being employed. For the women in Table 2,

the effects are similar, except that an extra year of experience is worth twice as much to a woman's wage as to a man's (reflecting in part the lower average accumulation of experience by women in the sample).

It can be seen from the detailed estimation results in Tables 3 and 4 that the impacts of both experience and tenure are nonlinear. Each of these variables makes a contribution that is strongly positive at small levels of the variable, although the effect diminishes with accumulating amounts of the variable. There is an implied length of time at which the effect is at a maximum, after which additional increments of experience or tenure make a negative contribution. For men, the peak effect of experience on wage occurs at 26 years of a working life. That is about 40 per cent more experience than the average in the sample for men, but it is still in the relevant range because around 27 per cent of the men in the sample have accumulated more experience than that. The maximum influence of tenure on men's wages and of experience on the chance of their being employed are so many years away that the eventual decline can be ignored for practical purposes. For women, the peak effect of experience and tenure on wage occurs at 29 and 30 years, respectively. That amount of experience is about twice the sample average for women, although it is exceeded by nearly 10 per cent of the women in the sample. As with men, the maximum effect of tenure on the wage is so many years away that the eventual decline can be ignored. The peak effect of experience on the probability of being employed occurs at 37 years, and while that is a long way out relative to women's average experience, around 1.6 per cent of women in the sample have more accumulated experience than that.

Age has a consistently negative marginal effect on both wage rates and employment chances. Looking first at the probability of employment for both men and women, approximately a year of age (holding experience constant) reverses the effect of a year of experience (holding age constant). Age also has a negative effect on the wage rates of women, but not so for men where the effect was reported earlier as being insignificant (in fact it was estimated as slightly positive, but with a *p*-value of 22%). Even for women the marginal effect of age on wage is not very strong: an extra year of age (holding experience constant) for women reverses about a third of the effect of a year of experience (holding age constant). Not too much weight should be put on the interpretation of the age effect in these models, because as noted earlier there is considerable multicollinearity between age, experience and (to a lesser extent) tenure. In addition, with a single cross-section of data it is impossible to separate a true effect of aging of the individual (namely depreciation of human capital) from a cohort effect that summarises a whole bundle of social factors.

The education variables have effects that might be expected. Having more education raises both the wage rate and the probability of employment, and these effects increase with increasing

educational attainment. For both men and women, a trade qualification boosts the employment prospects by much the same as completion of year 12, that is a 13-18 percentage point higher chance of being in employment than someone who has not completed high school. Having a degree has the same qualitative effect, but one that is twice as strong. Men with degrees having a 30 point higher probability of being employed, and women with a degree are similarly much more likely to be working than the base case of someone who has not completed year 12.

The additional returns to education in the wage rate are higher for men than for women by proportions of 40-80 per cent. Completing year 12 is worth over \$2 an hour for a man but only \$1.15 for a woman. Similarly, trade qualifications boost a man's wage rate by \$2.50, while for a woman the boost is just over \$1.50 an hour. The additional returns to having a degree are very high, and the margin between the sexes is proportionally smaller at the highest education level. But still the men's premium of \$9.65 is well above the women's, which is under \$7 an hour.

The effects of children are also as we might expect. For men, the permanent effect of ever having children on the chance of employment is a negative impact of 5.7 percentage points. This is quite small, since it is similar in magnitude to the effect of an extra year-and-a-half of age or the same amount less of experience. The effect of ever having children on a man's wage rate is small and statistically insignificant, so the variable is omitted from the wage equation. The impact of the same variable on a woman's employment is also negligible (once the number and ages of young children are allowed for), but there is a negative impact on the wage rate that is almost the reverse of the premium a woman gets from having trade qualifications.

Younger children keep women out of paid employment, with an effect that is consistently stronger the younger the child. A woman with an infant is estimated to be less than half as likely to work than an otherwise similar woman whose children are all over 14. Having a toddler is a very strong indicator of not currently working, but not as strong as having an infant. Two or more children in the age group three to 14 have more impact on a woman's employment than a single child in the same age range, but not twice the impact. The effect of children's ages on wage rates is negligible for men and is comfortably omitted from the model. For women, the effects are mixed and difficult to interpret (because those affected by young children are mostly not working hence we don't observe their wage rates), so the effects of children's ages have been omitted from the women's wage equation as well.

NESB depresses the probability of being employed by seven percentage points for men and by 12 points for women. For men, this impact is equivalent to the effect of being two years older without any extra experience, while for women it is similar to the effect of three years of age without experience. There is also a direct effect on the wage rate for women that is not apparent in

the data for men, in which NESB women have a wage rate \$1.33 an hour lower, an decrement that is larger than the premium enjoyed by a woman with year 12 completion, but smaller than that for a woman with trade qualifications.

6. Marriage premium

We find positive marriage premia for both men and women and for both the legally married and those who are cohabiting (i.e. those in de facto relationships), but with some significant differences. Again the calculated marginal effects in Tables 1 and 2 are useful summary measures of the impacts of the different partnering states on the outcomes, both in probability of employment and the wage rate. These effects are calculated for a hypothetical person whose characteristics, other than the one specifically being examined in a comparison, match the sample averages for their sex.

Looking first at differences in the probability of employment, we see that men who are legally married are about 15 percentage points more likely to be earning than single men who have never married, and about half that effect holds for men in de facto relationships compared to singles. Both of these comparisons are statistically significant ($p < 0.005$ for de facto greater than single, and $p < 0.001$ for married greater than de facto). We observe a small increase in employment chance for a man who has been married compared to one who has never married, but the difference is both trivially small and statistically insignificant ($p = 0.63$ in a two-sided test).

For women, there is an almost constant 7–10 percentage point additional chance of being employed that can be attributed to partnering, whether that is a current marriage, a cohabiting partnership, or even a past marriage that has ended in widowhood, separation or divorce. In all three categories of partnering, the probability of employment is significantly higher than for the never-married singles (the one-sided p -values range from 0.011 to below 0.001). The differences *between* the three categories of partnering are all insignificant at the usual levels (all pairwise comparisons have p -values above 0.33 in two-sided tests).

The most interesting comparisons are in the additional wage rates associated with the different partnering states. See Figure 1 for a summary. Legally married men enjoy a premium of just over \$2.00 an hour, which is almost exactly the same as the additional reward men get from completing education to year 12 and four-fifths of the wage premium of a tradesman over a man in the lowest category of educational attainment. This additional wage is both large in comparison with the expectedly strong effect of education on wages and it is statistically significant ($p < 0.001$ in the one sided test). The premium for men in cohabiting relationships is similarly large at just under \$2.00 an hour and significant ($p < 0.001$ for de facto more rewarded than single). It is remarkable that the difference between legal marriage and de facto is only 10 cents an hour, which is both small in

magnitude and statistically insignificant ($p = 0.82$ for the two-sided test). Even men who are currently unpartnered because of widowhood, divorce or separation enjoy a wage premium over never married men around \$1.40 an hour, which is both large and significant ($p = 0.018$ for the one-sided test). In fact, while the difference in premium between currently married men and ex-married men is not trivial (\$0.66 an hour), neither is it large enough to be statistically significant ($p = 0.155$ for currently married greater than ex-married).

The outcomes in wage rates for women are very different. In contrast to much of the literature, we find positive marriage premia in wages for women. But we also find the premia are smaller than for men and much more dependent on the nature of the partnering relationship. There is a wage premium of \$1.40 for women in legal marriage above the women who are single and have never married, which is large and statistically significant ($p < 0.001$). But in comparison to the men the premium is not so large in amount. Recalling that the working women in this sample have an average wage rate 90 per cent of the average for men, it is remarkable that a woman's premium for marriage is only 70 per cent of that received by a man in the same situation. The comparison with men is similar to what we found with education, where the additional wage that men receive for completing year 12 or for having a trade qualification is considerably higher than the premia enjoyed by women for the same educational attainments.

The gender comparison is more adverse for women not in a legal marriage. A woman in a cohabiting relationship experiences a wage premium of \$0.74, which is significantly positive ($p = 0.014$) but only half the premium of those in legal marriage (which is a significantly lesser amount, since $p = 0.027$ for the test of de facto less than legally married). The de facto woman's premium is also less than two-fifths that enjoyed by a man in the same situation. Comparing people who have once been married but are now widowed, divorced or separated, the gender differences are even more marked. While the premium for men in this category is \$1.42, and they retain 70 per cent of the premium of a legally married man, the corresponding premium for women is only \$0.44, which is significantly lower than for the legally married woman ($p < 0.002$ for the one-sided test) and no different from the never-married single woman ($p = 0.29$ for the two-sided test).

7. Conclusions

This paper examines the marriage premium in Australia for both men and women. We consider states of cohabitation and ex-married in addition to the usual dichotomy of legally married and single. We find a large premium, relative to never-married single men, for those men who are either legally married or cohabiting, with very little difference between the two. The existence of a large premium for legally married men is consistent with either selection or specialisation

hypotheses. However, the finding that cohabiting men's wage rates are the same as married men's, together with the reports of less specialisation in cohabiting relationships, suggests that specialisation alone is not a convincing explanation and that selectivity is operating. Ex-married men have higher wages than those who have never married, which cannot be due to current specialisation, but it might be a residual signal of unobserved attributes that are favourable to both partnering and success at work. Their premium is also much less than for currently partnered men, which is consistent with the selection explanation that such men are less successful at both work and marriage. The trivial difference we find between married and cohabiting men is in contrast to the strong effect reported in US studies, although it is plausible because cohabitation is such a common and legally recognised institution in Australia.

Women also have a substantial premium from both legal and de facto marriage, although at lower levels than for men. Without evidence of reverse gender roles being practised in household specialisation in Australia, the finding of a significant premium for partnered women supports the selection mechanism in operation. However, the lower premium for women than for men is difficult to explain on selection grounds alone, and suggests that some of the premium that is observed for men may be due to specialisation that is not available to working women. And that specialisation may also operate in de facto relationships. As cohabitation has become more common, particularly cohabitation prior to legal marriage, it is likely that de facto relationships have taken on more characteristics of legal marriages, including elements of the male breadwinner model. The fall-off in premium between legally married and cohabiting women might be explained by the incomplete institution that is de facto marriage, but that explanation begs the question of why there is not a similar difference for men. Ex-married women have a premium over the singles that is both small in value and statistically insignificant, which doesn't refute the selection prediction that such women are more successful at both work and marriage than the singles who have never married, and it is entirely consistent with the prediction that they are less successful in both areas than those who are currently partnered.

It seems no one explanation will fit all the findings we have assembled here about the 'marriage' premium in Australia. It would be possible to control some other factors if longitudinal data were available, particularly to distinguish those couples who do and do not make the transition from cohabitation to legal marriage. Survey data with direct observations on household allocation of time would enable the specialisation mechanism to be studied more closely. Another fruitful direction for future research would relate changes in premia over time to the changes that have been observed in social and household organisation.

Table 1. Sample Summaries and Marginal Effects - Males

Variable	Sample mean	Change or base	Δ Wage if employed	Δ Prob employed
Wage if employed	\$20.62			
Employed	79.9%			
Experience	18.4 yrs	+1 year	\$0.16	3.4%
Tenure	5.5 yrs	+1 year	\$0.17	.
Age	37.6 yrs	+1 year	.	-3.9%
Married	51.1%	never married	\$2.08	14.7%
De facto	12.6%	never married	\$1.98	7.0%
Widowed, div'd, sep'd	10.1%	never married	\$1.42	1.7% ^φ
Degree	21.0%	incomplete	\$9.65	30.0%
Trade	34.0%	incomplete	\$2.59	15.4%
Year 12	19.0%	incomplete	\$2.09	17.8%
Ever had children	59.0%	no children	.	-5.7%
Infant	4.0%	child >14	.	.
Toddler	9.1%	child >14	.	.
One older child	11.9%	child >14	.	.
Two or more older child'n	15.8%	child >14	.	.
NESB	12.5%	not NESB	.	-7.2%

N = 4259

^φ Indicates the underlying coefficient is not statistically significant at 5%.

Table 2. Sample Summaries and Marginal Effects - Females

Variable	Sample mean	Change or base	Δ Wage if employed	Δ Prob employed
Wage if employed	\$18.52			
Employed	64.4%			
Experience	14.1 yrs	+1 year	\$0.35	3.2%
Tenure	3.5 yrs	+1 year	\$0.16	.
Age	37.8 yrs	+1 year	-\$0.12	-2.8%
Married	53.9%	never married	\$1.41	9.7%
De facto	12.8%	never married	\$0.74	7.3%
Widowed, div'd, sep'd	12.3%	never married	\$0.44 ^φ	7.8%
Degree	21.7%	incomplete	\$6.91	28.7%
Trade	19.9%	incomplete	\$1.54	13.9%
Year 12	22.2%	incomplete	\$1.15	13.7%
Ever had children	69.3%	no children	-\$1.52	-1.5% ^φ
Infant	4.4%	child >14	.	-51.3%
Toddler	10.4%	child >14	.	-34.8%
One older child	15.8%	child >14	.	-7.4%
Two or more older child'n	20.2%	child >14	.	-12.3%
NESB	13.7%	not NESB	-\$1.33	-12.3%

N = 5059

^φ Indicates the underlying coefficient is not statistically significant at 5%.

Table 3. Heckman Tobit II Estimation Results - Males

Predictor	Wage equation 100*log(wage)		Selection equation Pr(employed)	
	coeff	t-ratio	coeff	t-ratio
Experience	2.354	8.14	0.2457	17.35
Experience ² /100	-4.495	-6.82	-0.2096	-10.79
Tenure	1.017	3.81	.	.
Tenure ² /100	-1.249	-1.38	.	.
Age	.	.	-0.1707	-18.43
Married	11.086	5.34	0.6057	6.26
De facto	10.579	4.35	0.2475	2.62
Widowed, div'd, sep'd	7.692	2.11	0.0564	0.48
Degree	47.03	19.59	1.481	15.08
Trade	14.97	7.93	0.4938	7.76
Year 12	12.25	5.15	0.5951	8.14
Ever had children	.	.	-0.2516	-2.90
NESB	.	.	-0.2799	-3.78
Constant	235.4	64.3	3.189	17.99

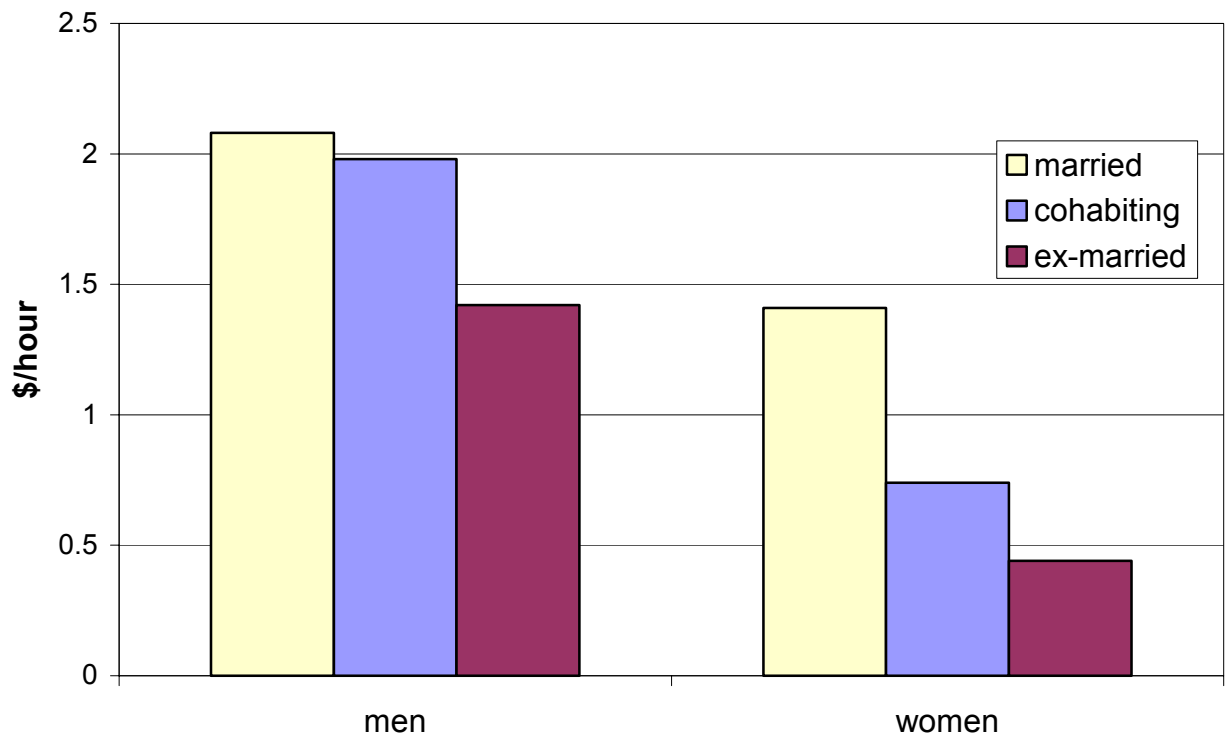
rho	0.1015	0.99	Number obs	4212
sigma	41.12		Censored	858
lambda	4.17		Uncensored	3354

Table 4. Heckman Tobit II Estimation Results - Females

Predictor	Wage equation 100*log(wage)		Selection equation Pr(employed)	
	coeff	t-ratio	coeff	t-ratio
Experience	4.327	10.85	0.1626	18.60
Experience ² /100	-7.454	-9.97	-0.2171	-10.57
Tenure	1.216	4.41	.	.
Tenure ² /100	-2.020	-1.87	.	.
Age	-0.8109	-4.13	-0.0776	-17.43
Married	9.634	4.14	0.2599	3.51
De facto	5.188	2.19	0.1918	2.49
Widowed, div'd, sep'd	3.090	1.06	0.2068	2.28
Degree	42.66	18.65	0.8299	13.44
Trade	11.22	5.32	0.3612	6.30
Year 12	8.461	3.82	0.3567	6.44
Ever had children	-10.07	-4.49	-0.0486	-0.56
Infant	.	.	-1.3896	-11.10
Toddler	.	.	-0.9200	-11.46
One older child	.	.	-0.2156	-3.45
Two or more older child'n	.	.	-0.3488	-5.43
NESB	-9.254	-3.73	-0.3244	-5.41
Constant	238.9	59.05	1.5209	13.60

rho	0.6208	6.40	Number obs	5000
sigma	40.30		Censored	1802
lambda	25.02		Uncensored	3198

Figure 1. Partnering premia



References

- Australian Bureau of Statistics (ABS). (1999). *Marriages and Divorces, Australia, 1998*, Catalogue No. 3310.0, Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS). (2003). *Marriages and Divorces, Australia, 2002*, Catalogue No. 3310.0, Canberra: Australian Bureau of Statistics.
- Baxter, J. (2001). Marital status and the division of household labour: cohabitation vs marriage. *Family Matters*, Iss.58: 16–21.
- Becker, G. (1981). *A Treatise on the Family*. Cambridge: Harvard University Press.
- Becker, G. (1985). Human capital, effort, and the sexual division of labor. *Journal of Labor Economics*, Vol.3(1, part 2): S33–58.
- Chalmers, J. (2002). *Why marry?: An Economic Analysis of the Male Marriage Premium*, unpublished PhD thesis, Canberra: The Australian National University.
- Cherlin, A. (2000). Toward a new home socioeconomics of union formation, in Waite, L (Ed.) *The Ties that Bind: Perspectives on Marriage and Cohabitation*, New York: Aldine de Gruyter, pp: 126–144.
- Cohen, P. (2002). Cohabitation and the declining marriage premium for men. *Work and Occupations*, Vol.29(3): 346–363.
- Gershuny, J. and Robinson, J. (1988). Historical changes in the household division of labor. *Demography*, Vol.25(4): 537–552.
- Gray, J. (1997). The fall in men's return to marriage: Declining productivity effects or changing selection? *The Journal of Human Resources*, Vol.32(3): 481–504.
- Heimdal, K. and Houseknecht, S. (2003). Cohabiting and married couples' income organization: Approaches in Sweden and the United States. *Journal of Marriage and the Family*, Vol.65: 525–538.
- Hersch, J. and Stratton, L. (2000). Household specialization and the male marriage wage premium. *Industrial and Labor Relations Review*, Vol.54(1): 78–94.
- Hill, M. (1979). The wage effects of marital status and children. *Journal of Human Resources*, Vol.14(4): 579–594.
- Hochschild, A. (1989). *The Second Shift*. New York: Avon Books.
- Korenman, S. and Neumark, D. (1991). Does marriage really make men more productive? *The Journal of Human Resources*, Vol.26(2): 282–307.

- Light, A. (2004). Gender differences in the marriage and cohabitation income premium. *Demography*, Vol.41(2): 263–284.
- McDonald, P., Jones, F., Mitchell, D. and Baxter, J. (1999). *Negotiating the Life Course 1997, Wave 1*. Canberra: Australian Social Science Data Archive, The Australian National University.
- Mincer, J. and Ofek, H. (1982). Interrupted work careers: Depreciation and restoration of human capital. *Journal of Human Resources*, 17(1): 3–24.
- Mincer, J. and Polachek, S. (1974). Family investment in human capital: earnings of women. *Journal of Political Economy*, 82(2): S76–S108.
- South, S. and Spitze, G. (1994). Housework in marital and non-marital households. *American Sociological Review*, Vol.59(3): 327–347.
- Waldfogel, J. (1997). The effect of children on women's wages. *American Sociological Review*, 62(2): 209–217.
- Watson N. and Wooden, M. (2002), 'The Household, Income and Labour Dynamics in Australia (HILDA) Survey: Wave 1 survey methodology', Hilda Project Technical Paper Series, No. 1/02, The Melbourne Institute, The University of Melbourne.
- Wooden, M. (1994) The labour-market experience of immigrants, in M. Wooden, R. Holton, G. Hugo, and J. Sloan (Eds.) *Australian Immigration: A Survey of the Issues*, Canberra: Bureau of Immigration and Population Research, AGPS, pp. 218–279.