

Relationship Breakdown and the Economic Welfare of Australian Mothers and their Children

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Abstract

This paper provides estimates of the effects of divorce on the lifetime incomes of mothers. This is an issue that is not well explored in most countries, and has been essentially untouched empirically in the Australian context. The paper extends the existing literature, which has generally focused on the short-term economic implications of divorce for mothers. Simulations are used to provide insights into the impact of divorce for a host of disparate circumstances. It is found that the relative income costs of divorce differ greatly depending upon the relative earnings capacity of the mother and father. Women with a much lower earning capacity than their partner face particularly large income costs of divorce. It is also found that the relative income costs of divorce fall as the number of children increases. The importance of child support payment to the household income of mothers following divorce is highlighted and it is shown that the income of mothers would be higher if they received child support at levels commensurate with the government's non-resident parent child support rules, rather than the levels they report actually receiving.

1. Introduction

One of the most significant changes affecting Australian society over the last thirty years has been a dramatic increase in the rate of relationship breakdown. The divorce rate, as measured by the number of divorces per 1,000 resident population, increased

¹ However, these figures refer only to the ending of marriages and do not include cohabiting (de facto) relationships. The proportion of couples that are cohabiting has increased very significantly in recent decades. Cohabiting relationships are less stable than marriages and have become increasingly fragile. An implication of this is that the divorce rate is increasingly understating the rate of relationship breakdown (Weston and Qu, 2006).

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from around 0.6 in 1960 to a peak of 4.6 divorces per 1,000 resident population in 1976 when the *Family Law Act 1975*, which allowed for 'no fault' divorce, came into operation. Since then, the crude divorce rate has mostly fluctuated between 2.5 and 3.0.¹

While there is a substantial literature on the economic implications of divorce, most of the existing studies consider the impacts for women measured at a single point in time rather than analysing the cumulative lifetime consequences. Studies have generally found that women experience a decline in financial circumstances postdivorce² and the social and economic implications of divorce are probably most serious for relationships in which children are involved. There is some evidence that, in addition to parental conflict, it is the economic fallout from divorce that results in many of the negative consequences of divorce for children (e.g., Ambert, 1998; and Duncan, 1994).

Quantifying the lifetime economic consequences of divorce is an issue that has been essentially untouched empirically in the Australian context. This paper begins to fill this gap by using statistically estimated parameters concerning women's labour supply and earnings, and men's contributions to both household income and child support to simulate the effect of divorce on the lifetime household income of mothers. This provides insights into the impact of divorce for a host of disparate circumstances.³ Simulations of this type have been effectively employed for Britain (Davies, Joshi, Rake and Alami, 2000; and Davies and Joshi, 2001). A common theme in the literature is the difficulty of disentangling the extent to which a negative relationship between divorce and subsequent labour market earnings is a causal effect, and the extent to which there is some other unobserved factor that both increases the probability of divorce and reduces labour market earnings. The difficulty of establishing causal relationships means that the results presented in this paper are essentially descriptive.

The remainder of this paper is structured as follows. First, the Australian system of social protection is briefly discussed. Second, the method used to estimate the impact of marital separation on the lifetime household income of mothers and their children is described. Third, the data used, from the Household Income and Labour Dynamics in Australia (HILDA) survey, is described. Fourth, the results of the regression modelling of the determinants of employment, earnings and child support are discussed. Fifth, the results of the simulations of the impact of divorce on mothers' economic wellbeing are presented.

2. The Australian System of Social Protection

In this section the government benefits provided to families with dependent children are briefly outlined and the Child Support Scheme (CSS) is described. The description of the income support system is for 2001, the time at which Wave 1 of the HILDA

² See, for example, de Vaus, Gray, Qu and Stanton (2007), Jarvis and Jenkins (1997), Perry, Douglas, Murch, Bader and Borkowski (2000), Pulkingham (1995), Smock, Manning and Gupta (1999), and Smyth and Weston (2000).

³ In Australia legally married and cohabiting couples are treated equally by the family law system for most purposes and identically by the social security system. Therefore, we do not distinguish between legal marriages and cohabiting relationships. In the remainder of this paper we use the term 'divorce' to refer to the time at which a couple finally separates (not the legal dissolution of the marriage). For cohabiting couples, there is no legal process to end the *de facto* relationship.

survey was collected. A detailed description of the Australian system is provided by Whiteford and Angenent (2001). In Australia, benefits are paid at a flat rate from general government revenue and are subject to income and assets tests, but these are generous compared to the means tests in most other OECD countries. One type of family assistance involves supplements to families with children (Family Tax Benefit Part A and Part B). The other type of assistance is through income support payments designed to provide a minimally adequate income to those parents with no or limited income from other sources. The main type of income support available to mothers with young dependent children is the Parenting Payment.⁴ Other payments, including those related to unemployment or disability, are available to working-age individuals.

Given the prevalence of relationship breakdown, a major public policy concern is to promote the care and financial support of children following marital separation. Australian child support policy is based on the view that children whose parents have separated should themselves have a standard of living that reflects the living standard of both parents, not just the one with whom they usually live. The key public response has been the development and enforcement of the CSS, which came into effect in 1988–89.⁵ The CSS is designed to ensure, among other things, that parents share in the cost of supporting their children according to their capacity (Smyth, 2004).

Under the CSS a formula is used to calculate the amount of money that a nonresident parent is required to pay. This is determined by a number of factors, including: the number of children who require support; the income of the resident parent; and the non-resident parent's 'capacity' to pay. If the resident parent re-partners, child support payments are not affected by the income of their new partner. Child support can be paid via private arrangement between parents, or it can be collected from the non-resident parent by the Child Support Agency (CSA) and paid to the resident parent.⁶ CSA collection occurs via the federal income tax system. In theory, application of the child support formula results in the minimum amount that a non-resident parent should be paying. However, if apparently agreed between parents, the amount actually paid may be less than that implied by the formula.⁷

⁴From 1 July 2006 significant changes were made to the income support system, including restricting Parenting Payment to those whose youngest child is under 6 years for partnered primary carers and 8 years for single primary carers. Primary carers receiving Parenting Payment prior to 1 July 2006 continue to be eligible to receive Parenting Payment until their youngest child is aged 16 years. A part-time activity requirement of 15 hours per week applies to those with a youngest child aged 6 years or older.

⁵The CSS specifies the amount of child support to be paid according to an administrative formula.

⁶The terms "custodial" and "non-custodial" are sometimes used to describe the circumstances of the parent with whom the child lives. We use the terms "resident" and "custodial" interchangeably in this paper.

⁷The CSS is currently in the process of being reformed, with a number of changes having been announced, and some currently being implemented. The changes include efforts to increase the compliance of non-residential parents with their child support obligations and changes to the formulae, which will result in variations in child support obligations. The new formulae will take effect from 1 July 2008. The impact of the reforms on the amount of child support paid will depend upon a range of factors, including the level of payments required under the formulae, the effectiveness of the efforts to increase compliance with child support obligations and the behavioural impact of the reforms in terms of labour supply and children's living arrangements.

3. Method

The Broad Approach

The estimation of the impact of marital breakdown on the lifetime household income of mothers and their children uses a counterfactual approach. Specifically, our method attempts to model the economic implications of divorce as the difference between the lifetime household income of a mother who gets divorced and her lifetime household income had she remained partnered.⁸

Since demographic transitions such as childbearing and divorce almost always change the number of people living in a household, it is necessary to adjust the lifetime household incomes for differences in the number and age of people sharing that income. This is achieved through the application of the new OECD equivalence scale.⁹

In the partnered case, household income comprises female and male earnings, plus government cash benefits.¹⁰ In the event of separation, a woman's household income is affected by: (i) changes in her earnings, through the effect of the separation on hours worked and hourly wages; (ii) differences in government financial support due to changes in household income and relationship status; and (iii) changes in the contribution of the father to the mother's household income if the couple has had children. The specific methods used are as follows.

For women, the association between income on the one hand, and number and age of children and marital history on the other, is estimated in two stages: with respect to the determinants of being in paid employment and, for women who are working for pay, with the use of an earnings function estimated using data from Wave 1 (2001) of the HILDA survey. To the above calculations are added similar simulations of husbands' incomes. If the couple remain together, and the assumption is made that there is complete sharing of incomes between husband and wife, in this case the exercise is fairly straightforward. However, it should be recognised that there is not necessarily equivalence in the sharing of incomes within a family, and this might be critical in determining the extent to which children and their mothers are affected by separation (Davies *et al.*, 2000). In the extreme case where the mother receives a very low share of household resources, she actually may receive more after separation.

For separated/divorced women, the construction of the hypothetical scenarios is more complex because non-resident fathers' incomes are not observed directly in the data, meaning that payments from the non-resident parent need to be estimated. In this paper, we use two approaches to estimate child support payment. The first involves calculating the levels of child support by applying the CSS formula in different scenarios concerning the father's income (predicted for a range of levels of education). The second approach is motivated by the fact that some non-resident parents do not meet their child support obligations (Ministerial Taskforce on Child Support, 2005). In this approach, child support payments are estimated using resident mothers' reports of child support payments received from non-resident fathers, with the modelling of child

⁸ Divorce also often has implications for the level of assets held by ex-partners. For example, the family home may be sold in order to buy new homes or because the housing debt can no longer be met.

⁹ The new OECD equivalence scale is constructed as follows: the first adult in the household adds 1 to the scale, second and subsequent adults add 0.5 to the scale, and each child below the age of 18 years adds 0.3 to the scale.

¹⁰ For simplicity, income from investments and private transfers are ignored.

support payments including human capital, demographic and fertility variables. The results are used to estimate child support payments for a range of hypothetical families.

In all simulations, social security payments are calculated on the basis of social security program rules,¹¹ given different assumptions concerning the mother's and father's income, and the number and ages of children. In estimating the impact of children and relationship history on labour market earnings, we make a number of assumptions: (i) fertility decisions are exogenous, and thus not influenced by expectations of marital dissolution; and (ii) marital dissolution is exogenous.

The above may not be inconsequential assumptions. For example, it is plausible that women with a higher earnings capacity who are in an 'unhappy' relationship are more likely to end that relationship than similarly 'unhappy' women with a lower earnings capacity, and this possibility is not modelled. The major methodological point is that our simulations are essentially descriptive, illustrating the likely consequences of relationship breakdown for mothers, but not directly testing behavioural relationships.

The Approach in Detail

A number of steps are involved in constructing our simulations of lifetime-equivalent household income:

- (i) First, the impact of human capital, demographic characteristics and relationship status on the probability of employment for women and men are estimated.
- (ii) Second, the determinants of weekly earnings for women and men are estimated. For women, the explanatory variables include number and age of children, educational attainment, current relationship status, whether they have been divorced, and if so length of time since divorce. For men, explanatory variables include educational attainment, current relationship status and whether they have been divorced. Employment and earnings are not modelled as varying with fertility or with length of time since divorce.
- (iii) The age profile of expected earnings is constructed by multiplying the probability of employment at each age by the expected weekly earnings if employed. For men and women the age profile of expected earnings is constructed for different levels of educational attainment and for the examples of both continuous marriage and divorce. For women, profiles are also constructed with respect to different numbers of children.
- (iv) To these predictions of earnings are added social security payments from government, with the amounts being determined by government rules.¹²
- (v) Household income is then converted to an after-tax amount by the application of the rules of the income tax system.
- (vi) In the divorce scenarios in which there are dependent children, child support payments are added to the mother's household income if a child aged less than 18 is present. CSS payments are estimated in two ways: applying the rules of the CSS to the simulated earnings of non-resident fathers and resident mothers; and using mothers' reports of child support received.

¹¹ It is believed that take-up of benefits is close to 100 per cent so this approach is likely to be accurate.

¹² The source of information on payments is Centrelink (2002), *A Guide to Commonwealth Government Payments*, 1 July – 19 September 2001, Canberra: Centrelink.

- (vii) These different earnings, and social security and child support payment streams, are used to construct measures of resident parent family labour market incomes over the lifecycle.
- (viii) Differences in family size and composition are adjusted for by applying the new OECD equivalence scale.

The above methods can be used to illustrate a plethora of different possible outcomes, and we have chosen to present results for a small number of scenarios (defined on the basis of the highest educational attainment of both members of the couple), which are as follows: (i) the female and male both have year 10 only (that is, they leave high school at around the age of 16); (ii) the female and male both have university degrees; (iii) the female has year 10 only and the male has a degree; and (iv) the female has a degree and the male has year 10 only. The first two cases reflect what is known as positive assortative mating (individuals who are alike in terms of education marry), and the last two reflect the opposite.

4. The HILDA Data Described

HILDA is a large nationally based random longitudinal sample of Australian households, and in this paper we use the first wave of data collected during 2001. HILDA is ideal for this purpose because it contains detailed information about labour market variables, fertility, relationship histories, and child support payments. Information is collected about all members of the household and all adults are interviewed. In Wave 1 information was collected from almost 14,000 people aged from 15 years from 7,682 households.

Very few of the mothers (1.6 per cent) or fathers (0.7 per cent) had never been married. The majority of mothers (69.1 per cent) were married and had not been divorced, while 29.2 per cent had experienced divorce subsequent to having children. For fathers, nearly three-quarters (74.3 per cent) were married and never divorced, and one-quarter (25.1 per cent) had experienced divorce after having children.¹³

Table 1 shows the employment rates, hours of work, weekly earnings and hourly wage rates of mothers and fathers by post-children marital history. The employment rates of females who have not been separated after having children are a little higher than for those who have been separated (63.0 and 59.3 per cent respectively). For males, those who have been separated have a 14.7 percentage point lower employment rate than those who have not been separated (88.2 and 73.5 per cent respectively).

¹³ These figures are for respondents aged 18 to 60 years. Marriage refers to both legal marriage and cohabiting relationships. Dependent students are excluded, as are those who have been widowed and those with incomplete post-children relationship histories. Respondents who were not in a relationship when their first child was born but who subsequently partner and never divorce are classified as being continuously married after having children.

Table 1 - Employment Rates, Usual Working Hours and Earnings by Post-Children Marital History and Gender

	<i>Not divorced/separated</i>		<i>Divorced/separated</i>	
	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>
Employment (per cent)	63.0	88.2	59.3	73.5
Usual hours per week (if employed)	28.7	46.4	32.4	45.2
Weekly earnings (\$2001)	530	1055	564	929
Hourly wage rate (\$2001)	19.84	22.91	17.26	20.95

Notes: Excluded from the table are those who have never been married. The self-employed are classified as being employed in the calculation of the employment rate but are excluded in the calculation of usual hours per week, weekly earnings and hourly wage rate.

Source: HILDA 2001.

As expected, fathers work much longer hours than mothers, and earn more per hour (by about 15 per cent). Women who have been divorced on average work longer hours for pay than women who have not been divorced, but the former earn a lower hourly wage rate. On average, women who have been divorced and who are employed earn more per week than women who have not been divorced after having children (\$564 and \$530 per week respectively, in 2001 dollars). For men, there is little difference in usual working hours with respect to post-children marital history. However, men who have been divorced earn less per hour than those who have not been divorced (by about 10 per cent), which is almost certainly the result of unobserved variables associated with marital status rather than the consequence of marital status. Again, we stress the limitations of essentially descriptive exercises such as these.

There are clear differences in human capital and demographic characteristics between those who have been divorced after having children and those who have not. Analysis of the first wave of HILDA reveals that females and males who have not been divorced are much more likely to have children under 3 years of age (21.8 and 23.0 per cent respectively) than those who have been divorced (12.1 and 10.9 per cent for women and men respectively). This reflects the fact that most parents in Australia have a partner when their children are born and relatively few divorces occur whilst children are very young. For similar reasons, females and males who have been divorced are less likely to have children aged 3 to 5 years (16.0 and 16.6 per cent respectively) compared to those who have not been divorced (21.4 and 22.0 per cent respectively). There is little difference in the likelihood of having children aged 6 to 15 years according to post-children marital history.

For both males and females there are clear differences in educational attainment according to post-children marital history. Those who have been divorced have, on average, lower levels of educational attainment. For example, for females, 26.8 per cent of those who have not been divorced have year 10 or less education as compared to 32.7 per cent of those who have been divorced. Bradbury and Norris (2005), applying multivariate statistical techniques to the HILDA data, find that having a lower income is strongly associated with a higher rate of relationship breakdown.

The clear differences in human capital and demographic characteristics that are related to labour force status and earnings according to post-children marital history highlight the importance of using a regression framework.

5. Estimates of Determinants of Employment, Earnings and Child Support

This section describes the models of the determinants of employment, earnings and child support that are estimated in order to provide the parameters used in the simulations. The sample is restricted to respondents aged 18 to 60 years. Respondents who are dependent students, who have been widowed, or with missing information on post-children relationship histories are excluded from the analysis.¹⁴ The sample summary and coefficient estimates are presented in Appendix A.

Probability of Employment

The determinants of the probability of employment are estimated using logistic regression, which is appropriate for a binary dependent variable (employed or not employed). Economic theory suggests that a range of economic and demographic variables will affect this probability and the theoretical basis underlying these relationships is well known (see Blundell and MaCurdy, 1999). The key variables are now briefly described.

For both fathers and mothers, the explanatory variables include age, highest level of educational attainment, state of residence, geographical area (major city, inner regional or outer regional area), health status and migrant status. For women, the impact of childrearing on the probability of employment is measured in a number of ways. The permanent impact of ever having children is captured by a dummy variable, with a series of variables being used to identify whether a woman has: children aged less than 3 years of age; children aged 3 to 5 years; one child aged 6 to 15; two children aged 6 to 15; and three or more children aged 6 to 15. For men, having children is assumed to have no impact on the probability of employment.

For mothers and fathers the impact of divorce on the probability of employment is captured through variables measuring whether the respondent has a partner and whether any current relationship is the result of re-partnering and having been married (before or after having children). For mothers, the effect of length of time since divorce is captured using a set of dummy variables (divorce occurred less than 3 years ago, 4 to 10 years ago, or 11 years or more ago).¹⁵ In addition, a variable is included that captures whether the woman has an employed partner.

The results are fairly familiar for exercises of this type and are not discussed in detail in this paper (the estimation results are provided in Appendix A). It is estimated that increases in educational attainment increase the probability of employment for males and females, although the effects of education are stronger for females than males. For females, having young children substantially reduces the probability of being employed, as does having a number of children under the age of 16.

¹⁴ In addition to the above exclusions, for the weekly earnings we exclude respondents: with very low hourly wage rates (less than \$2.00 per hour); with very high hourly wage rates (more than \$200 per hour); who are self employed (since their earnings are likely to represent something different than earnings for employees); who are currently employed but report having zero actual labour market experience; and who report being employed but report zero earnings.

¹⁵ If a parent has experienced two or more relationship breakdowns after the birth of their first child, we use the length of time since their first relationship ended.

Labour Market Earnings

There is an extensive and well-established empirical literature that estimates the determinants of earnings, and the conventional framework is adopted here. In this approach, the natural logarithm of earnings is expressed as a function of labour market experience, educational attainment and a number of other economic and demographic variables. The specification of the earnings equation is similar to the specification of the employment equation. The main difference is that the earnings equation includes tenure with the current employer.

The earnings equation results are familiar for exercises of this type and are presented in Appendix A. To help anticipate the simulations, the coefficients from the probability of employment and earnings equations can be used to illustrate differences in earnings for women and men by marital history and educational attainment. For women, the effects of having children and the number of children on a woman's earnings profile are illustrated. The earnings profiles have been constructed by multiplying the probability of employment by earnings if employed.

In all of the simulations the following hypothetical illustrations have been used: the woman is assumed to marry at age 25; her husband is also assumed to be 25 years old at marriage; women have one, two or three children, with the first child being born when the woman is aged 28, the second at age 30, and the third at age 32; two levels of education are considered: year 10 schooling or less, and having a university degree level qualification; and, if divorce occurs, it happens at age 36. The simulations are conducted holding region of residence, state of residence, health status and country of birth at the sample averages. In the simulations, if a woman has a partner he is assumed to be employed.¹⁶

Figure 1 shows the effects of the number of children on before-tax life-time earnings profiles for a woman with year 10 education who is married and does not divorce. The profiles show that earnings are lower when there are young children, and increase as the age of the youngest child increases. It is estimated that childbearing leads to a permanent reduction in earnings.

Figure 2 shows the effects of divorce on the before-tax earnings profile for a woman who has two children, by educational attainment (Year 10 and degree), and whether she divorces. The results suggest very significant differences in lifetime earnings for women with low education compared to women with high levels of education. They also suggest that divorce reduces mothers' earnings, but the effect of divorce is much smaller than the effect of educational attainment.

¹⁶A complication in predicting labour market earnings is that the earnings equation includes actual experience as an explanatory variable. Labour market experience at each age is constructed by adding the predicted probability of employment for each year to the experience measure. This means that if a person has low probability of employment given their marital, fertility and education profiles, then relatively little is added to the labour market experience. If employed, tenure is allowed to vary according to labour market experience. This is achieved through the results of regression of tenure against labour market experience (specified as a cubic).

Figure 1 - Earnings Profile (before-tax) by Number of Children, Females with Year 10 Education Only, Continuous Marriage

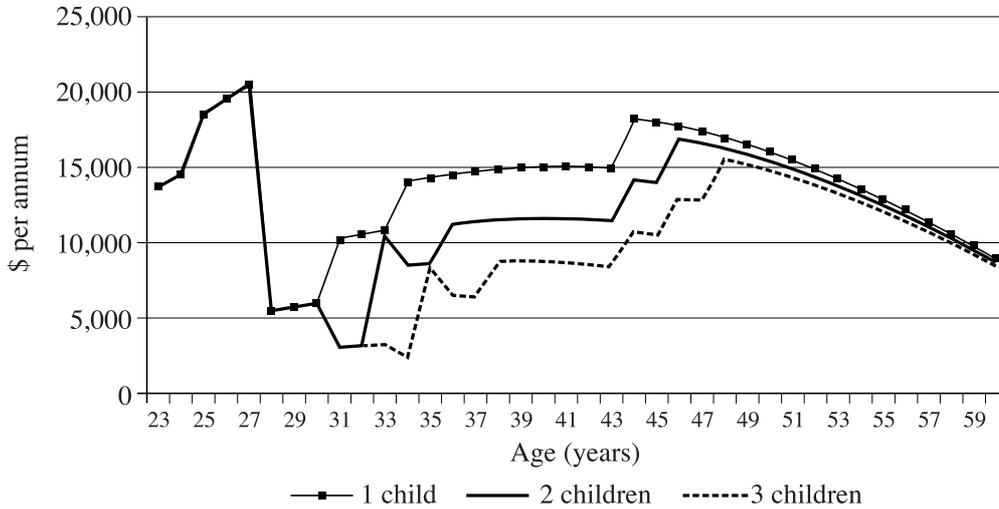
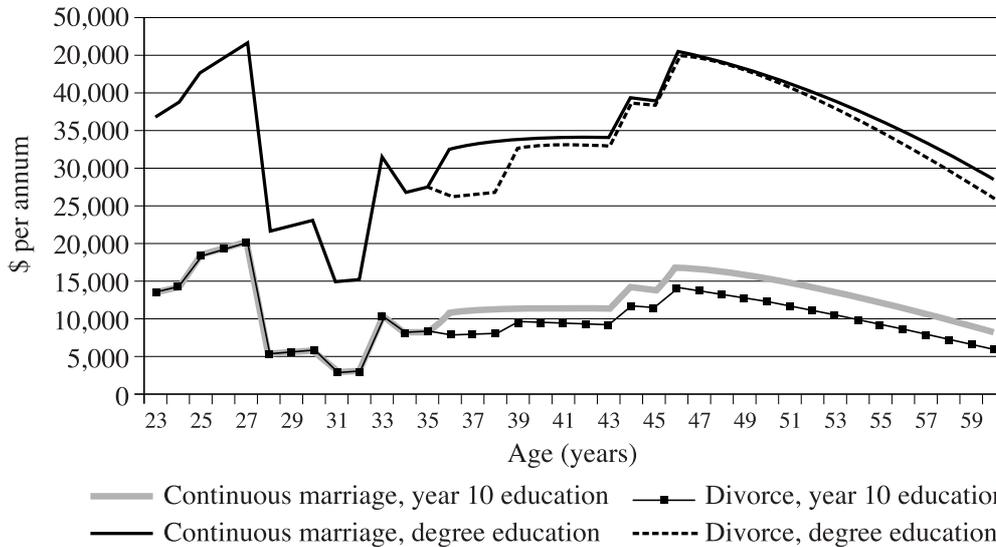


Figure 2 - Earnings Profile (before tax) by Marital History and Educational Attainment, Females with Two Children

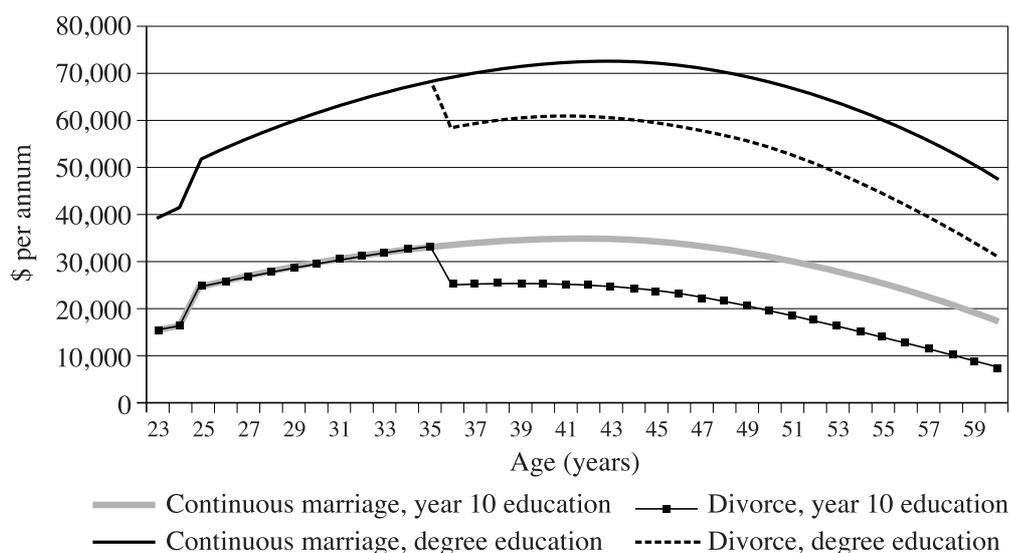


Note: Earnings profile derived by multiplying the probability of employment by earnings if employed.

The effect of divorce upon the life-time labour market earnings of men with year 10 education and with a degree is shown in figure 3. As for women, education is an important determinant of earnings for men. Divorce is estimated to reduce earnings by around 15 per cent for men with high levels of education. The effects of divorce appear to grow in influence with age, although it seems likely that there are too few data points at the extremes of the sample by age for us to be confident that the functional form is robust. There are a number of possible reasons as to why divorce may have a negative effect on the earnings of men, and they include adverse mental and physical health consequences of divorce and non-resident fathers reducing their labour market

participation in order to reduce the amount of child support payable, or having shared care of their children, which reduces labour market earning capacity. However, it is probable that some part, or possibly all, of this effect is a consequence of unobservable differences between divorced and married and never-divorced married males, and it is thus not only attributable to the effects of marital status.

Figure 3 -Earnings Profile (before-tax) by Marital History and Educational Attainment, Males



Note: Earnings profile derived by multiplying the probability of employment by earnings if employed.

Overall, the results from the employment and earnings regressions are generally familiar. This leads to some confidence as to their usefulness with respect to the simulations of household income presented in sections 6 and 7.

Mothers' Reports of the Receipt of Child Support

A potential contribution to the household incomes of divorced women is child support received from the non-resident father, and HILDA includes this information as reported by resident mothers.¹⁷ Among women with dependent children who have a parent living elsewhere, 51.4 per cent report receiving child support payments, with the average amount received being \$2,493 per annum. Among mothers who receive child support payments, the average amount received is \$4,854.

The determinants of the amount of child support received by resident mothers are estimated using regression modelling, and the coefficients are used to construct simulations of mothers' household incomes following divorce. A limitation of this model is that there is no information on the income of the non-resident father, a key determinant of the amount of child support that should be paid to the mother. A Tobit regression model is used because the amount of child support reported is zero for a significant number of respondents, and is continuous for the remainder.¹⁸ The

¹⁷Non-custodial fathers' reports of child support are also available in HILDA. We have not used these data since there is no reported connection between separated former couples.

¹⁸The statistical characteristics of the data and the regression coefficients are reported in Appendix A.

coefficients from this model are used to construct simulations of mothers' household income following divorce.

6. Simulating the Impact of Divorce on Mothers' Economic Wellbeing

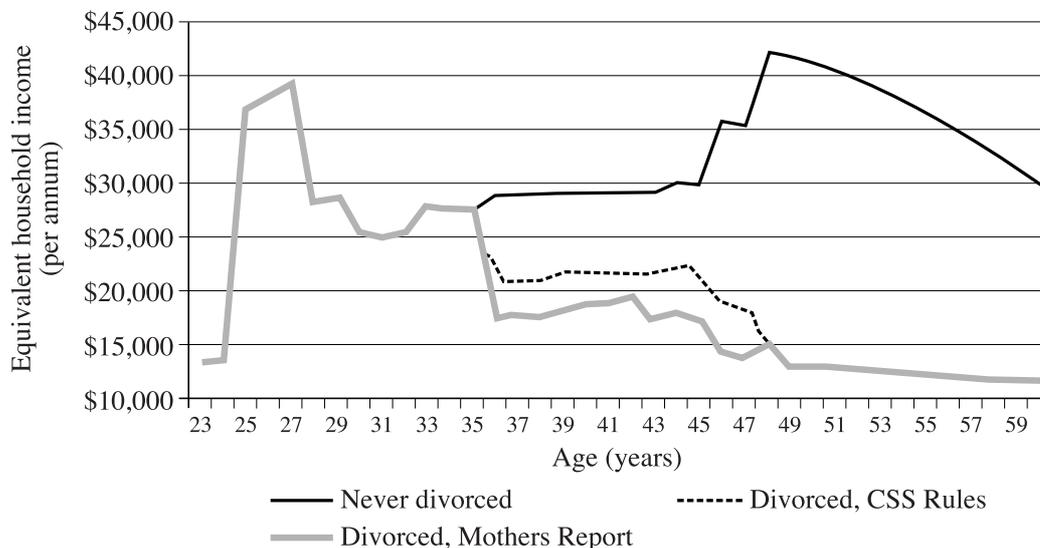
The simulations presented in this section illustrate the effect of divorce on economic wellbeing for women between the ages of 23 and 60 years with a range of levels of education, and according to the education level of their partner. The effects of divorce on mothers' household income (in 2001 dollars) are summarised by comparing (for ages 23 to 60 years) the total equivalent household income if divorce occurs to what the total lifetime equivalent household income would have been if the mother had remained married. In what follows, we term this 'lifetime equivalent household income'.

Age Profile of Mothers' Equivalent Household Income

Figures 4 to 7 show the age profiles of equivalent after-tax household incomes for continuously married and divorced mothers who do not subsequently re-partner for various combinations of educational attainment (low-education mother, high-education father; high-education mother and father; low-education mother and father; high-education mother and low-education father). To highlight some key points we present the profiles for a two-children scenario. The conclusions reached do not differ, on the whole, for women who have one or three children.

For the low-education mother/high-education father couple after-tax household income increases dramatically when marriage occurs (age 25), which is the result of a higher-earning male income being added to the woman's household income (figure 4). When the first child is born (at age 28) the family equivalent household income drops. This occurs because of the fall in mother's earnings and because the addition of a person to the family decreases equivalent household income. The birth of a second child (when the mother is aged 30) further decreases household income, although by not nearly as much as the first birth.

Figure 4 - Equivalent After-tax Household Income for Mothers by Divorce Status, Year 10 Education Mother, University Degree Father, Two Children



If the mother remains married, equivalent household income gradually increases over time. As the children grow older, the mother's probability of employment and hours of work (if employed) both increase. The mother also has an increase in her hourly wage rate as she accumulates labour market experience, and the father's earnings increase as he accumulates labour market experience. As each child becomes financially independent of his or her parents the mother's equivalent household income increases further, since the child is not then counted as being part of the household (in these simulations this is assumed to occur at age 18).

If the marriage ends (assumed to be when the mother is aged 36), from that time onwards the mother's equivalent household income is below what it would have been if she had remained married. The dashed line shows her equivalent household income if she receives child support payment according to the rules of the CSS, with the other line showing her equivalent household income when child support payments are based upon resident mothers' reports of what they receive.

The cost of relationship breakdown to the mother at any point in time is the difference between equivalent household income if she divorces and what her household income would have been had her marriage survived. The total lifetime costs of divorce are represented by the area between the equivalent household income profiles.

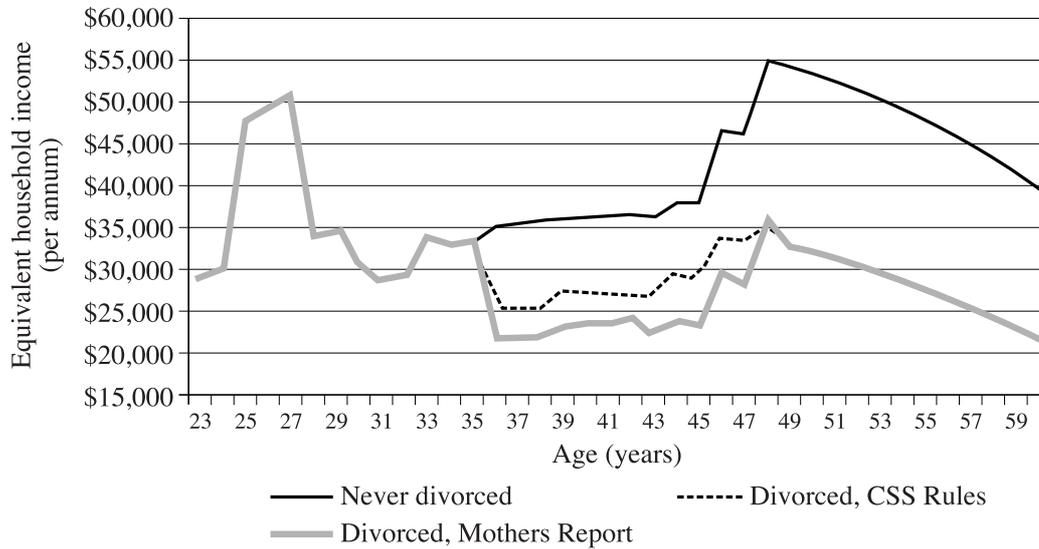
An important feature of figure 4 is that for the low-education mother/high-education father couple, equivalent household income calculated using mothers' reports of child support is less than when child support is calculated by applying the rules of the CSS.

Under the assumption that child support estimated using mothers' reports is a lower bound estimate of child support actually received, then the actual amount of child support will be somewhere between these two amounts. The bottom line is that for this type of (ex-)couple, the economic living standards of the mother post-divorce are lower than what the design of the CSS suggests they should be. While the amounts of child support calculated using the rules of the CSS and mothers' reports differ, the pattern is quite similar.

For the low-education mother/high-education father couple the impact of divorce on equivalent household income is the smallest while the children are younger (in the period immediately following divorce). This is because the loss of the father's "full income" is partially offset by receipt of a higher level of government benefits and child support payments. The costs of divorce also increase over time because the father's income increases with age and the additional child support payments do not fully compensate for this. Once the youngest child turns 18 the mother is much worse off, since she typically ceases to receive child support payments and is no longer eligible for child-related government benefits.

Figure 5 shows the lifetime income profiles for the high-education couple. The total lifetime income consequences of divorce are less in percentage terms and absolute terms for the high-education couple than for the low-education mother/high-education father couple (figure 4). We will return to the total income costs of divorce to mothers in the following section. As for the low-education mother/high-education father couple, equivalent household income based upon mothers' reports is less than that based upon the CSS rules.

Figure 5 - Equivalent After-tax Household Income for Mothers by Divorce Status, University Degree Mother and Father, Two Children



An important difference between mothers with low education (year 10) and those with high education (university degree) is that, post-divorce and while the children are still at home, the household income of high-education mothers increases over time (figures 5 and 7) whereas it decreases for the low-education mothers (figures 4 and 6). This occurs because earnings increase with age at a much faster rate for the high-education mothers.

Figure 6 - Equivalent After-tax Household Income for Mothers by Divorce Status, Year 10 Mother and Father, Two Children

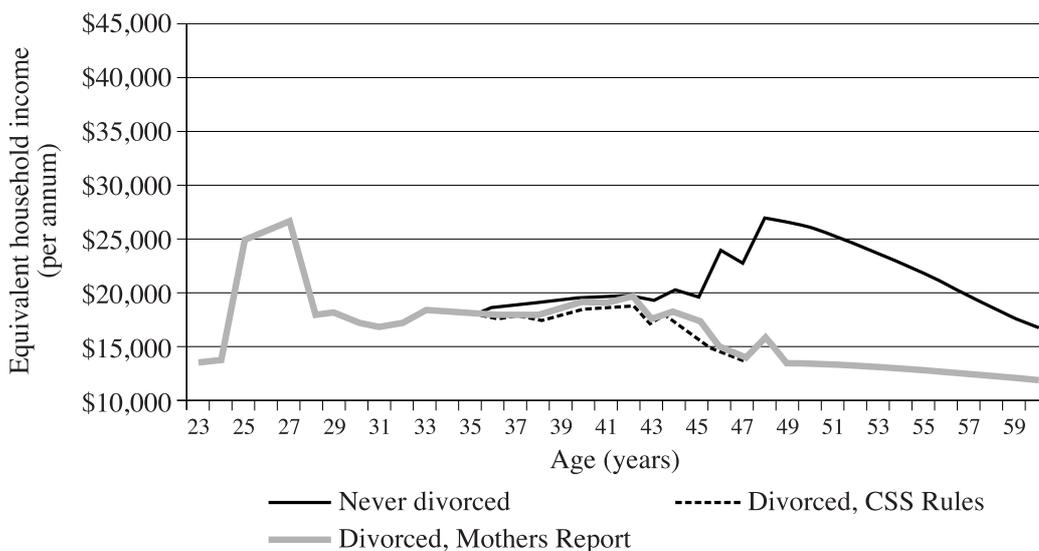
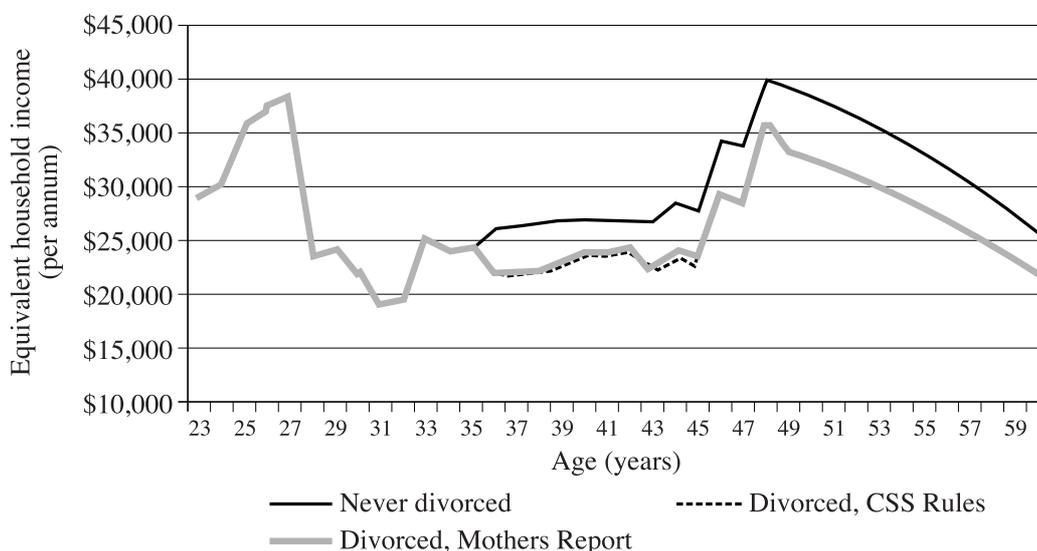


Figure 7 -Equivalent After-tax Household Income for Mothers by Divorce Status, University Degree Mother and Year 10 Father, Two Children



For the low-education couple (figure 6) and the high-education mother/low-education father couple (figure 7) the income costs of divorce for the mother are still substantial, but are much smaller overall. In contrast to the results for mothers who were married to a high-education man, the method of estimating the amount of child support received makes little difference to the post-divorce income.

The finding that, for low-education mothers married to low-education fathers, the equivalent household income costs of divorce are relatively small when the mother has dependent children suggests that the financial incentive for such mothers to remain partnered is relatively small.

The Overall Effect of Divorce

A summary measure of the impact of divorce on mothers' working age (hereafter 'lifetime') equivalent household income can be constructed by comparing the mothers' (undiscounted) total equivalent household income if divorced to total income if continuously married. The costs of divorce are represented by income if divorced as a proportion of income if continuously married, and the dollar difference in income if divorced and income if continuously married.

Table 2 shows the equivalent household income of a mother who divorces as a percentage of what her income would have been had she remained married. The relative income of divorced as compared to continuously married mothers is calculated using the two different methods of estimating the amount of child support she receives (CSS rules and mothers' reports).

Table 2 - Equivalent Lifetime (ages 23 to 60) Household Income Costs of Divorce for Mothers (Percentage of Continuous Marriage Income)

	<i>1 child</i>	<i>2 children</i>	<i>3 children</i>
CSS rules			
Year 10 mother/degree father	61.5	64.4	67.2
Degree mother/degree father	74.6	75.5	76.6
Year 10 mother/year 10 father	76.0	79.3	82.0
Degree mother/year 10 father	88.8	89.3	90.1
Mothers' reports of child support received			
Year 10 mother/degree father	59.1	61.0	63.2
Degree mother/degree father	71.8	72.2	73.0
Year 10 mother/year 10 father	76.9	80.4	83.2
Degree mother/year 10 father	88.7	89.5	90.5

Notes: The figures are calculated by dividing total equivalent lifetime household income (undiscounted) if divorced by total equivalent lifetime household income (undiscounted) if continuously married.

As an example of how to interpret table 2, consider a low-education mother who was married to a high-education man. Assuming that the mother receives child support payments according to the rules of the CSS, if she has one child our simulations show that her equivalent lifetime household income is 61.5 per cent of what it would have been had she remained married. As the number of children she has increases, the income costs of divorce are slightly lower in percentage terms – 64.4 per cent of non-divorced mothers' incomes for those with two children and 67.2 per cent for those with three children. The smaller income loss is caused by a combination of an increase in the amount of child support paid and additional government benefits.

The income costs of divorce to the mother are greater when mothers' reports are used to estimate child support received (figure 4). If mothers' reports are used, then the mothers' lifetime income falls to 59.1 per cent of what it would have been had she remained married. While the differences between child support calculated using the CSS rules and mothers' reports may seem quite small when considered in the context of lifetime income, the method of calculating child support makes a substantial difference to the income effects of divorce while the mother has a dependent child in the household and the father is required to pay child support.

Turning to the high-education mother/low-education father couple, the effect of divorce on the lifetime equivalent household income of the mother is much smaller – around 10 per cent for each of the fertility scenarios. As noted above, for this couple the method of estimating child support makes little difference to the effects of divorce on the mother's lifetime income. As well, the income consequences of divorce for the mother (in percentage terms) in the positive assortative mating couples (low-education and high-education couples) are between the losses for the other two hypothetical couples.

A key determinant of the relative equivalent household income costs of divorce is the disparity in the labour market earning capacity of the father and mother, the major result being that the higher the father's earnings capacity relative to that of the mother the larger the lifetime equivalent household income cost of divorce to the mother. Conversely, the higher the mother's earnings capacity relative to that of the father, the smaller the relative income effects of divorce on the mother's lifetime equivalent household income.

While the percentage effect of divorce on mothers' equivalent household income is smallest for the high-education mother/low-education father couple, this cannot be interpreted as meaning that women in this situation are relatively better off in absolute terms following divorce, since in order to answer this question it is necessary to compare the levels of lifetime equivalent household income. Accordingly, table 3 shows the actual dollar value of lifetime equivalent household income of mothers according to number of children and marital history after the birth of her first child (post-children marital history). The top panel shows lifetime household incomes assuming that mothers receive child support according to the rules of the CSS, and the bottom panel shows lifetime household incomes according to mothers' reports.

Table 3 - Equivalent Lifetime (ages 23 to 60) Household Income by for Mothers Post-children Marital History, Number of Children and Method of Calculating Child Support (\$'000)

	<i>Continuously married</i>			<i>Divorced</i>		
	<i>1 child</i>	<i>2 children</i>	<i>3 children</i>	<i>1 child</i>	<i>2 children</i>	<i>3 children</i>
CSS rules						
Year 10 mother/degree father	1,316	1,206	1,121	809	777	754
Degree mother/degree father	1,719	1,562	1,436	1,281	1,179	1,099
Year 10 mother/year 10 father	847	774	728	643	614	597
Degree mother/year 10 father	1,250	1,131	1,037	1,110	1,009	934
Mothers' reports of child support received						
Year 10 mother/degree father	–	–	–	778	735	708
Degree mother/degree father	–	–	–	1,234	1,127	1,049
Year 10 mother/year 10 father	–	–	–	651	622	605
Degree mother/year 10 father	–	–	–	1,109	1,013	939

We first consider the lifetime income costs of divorce for the case in which child support is paid according to the rules of the CSS. Mothers who have one child and who are continuously married have an equivalent household income of between \$1.8 million for a high-education mother who was married to a high-education man, and \$0.85 million for a low-education mother who was married to a low-education man. As the number of children increases, equivalent household income for all of the family types falls. This reflects the fact that additional children are estimated to decrease mothers' earnings and impose an additional cost on the family in equivalence scale terms.

An important point from table 3 is that, for women who are divorced, the more children they have the lower is their equivalent household income. The reason for the fall in the relative income loss from divorce as the number of children increases is caused by the increase in equivalent household income in the case of divorce as compared to equivalent household income in the case of continuous marriage; it is not due to women with more children who are divorced having a higher income in absolute terms than divorced women with fewer children.

Source of Income by Post-children Marital History

While divorce impacts upon mothers' economic wellbeing, it also changes the relative importance of income from different sources. In this section estimates of how divorce

affects the relative contribution made by each source of income are presented. To provide a focus on the implications for children, the estimates are for the period over which the mother has dependent children.

For all four hypothetical couples, divorce increases the proportion of income that comes from the mothers' labour market earnings (table 4). To illustrate this result we focus on the mother from the low-education mother/low-education father couple. The proportion of her lifetime household equivalent income that comes from her earnings increases from 30.0 per cent if she is continuously married to 36.3 per cent if she divorces. The proportion of the income of the household that comes directly from the father's earnings while he is living in the household falls from 66.5 to 37.6 per cent, although this is partially offset by contributions from the father in the form of child support (4.5 per cent of the mother's household income). In addition, government benefits become much more important, increasing from 3.5 to 21.6 per cent of the income of the household in which the mother lives. Similar patterns are evident for mothers from the other hypothetical couples.

Table 4 - Components of After-tax Household Income while a Mother has Dependent Children, by Marital History and Type of Couple (per cent)

	<i>1 child</i>		<i>2 children</i>		<i>3 children</i>	
	<i>Continuous marriage</i>	<i>Divorce</i>	<i>Continuous marriage</i>	<i>Divorce</i>	<i>Continuous marriage</i>	<i>Divorce</i>
Degree mother/year 10 father						
Mother's earnings	51.2	65.9	47.2	60.3	43.6	54.1
Father's earnings	47.2	26.3	49.6	24.5	51.3	22.6
Government benefits	1.6	5.2	3.2	10.6	5.1	17.6
Child Support	0.0	2.6	0.0	4.6	0.0	5.7
Year 10 mother/degree father						
Mother's earnings	19.7	25.9	16.1	20.0	13.3	15.7
Father's earnings	79.3	49.2	81.0	43.7	81.7	39.5
Government benefits	1.0	13.1	2.9	18.6	5.0	23.4
Child Support	0.0	11.8	0.0	17.8	0.0	21.4
Degree mother and father						
Mother's earnings	37.3	51.1	34.2	46.5	31.5	42.1
Father's earnings	62.6	37.4	65.5	34.6	67.7	32.2
Government benefits	0.0	3.0	0.4	5.1	0.8	8.5
Child Support	0.0	8.5	0.0	13.8	0.0	17.3
Year 10 mother and father						
Mother's earnings	30.0	36.3	24.6	27.6	19.8	21.0
Father's earnings	66.5	37.6	67.8	33.0	66.5	28.9
Government benefits	3.5	21.6	7.6	32.7	13.8	42.5
Child Support	0.0	4.5	0.0	6.6	0.0	7.6

Notes: Child support is calculated using the rules of the CSS. The figures are constructed by dividing income from each source by net after-tax unequivalised household income. For women with one child the age range over which income is calculated is 28 to 45, for two children it is 28 to 47, and for three children it is 28 to 49.

As the number of children increases, the proportion of the mother's income that comes from child support increases. For example, for a year-10 educated mother whose ex-partner has a degree, the proportion of her equivalent household income from child support payments ranges from 11.8 per cent if they have one child to 21.4 per cent if they have three children.

While the focus of this paper has been on the consequences of divorce for financial living standards up to the age of 60, the effects in older age are likely to be compounded by the lower levels of superannuation that will be accumulated as a result of lower labour market earnings. There is also likely to be a loss of access to the partner's superannuation.¹⁹ This is consistent with the finding of de Vaus *et al.* (2007) that older Australians who have been divorced have lower levels of financial wellbeing than their married and never-divorced counterparts.

7. Conclusion

This paper has examined the effects of divorce on the economic situation of Australian mothers and their children, and the effects of divorce on equivalent household incomes for women in a range of circumstances have been simulated. The relative earnings capacity of the mother and father is an important factor in determining the effects of divorce for the mother compared to what would have been the case had she remained married. We consider the effects of divorce for women with one, two and three children.

After divorce a mother no longer has access as much of the father's income, although non-resident fathers may continue to contribute to the income of the household in their ex-wives' lives through child support payments. While under the CSS a formula is used to calculate the amount of money a non-resident parent is required to pay, resident parents report, on average, receiving less child support than non-resident parents apparently report paying. We conduct all of the simulations with two different estimates of child support: using the CSS formula and using mothers' reports of child support received. These different methods of estimating child support can have quite important implications for mothers' post-divorce living standards.

The main findings are:

- Mothers' equivalent household incomes fall following divorce. For example, a low-education mother who was married to a high-education father, with whom she has one child, is estimated to have an equivalent lifetime household income that is 61.5 per cent of what it would have been had she remained married.
- The relative income costs of divorce differ greatly, depending upon the relative earnings capacity of the mother and father. For women who marry a man

¹⁹The Australian system of provision for retirement incomes can be characterised as a three-pillar model. The three pillars are: a flat-rate, means-tested pension, financed from general government revenue (the Age Pension); compulsory saving through an employment-based system, known as the Superannuation Guarantee; and voluntary superannuation, assisted by tax concessions or other private saving, particularly housing. The second pillar – compulsory saving through the Superannuation Guarantee – was introduced during the 1990s, and now covers the majority of the employed population. However, it will take many years before those reaching retirement age will have had paid sufficient compulsory superannuation throughout their working lives to make a significant difference to their retirement incomes.

with a much greater labour market earnings capacity, as reflected in education, the income costs of divorce are particularly large.

- The percentage decrease in mothers' equivalent household income following divorce are smallest for the high-education mother who was married to a low-education man (11.2 per cent for mother with one child), followed by the low-education mother who was married to a low-education man (24.0 per cent for mother with one child), followed by the high-education mother who was married to a high-education man (25.4 per cent for mother with one child). The largest income losses are for the low-education mother who was married to a high-education man (38.5 per cent for a mother with one child).
- The relative income costs of divorce fall as the number of children increases. This occurs for two reasons. First, the level of government support increases as the number of children increases. Second, father's child support contributions increase as the number of children increase at a rate faster than the costs of children, as suggested by the equivalence scale.
- Mothers' household incomes after divorce would be higher if they received child support levels commensurate with the government's non-resident parent child support rules.
- Following divorce, a much higher proportion of mothers' household income is derived from government benefits. For example, for a mother with year 10 education who is married to man with a degree and has two children, 2.9 per cent of lifetime income comes from government benefits, but this is estimated to increase to 18.6 per cent if the mother is divorced. Australian social security provisions act as an important offset to the economic penalty associated with parental separation, particularly as the number of children increases.

The finding that the financial costs of divorce are smallest for low-education couples is a potential explanation for the social class gradient of divorce, with lower-income families being more likely to experience divorce (Bradbury and Norris, 2005). There are of course other possible explanations, including that being on a low income increases the stress on a couple and hence increases the likelihood of divorce, and that those with a lower level of education have less well developed relationship skills than those with a higher level of education and are hence more likely to divorce. The reasons for the social class gradient of divorce is a highly policy relevant question but it is poorly understood. While the results presented in this paper provide one possible explanation, further research into this policy-relevant question is needed.

Appendix A

Summary Statistics and Regression Results

Table A1 - Summary Statistics for Earnings and Probability of Employment Equations

	<i>Earnings</i>		<i>Employment</i>	
	<i>Females</i>	<i>Males</i>	<i>Female</i>	<i>Male</i>
Employment			68%	83%
Weekly earnings	\$595	\$926		
Experience (years)	16.1	19.2		
Tenure (years)	5.6	7.1		
Age (years)	37.6	37.7	38.6	39.0
Has children under 3	8%		14%	
Has children 3 to 5	10%		14%	
Has one child 5 to 15	14%		15%	
Has two children 6 to 15	11%		12%	
Has three or more children 6 to 15	5%		5%	
Ever had a child	61%		70%	
Year 10 or less education	16%	14%	23%	18%
Year 11 education	5%	5%	6%	5%
Trade	23%	37%	21%	37%
University degree	31%	25%	23%	21%
Inner regional	25%	26%	27%	27%
Outer regional	11%	10%	13%	13%
Victoria	27%	26%	26%	25%
Queensland	20%	20%	20%	20%
South Australia	8%	8%	9%	9%
Western Australia	10%	10%	10%	10%
Tasmania	3%	2%	3%	3%
Northern Territory/Australian Capital Territory	3%	3%	2%	2%
Poor Health	8%	9%	12%	13%
NESB migrant	12%	13%	15%	14%
ESB migrant	11%	11%	10%	11%
Has partner	68%	70%	70%	68%
Has partner* divorced	8%	8%	9%	8%
Never married	14%	18%	12%	18%
3 years or less since divorce	3%		3%	
4 to 10 years since divorce	6%		7%	
11 or more years since divorce	10%		11%	
Partner employed	62%		59%	
Number of observations	2,723	3,003	4,871	4,604

Table A2 - Determinants of the Probability of Employment, Logistic Regression

	<i>Females</i>		<i>Males</i>	
	<i>Coefficient</i>	<i>T-stat</i>	<i>Coefficient</i>	<i>T-stat</i>
Age	0.1701	6.04	0.2184	7.64
Age squared	-0.0023	-6.50	-0.0030	-8.73
Has children under 3	-1.5687	-12.18		
Has children 3 to 5	-0.6881	-6.18		
Has one child 5 to 15	-0.2478	-2.11		
Has two children 6 to 15	-0.5581	-4.34		
Has three or more children 6 to 15	-0.9184	-5.60		
Ever had a child	-0.5698	-3.38		
Year 10 or less education	-0.6834	-6.95	-0.7253	-5.34
Year 11 education	-0.2393	-1.56	-0.2985	-1.46
Trade	0.2789	2.69	0.0268	0.21
University degree	0.7588	6.78	0.4858	2.97
Inner regional	0.0793	0.88	-0.0508	-0.45
Outer regional	0.1690	1.49	-0.2094	-1.57
Victoria	0.1155	1.21	0.1220	1.00
Queensland	-0.1253	-1.20	-0.1044	-0.83
South Australia	-0.1272	-0.95	-0.3156	-1.99
Western Australia	-0.0345	-0.26	0.1230	0.73
Tasmania	0.3441	1.61	-0.4532	-1.82
Northern Territory/Australian Capital Territory	0.3854	1.51	0.7636	1.94
Poor Health	-1.0508	-10.10	-1.5242	-14.63
NESB migrant	-0.6892	-6.81	-0.9323	-7.70
ESB migrant	-0.0537	-0.42	-0.1084	-0.71
Has partner	-0.8647	-4.08	1.0354	8.43
Has partner* divorced	-0.0411	-0.17	-0.351	-2.16
Never married	0.1231	0.65	0.1158	0.73
3 years or less since divorce	0.3088	1.15		
4 to 10 years since divorce	0.2203	0.92		
11 or more years since divorce	0.0940	0.40		
Partner employed	1.6012	13.50		
Constant	-1.3470	-2.53	-1.8374	-3.26
Number of observations	4,871		4,604	
Pseudo R2	0.2001		0.1776	

Table A3 - Determinants of Weekly Earnings (natural logarithm of weekly earnings)

	<i>Female</i>		<i>Male</i>	
	<i>Coefficient</i>	<i>T-stat</i>	<i>Coefficient</i>	<i>T-stat</i>
Experience	0.041534	5.02	0.033883	3.58
Experience squared	-0.00062	-3.19	-0.00029	-1.39
Age	0.034078	2.38	0.033898	1.80
Age squared	-0.00063	-3.55	-0.00066	-2.66
Tenure	0.03196	6.38	0.022222	6.39
Tenure squared	-0.00069	-3.45	-0.00044	-3.74
Has children under 3 years	-0.26148	-4.52		
Has children 3 to 5 years	-0.21458	-4.28		
Has one child 6 to 15 years	-0.13388	-3.21		
Has two children 6 to 15 years	-0.24738	-5.10		
Has three or more children 6 to 15 years	-0.34133	-4.98		
Ever had a child	-0.20833	-4.02		
Year 10 or less education	-0.14478	-3.47	-0.13957	-4.05
Year 11	-0.02972	-0.51	0.06041	1.41
Trade	0.11974	3.78	0.071726	2.60
University degree	0.428211	14.2	0.413871	12.25
Inner regional	-0.10146	-3.33	-0.12838	-5.49
Outer regional	-0.13084	-3.27	-0.09966	-2.81
Victoria	-0.07829	-2.60	-0.03433	-1.32
Queensland	-0.04501	-1.37	-0.09974	-3.62
South Australia	-0.20597	-4.28	-0.19847	-5.52
Western Australia	-0.15087	-3.45	-0.07303	-2.00
Tasmania	-0.2076	-2.69	-0.12089	-1.79
Northern Territory/Australian Capital Territory	0.057487	0.96	0.10008	1.86
Poor health	-0.08614	-1.96	-0.11569	-3.01
NESB migrant	0.009549	0.26	-0.1203	-3.76
ESB migrant	0.029909	0.75	0.084258	2.84
Has partner	-0.12325	-1.76	0.096953	3.04
Has partner* divorced	0.071275	1.02	-0.046	-1.23
Never married	-0.20181	-4.40	-0.16634	-3.82
3 years or less since divorce	-0.16275	-1.63		
4 to 10 years since divorce	0.044483	0.62		
11 or more years since divorce	0.075852	1.12		
Partner employed	0.108985	1.79		
Constant	5.527734	24.36	5.752153	20.17
Number of observations	2,723		3,003	
Adjusted R squared	0.2933		0.2996	

Notes: Robust standard errors have been used.

Table A4 - Determinants of Mothers' Report of Child Support Received (\$ per annum) Tobit Model

	<i>Coefficient</i>	<i>T-stat</i>	<i>Mean</i>
Total maintenance received			\$2,504
Age	117.9079	0.35	36.10
Age squared	-0.0262463	-0.01	
Weekly wage income	10.76669	2.53	\$129
Weekly wage income squared	-0.0171471	-2.29	
Child[ren] 0-5 with non-resident parent	1459.731	1.51	23%
1 child 6-17 with non-resident parent	28.24961	0.02	49%
2 children 6-17 with non-resident parent	2841.332	2.05	29%
3 children 6-17 with non-resident parent	3946.734	2.56	11%
Year 10 or less	948.3254	1.20	29%
Year 11	1253.059	1.07	8%
Trade	743.8811	0.91	22%
University degree	826.5417	0.84	15%
Inner regional	-636.3878	-0.98	31%
Outer regional	-2569.619	-2.72	13%
NESB migrant	-1750.216	-1.94	13%
ESB migrant	65.25061	0.07	10%
Partner	-2004.134	-2.91	35%
Never married	-2164.666	-1.65	7%
3 years or less since divorce	2631.656	2.88	23%
4 to 10 years since divorce	2947.252	4.05	46%
Buying home	890.0805	0.96	32%
Renting home	-1709.728	-1.82	56%
Constant	-6591.563	-1.06	
Number of observations	499		
Uncensored observations	264		
Censored observations	235		
Pseudo R2	0.0212		

Notes: Sample is restricted to mothers who have children where the child has a parent living elsewhere and hence could be receiving child support payments.

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