Teenage mothers' income support, education and paid work: *The dynamics of welfare participation* [*]

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Table of Contents

0. Executive Summary

This project investigates the welfare participation and welfare transition (moving off income support receipt) for women who had a first child at an early age (that is, women who experienced teenage motherhood). This report defines teenage mothers as women who had their first child between age 15 and 19 as can be identified using variables reporting the woman's own age and the age of her oldest child. Their welfare participation and transitions are compared with those of mothers who had their first child at an older age (20 years or over).

0.1 Background

Research findings consistently indicate a correlation between having a first child at an early age and poor socioeconomic outcomes, although it is a subject of debate whether teenage parenthood is the causative factor of poor socioeconomic outcomes. Teenage mothers are not particularly common in Australia. Australia's teenage fertility rate of 16.3 babies per 1000 teenage women is low in comparison to countries such as the United States (51.1) and the United Kingdom (29.7) (Morehead and Soriano, 2005). In fact, Australia's teenage fertility rate continues to decline. In 2006, it was at 15.4 babies per 1000 teenage women, the lowest on record (Australian Bureau of Statistics, 2007: p. 18). In other countries, there has also been a decline as reported in 2007 by the Organisation for Economic Co-Operation and Development (OECD). In 2004, teenage birth rates for United States and the United Kingdom were 50.3 and 25.8 babies per 1000 teenage women respectively. The OECD country with the highest teenage birth rate is Mexico at 67.3 per 1000 teenage women (see Table 2.2 in OECD, 2007: p.31).

Teenage mothers make up only one per cent of all single mothers in Australia. Teenage mothers, however, are of concern in relation to income support policies. At three per cent, teenage mothers are overrepresented as recipients of the main income support payment for single mothers (Morehead and Soriano, 2005). Understanding more about the factors influencing welfare participation of (former) teenage mothers will assist in developing strategies to assist them under Welfare to Work.

One way of understanding the factors that influence the welfare participation of (former) teenage mothers is to consider if the higher rate of welfare participation can be

attributed to state dependence. We often observe that individuals who have experienced an event in the past are more likely to experience that event in the future. One explanation is that as a consequence of experiencing an event, preferences, prices or constraints relevant to future choices are altered (state dependence). A second explanation is that individuals may differ in certain unobserved variables (that is, there is unobserved individual heterogeneity persisting over time) which influence their probability of experiencing the event. In the first case, past experience has a genuine behavioural effect in the sense that an otherwise identical individual who has not experienced the event will behave in a different way in the future compared to an individual who has experienced the event. In the second case, however, previous experience appears to be a determinant of future experience solely because it is a proxy for temporally persistent unobservable factors that determine choices.

Distinguishing state dependence from other sources of welfare persistence is important from a policy perspective. If the relationship between past and current participation in a welfare program is mostly due to state dependence, early intervention policies preventing people from entering welfare or assisting people early in the welfare receipt spell may be relatively effective in reducing future utilisation of welfare benefits. However, if the relationship between past and current participation in a welfare program is instead due to persistent individual unobserved heterogeneity, labour market policies may be less effective and the underlying (unobserved) causes of welfare participation need to be addressed. In the latter case, further research is first required to explore what these (currently) unobserved factors might be and how they could be addressed.

0.2 Research questions
The four main objectives of the project are as follows:
- Document the present socio-economic status of women who experienced teenage motherhood including demographic characteristics, health conditions, labour market characteristics, and the rate of welfare participation and transition.
- Investigate which socio-demographic characteristics of women who experienced teenage motherhood are associated with welfare participation.
- Investigate whether the factors that influence welfare participation of women who experienced teenage motherhood differ from the factors that influence welfare participation of mothers in general.

- Examine to what extent observed persistence in welfare participation can be attributed to state dependence.

0.3 The data

The general analysis in this report is based on the Household, Income and Labour Dynamics in Australia (HILDA) Survey, which is a longitudinal data set collecting information on all individuals for a number of randomly selected households on a yearly basis. The sample of analysis contains all women who have ever been a teenage mother and are now aged between 15 and 62. As a result, the sample spans more than 40 years of birth cohorts.

In addition, to explore the occurrence of teenage parenthood amongst mothers of indigenous descent, the unit record information from the Census 2001 is used. Compared to the HILDA, the latter is based on a larger sample (allowing for disaggregation by indigenous background) but contains much fewer background characteristics and is not longitudinal.

0.4 The results from the descriptive analyses

The results in this report, from the first five waves in HILDA and from the Census 2001, show that there are clear correlations between education and a range of other characteristics, and teenage motherhood. Teenage mothers have lower levels of education and tend to leave school early. Although there is a strong correlation between education and teenage motherhood, it seems unlikely that teenage motherhood causes low education outcomes, given the timing of school leaving (usually before the teenagers actually fall pregnant). Therefore, it seems more likely that common factors, which are unobserved in the data, cause both teenage parenthood and low education outcomes. These could include for example, childhood disadvantage or peer groups' influences. Comparing education levels across three birth cohorts of teenage mothers, it is shown that their education outcomes have hardly improved over time, whereas comparing the same birth cohorts of older mothers a strong increase in educational attainment is observed.

There are a number of individual and household characteristics that are associated with teenage motherhood. Census and HILDA data show similar patterns. Overall, the descriptive analysis indicates that teenage mothers are relatively disadvantaged when

compared to the group of older mothers. Teenage mothers were more likely to have lived in a single-parent household in their childhood and to be of indigenous background. They were less likely to have had an employed father and/or mother when they were aged 14. Their current circumstances also look less favourable than those of older mothers. Teenage mothers are less likely to be partnered (and were less likely to be married at the time the first child was born), and they have on average more children. Finally, on a range of health measures (physical and mental), teenage mothers are considerably worse off than the older mothers.

In terms of labour market outcomes, teenage mothers are worse off as well. They are more likely to be unemployed or out of the labour force, as are the teenage mothers' partners for those who are partnered. However, if teenage mothers are working they are more likely to work longer hours. As a result of the low labour force participation, the teenage mother's own income and her partner's income are lower than for older mothers. It is therefore perhaps not surprising that teenage mothers' overall life satisfaction is somewhat lower than for older mothers.

Descriptive analysis based on the Census 2001 shows that women from an indigenous background are clearly worse off than women from the general population, independent of whether they are or have been teenage mothers. However, similarly to the general population, the group of teenage mothers was particularly disadvantaged within the group of indigenous women. Relatively speaking the differences between older and teenage mothers with regard to labour market outcomes were less pronounced than for the general population, but here it is important to highlight that the older mothers within the group of indigenous women were already not well off.

The analyses in this report do not try to answer what causes teenage parenthood. The descriptive analyses only aim at providing a summary of the characteristics of teenage mothers versus older mothers to show in what ways teenage mothers are disadvantaged compared to older mothers. The main question in this report is how teenage parenthood affects welfare participation, and which teenage mothers are most likely to be on welfare at any given time. These results are then compared to the results for women who had their first child at an older age.

From descriptive analyses, it is clear that teenage mothers are much more likely to participate in welfare than older mothers. They are particularly more likely to depend on Disability Support Pension, especially once aged over 40. This may be related to the poor health outcomes evident from a comparison of a number of individual characteristics of teenage mothers to the characteristics of older mothers. Entry rates into welfare are much higher and exit rates are lower, which leads to a larger proportion of teenage mothers depending on some form of income support. The patterns across age are similar in the two groups of mothers: entry into welfare is at its highest when aged between 20 and 29 whereas exit off welfare is at its highest when aged between 20 and 39.

0.5 The results from the multivariate analyses

The multivariate analysis of welfare participation uses dynamic random effects probit modelling, in which the panel data features of the HILDA data are fully taken into account. These results are compared to a more simple pooled probit analysis, which does not take the panel feature of the data into account. We investigate whether the factors that determine welfare participation of women who experienced teenage motherhood differ from the factors that determine welfare participation of older mothers.

Both specifications of the dynamic random effects probit model indicate that accounting for unobserved individual-specific effects and for the endogeneity of the initial condition (that is, welfare participation in the first observed period) are important. In addition, there is a considerable degree of state dependence. That is, all three models indicate that welfare participation in the previous period is extremely important in determining current welfare participation, and it is more important for teenage mothers than for older mothers.

Mothers who spent a larger proportion of time in paid work since leaving full-time education are less likely to participate in welfare. The effect for older mothers is higher than for teenage mothers. Health status is important for teenage mothers but not for older mothers. Compared to good or excellent health, having fair health increases the probability of welfare participation significantly for teenage mothers. Education is important for both groups of mothers, but only a university degree decreases the probability of welfare participation significantly for teenage mothers. The probability of

welfare participation decreases with age for both groups of women, although it is not quite significant for teenage mothers after controlling for other characteristics. Being divorced or separated or having never been married are important for both groups of women, with the effect being much larger for older mothers, possibly due to the higher "quality" of the partners of the older mothers.

1. Introduction

This project investigates the welfare participation and welfare transition (moving off income support receipt) for women who had a first child at an early age (that is, women who experienced teenage motherhood). This report defines teenage mothers as women who had their first child between age 15 and 19 as can be identified using variables regarding the woman's own age and the age of her oldest child. Their welfare participation and transitions are compared with those of mothers who had their first child at an older age (20 years or over).

The general analysis in this report is based on the Household, Income and Labour Dynamics Survey (HILDA), which is a longitudinal data set collecting information on all individuals for a number of randomly selected households on a yearly basis. The survey has a retrospective component, asking about any children individuals have had and their ages, which allows determination of whether or not teenage parenthood occurred among all respondents. In addition, to explore the occurrence of teenage parenthood amongst mothers of indigenous descent, the unit record information from the Census 2001 is used. Compared to the HILDA, the latter is based on a larger sample but contains much fewer background characteristics and is not longitudinal.

Research findings consistently indicate a correlation between having a first child at an early age and poor socioeconomic outcomes, although it is a subject of debate whether teenage parenthood is a causative factor of poor socioeconomic outcomes. Teenage mothers are not particularly common in Australia. Australia's teenage fertility rate of 16.3 babies per 1000 teenage women is low in comparison to countries such as the United States (51.1) and the United Kingdom (29.7) (Morehead and Soriano, 2005). In fact, Australia's teenage fertility rate continues to decline. In 2006, it was at 15.4 babies per 1000 teenage women, the lowest on record (Australian Bureau of Statistics, 2007: p. 18). In other countries, there has also been a decline as reported in 2007 by the Organisation for Economic Co-Operation and Development (OECD). In 2004, teenage birth rates for United States and the United Kingdom were 50.3 and 25.8 babies per 1000 teenage women respectively. The OECD country with the highest teenage birth rate is Mexico at 67.3 per 1000 teenage women (see Table 2.2 in OECD, 2007: p.31).

Teenage mothers make up only one per cent of all single mothers in Australia. Teenage mothers, however, are of concern in relation to income support policies. At three per cent, teenage mothers are overrepresented as recipients of the main income support payment for single mothers (Morehead and Soriano, 2005). In Australia, around two thirds of Parenting Payment Single recipients, and half of Parenting Payment Partnered recipients, had their first child before age 25. Further, around one third of single recipients with a youngest child aged below 6 years had their first child before age 20. This is in contrast to a median age at first birth of around 30 in the overall Australian population. Understanding more about the factors influencing the welfare participation of (former) teenage mothers will assist in developing strategies to assist them under Welfare to Work.

One way of understanding the factors that influence the welfare participation of (former) teenage mothers is to consider if the higher rate of welfare participation can be attributed to state dependence. We often observe that individuals who have experienced an event in the past are more likely to experience that event in the future. One explanation is that as a consequence of experiencing an event, preferences, prices or constraints relevant to future choices are altered (state dependence). A second explanation is that individuals may differ in certain unmeasured variables (that is, there is unobserved individual heterogeneity persisting over time) which influence their probability of experiencing the event. In the first case, past experience has a genuine behavioural effect in the sense that an otherwise identical individual who has not experienced the event will behave in a different way in the future compared to an individual who has experienced the event. In the second case, however, previous experience appears to be a determinant of future experience solely because it is a proxy for temporally persistent unobservable factors that determine choices.

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- Investigate whether the factors that influence welfare participation of women who experienced teenage motherhood differ from the factors that influence welfare participation of mothers in general.
- Examine to what extent observed persistence in welfare participation can be attributed to state dependence.

Distinguishing state dependence from other sources of welfare persistence is important from a policy perspective. If the relationship between past and current participation in a welfare program is mostly due to state dependence, early intervention policies preventing people from entering welfare or assisting people early in the welfare receipt spell may be relatively effective in reducing future utilisation of welfare benefits. However, if the relationship between past and current participation in a welfare program is instead due to persistent individual unobserved heterogeneity, labour market policies may be less effective and the underlying (unobserved) causes of welfare participation need to be addressed.

A dynamic random effects probit model is applied in the multivariate analysis to estimate this state dependence. Here, state dependence, whereby an individual's tendency to be dependent on welfare benefits depends on past participation in welfare, is distinguished from persistence due to time-invariant individual unobserved heterogeneity, which could be an alternative cause of persistent participation in welfare benefits. In addition, this model accounts for the endogeneity of the initial condition, while controlling for differences in observed and unobserved characteristics between individuals. In particular, the approaches suggested by Wooldridge (2005) and Heckman (1981) are implemented to deal with the initial condition problem in a dynamic random effects probit model.

The report proceeds as follows. Section 2 presents a brief review of some recent studies on teenage motherhood and labour market outcome. Section 3 describes the data, with an explanation of the key definition of teenage motherhood. Section 4 presents the results from descriptive analyses. Section 5 describes the multivariate methods used and reports the estimation results. Section 6 concludes.

2. Literature Overview

The long-term labour market consequences of teenage motherhood have been investigated by researchers and policy makers. A general concern with young motherhood is the negative impact on socio-economic outcomes in later years of life, because teenage motherhood is prone to interfere with human capital investment by raising the opportunity cost of time spent in education. Earlier studies were based on linear models, mostly controlling for observed individual characteristics only. Most of these studies have found that early motherhood has a negative effect on educational achievement and later labour market outcomes. However, these results were questioned because of their failure to account for the potential endogeneity of the fertility decision which leads to overestimation of the negative consequences of teenage childbearing on schooling. That is, teenage childbearing and schooling decisions could be influenced by common unobservable individual characteristics.

In the last decade, a number of new studies have used a variety of innovative methods to control for unobserved characteristics influencing selection into teenage motherhood. A number of methods, such as an individual or family level fixed effects model, a simultaneous equation model, a natural experiment, an instrumental variables analysis or a propensity score matching method, have been applied to enable controlling for unobservable individual characteristics and constructing the counterfactual outcome for teenage mothers. Recent studies in the US and UK, using these approaches, provide evidence that the negative effects of teenage motherhood on education and labour market outcomes may be much less than those conventionally estimated (Goodman *et al.*, 2004; Hotz *et al.*, 2005; Ermisch and Pevalin, 2003, 2005).

In a recent Australian study, using a new Australian panel data set of young women (Australian Longitudinal Study of Women's Health), Bradbury (2006) found no evidence for a negative effect of young motherhood on education, labour market outcomes, income or location in Australia. He only found an impact of young motherhood on partnering outcomes. Being a young mother reduces the likelihood of being legally married when aged in her late 20s, and leads to a greater likelihood of being a lone parent around age 30. This is not to say that there may not be a high correlation between teenage parenthood and these outcomes, but that it seems unlikely

that teenage parenthood causes these outcomes. Instead, common factors may make it more likely for some women to become a teenage mother and at the same time make it more likely for these women to have a negative outcome on education, labour market outcome and income.

New approaches have generated a debate in the literature as to whether once individual unobserved characteristics are controlled for, any negative effects caused by early childbearing remain. However, drawing any robust conclusions from this debate has been difficult due to the sensitivity of the results to the empirical methodology chosen and the data set being used. Hoffman *et al.* (1993) note that even though the effects are substantially smaller than conventional estimates, the effects of early childbearing are still negative and significant, even after controlling for unobservable characteristics.

Although there is ongoing debate on the causality of poor labour market outcomes for women who experienced teenage motherhood, the fact that these women have poor socio-economic outcomes and high welfare dependency is not disputed. This project is particularly interested in the difference between the factors associated with welfare participation of women who were teenage mothers and welfare participation of women who became a mother at an older age. This will help to understand the difference in determinants of welfare participation of women who had a first child at an early age from those of women who had their first child at an older age. Based on this understanding, strategies could be developed to assist women who experienced teenage motherhood under Welfare to Work.

3. The data

Two separate sources of data are used for analysis in this study. First, we use five waves (from year 2001 to year 2005) of the Household, Income and Labour Dynamics Survey (HILDA), which is a sample from the general Australian population. Based on the HILDA, current socio-economic conditions of women who experienced teenage motherhood are documented and a multivariate panel model of their welfare participation is estimated. A second data set that is used is the Census 2001 (extended version on the Australian Bureau of Statistics' Remote Access Data Laboratory). This

13

allows documentation of the current socioeconomic conditions of indigenous women who experienced early motherhood.

In section 3.1, the advantages and disadvantages of the two data sets are explored. This is followed by section 3.2 on the definition of teenage motherhood in both data sets.

3.1 Advantages and disadvantages of the HILDA versus the Census

Each of the two data sets to be used in this report has its advantages and disadvantages. As a result, the analysis based on one data set complements the analysis based on the other data set. This subsection outlines the strengths and weaknesses of each data set.

A major advantage of the HILDA data set is that it contains the age of female respondents and the age of any children they have had, independent of whether these children are currently residing in the same household as their mother or not. This enables us to identify all women who once experienced teenage motherhood, independent of how long ago this occurred. Another advantage of these data is that it contains information on whether women are in or out of income support. Combined with the longitudinal nature of the HILDA, this means that we can study the dynamics of welfare participation of these women. However, a disadvantage of these data is the lack of indigenous women in the sample. Due to the relatively small proportion they represent in the population, the HILDA sample size is not sufficient to represent this group adequately. Given their higher propensity of becoming a teenage mother, they are an important group.

This disadvantage has prompted the search for alternative data to complement the analysis of HILDA. The Census 2001 has the major advantage of being a 1 per cent representative sample of the Australian population and therefore contains more households than the HILDA. The larger sample size enables a focus on the indigenous population, although they are still a small group. However, there are several disadvantages to these data compared to the HILDA. The amount of information on each individual is limited, with the data set containing fewer individual and household background characteristics. There are no retrospective questions about the respondent's children, the Census only contains information on children currently living in the

household (similar to the HILDA we cannot identify the adopted from the natural child). As a result, the derivation of the teenage motherhood variable is subject to more errors than in the HILDA. Section 3.2.2 explains how we deal with this in the analysis. Finally, the Census is a cross-sectional survey which does not allow analysis of the dynamic aspects of outcomes. Due to this latter disadvantage, only the descriptive analysis is based on both data sets, whereas the multivariate analyses only use the HILDA.

3.2 Identifying women who gave birth before age 20

3.2.1 HILDA

We identify women who gave birth for the first time before age 20 to generate the main variable required for the analysis using HILDA. Women who had their first child between age 15 and 19 have been identified using variables regarding the woman's own age and the age of her oldest child. Women who are calculated to have had their first child while being younger than 15 years have not been included in our analysis. The HILDA data does not allow us to separate the women's own birth children from their adopted children. Although this potential measurement error is likely to be trivial, we have minimised this error by dropping women who have age differences between them and their first child of less than 15 years.[1]

Women aged over 62 are excluded from the sample, since they were eligible for the Age Pension at the time of the survey. Over the five waves of HILDA, 839 women aged 15 to 62 are identified as women who experienced teenage motherhood. Table 1 presents a few characteristics of teenage mothers. Of this group, most women are first observed in wave 1. At the time of the first observation, the majority of women is aged between 40 and 60 years of age.

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[1] Only 27 women are calculated to have become a mother between 2 and 14 years of age using the formula of subtracting their oldest child's age from their own age.

Table 1. Number of teenage mothers in HILDA

	Number of teenage mothers
Total number of teenage mothers	839
Wave of first observation	
Wave 1	684
Wave 2	41
Wave 3	43
Wave 4	36
Wave 5	35
Age of the teenage mothers at the time of the first observation	
15-19	52
20-29	159
30-39	173
40-49	204
50-59	218
60-62	33

Data source: Authors' own computations based on the HILDA.

3.2.2 Census 2001

Similar to the HILDA, women who had their first child between age 15 and 19 have been identified in the Census using variables regarding the woman's own age and the derived age of her observed oldest child. In particular, the observed age of the oldest child is based on the children's details in the family records, excluding the mother's stepchildren or other related children.

In the Census, the derivation of the mother's age at the birth of her first child is subject to the following errors:

1. The child could be adopted or natural, and this difference is not observed
2. The eldest child could have left the household by the time the 2001 Census was held
3. The first child could have died or it could have been adopted out, an event which would not be observed

We minimise the second error type by restricting our sample to mothers who were aged between 20 and 34 years of age at the time of the Census, since children aged less than 20 years old are very likely to remain living at home. Furthermore, we exclude families who have one or more children absent on the census night from the sample. Subsequently, we identify 7,350 mothers aged between 20 and 34. In this group, 1,058 mothers had their first child at an age between 15 and 19 years old.

Table 2 shows the proportion of teenage mothers according to this definition in the Census by indigenous status. The prevalence of teenage motherhood is clearly much higher for women from an indigenous background, with the prevalence of childlessness in the 20 to 34 year old group being much lower in this group compared to the rest of the Australian population. Appendix Table 1 presents the results for all age groups in HILDA, which confirms that women from an indigenous background are much more likely to be or have been a teenage mother. However, the numbers from the Census cannot be directly compared to the numbers obtained from HILDA, since the selected age group is different.[2] The larger overall proportion of teenage mothers may be at least partly due to the older age groups being included in the HILDA sample. Appendix Tables 2 and 3 show that earlier birth cohorts experienced higher rates of teenage parenthood.

Table 2. Indigenous status of women aged 20 to 34 in the Census 2001

	Teenage mothers	Older mothers	Childless women	All women
Non-indigenous	949	6,111	10,249	17,309
(row percentage)	(5.48)	(35.31)	(59.21)	(100.0)
Indigenous	98	140	153	391
(row percentage)	(25.06)	(35.81)	(39.13)	(100.0)
Not stated	11	41	103	155
(row percentage)	(7.10)	(26.45)	(66.45)	(100.0)
Total	1,058	6,292	10,505	17,855

Data source: Authors' own computations based on the Census.

Ideally, we want to compare an average teenage mother with an average older mother to see whether teenage mothers differ in their characteristics, and how the teenage motherhood experience affected their subsequent wellbeing. By selecting only mothers currently aged between 20 and 34, mothers who have the first child at a relatively young age are overrepresented in the sample of older mothers. As a result, the average "older" mother in this age group had the first child at a younger age than is the case for the whole population of mothers. For example, the percentage of mothers amongst women aged 20 is much smaller than the percentage of mothers amongst women aged 34, or amongst an older group of women. Since women who have their first child at an older age are likely to be different from women who have their first child at a relatively younger age, the differences between the teenage mothers and the older mothers aged

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[2] Restricting the age group in HILDA would result in a very small sample for women from an indigenous background.

17

20-34 may not reflect the differences between the average teenage mothers with the average older mother. Thus, in addition, to see how teenage mothers fare relatively speaking in general, we also compare teenage mothers with childless women aged 20-34. This latter group is perhaps a more suitable counterfactual for this age group of women than the older mothers.

4. Descriptive Analysis

The descriptive analysis aims to document the current socio-economic status of women who experienced teenage childbearing, including the following:

- Tables on school-leaving age and education level
- A table of demographic characteristics, such as marital status, number of children, education, and life satisfaction
- A table of health status variables (for the HILDA data only)
- A table of labour market characteristics, such as employment status, full-time or part-time employment, labour earnings, partner's employment status and income, and job satisfaction
- A table of the rate of welfare participation by age (for the HILDA data only)
- A table of the rate of welfare transition by age (for the HILDA data only)

The descriptive analysis based on the HILDA data is presented in Section 4.1 and the analysis based on the Census data is discussed in Section 4.2.

4.1 The HILDA data

4.1.1 Age of becoming a mother and education

Among the 839 women who had their first child between ages 15 and 19, 23 women became a mother at age 15, 74 women at age 16, 146 women at age 17, 244 women at age 18, and 352 women at age 19. One of the general concerns with teenage motherhood is its interference with the women's school education, such as dropping out of school due to childbearing. Table 3 shows a cross tabulation between the woman's age at which she became a teenage mother and the age at which she left school. This table only shows the time sequence of becoming a mother and leaving school. It does not represent any causality between teenage childbearing and leaving school early.

Table 3. Age of leaving school for the different groups of women

Age left school	Teenage mothers					Teenage mothers total	Older mothers total	Childless women total
	Age became a teenage mother							
	15	16	17	18	19			
Never went	0	0	2	0	0	2	4	0
Still at school	0	0	1	0	0	1	0	411
9-11	2	1	1	2	6	12	22	5
12-14	2	22	28	44	54	150	271	47
15	13	33	66	91	104	307	796	187
16	5	16	34	66	113	234	988	373
17	0	2	7	35	55	99	1157	970
18	1	0	6	6	17	30	665	764
19	0	0	1	0	2	3	74	61
20-23	0	0	0	0	1	1	22	12
missing						0	5	1
total	23	74	146	244	352	839	4004	2831

Data source: Authors' own computations based on the HILDA
Note: the numbers of older mothers and women without children are based on the last observed wave.

The table shows that, typically, women who had a teenage birth left school before becoming a mother, with the most popular school-leaving age being 15. A possible explanation is that this is a reflection of the lifecycle of an older generation. Many women of the older generation had low educational attainment and married early, and therefore, became a mother at a younger age than is common now. To explore this explanation, Table 4 presents the same cross tabulation as Table 3 for a group of women aged 20 to 29, categorised based on the women's ages from the first observed wave. Most of the women, who became a mother at age 18 or 19, left school at age 15 or 16. This school-leaving age may reflect the legal school-leaving age minimum. This differs state by state but currently is around 16 in most states.[3] All other age groups show similar patterns.

Table 4. Age of becoming a teenage mother by age of leaving school for women currently aged 20 to 29

Age group of 20-29						
	Age became a teenage mother					
Age left school	15	16	17	18	19	total
12-14	1	4	1	3	3	12
15	4	8	12	13	16	53
16	2	4	8	20	26	60
17	0	1	1	8	14	24
18	0	0	1	2	5	8
19	0	0	1	0	1	2
total	7	17	24	46	65	159

Data source: Authors' own computations based on the HILDA

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[3] For example, in Western Australia the school-leaving age will change in 2008. It will be at the end of the year when turning 17 years of age (it was 16). In South Australia, the age of compulsory education changed from 15 to 16 years from 1 January 2003.

The birth cohorts span a time frame of more than 40 years, which corresponds to significant changes in community standards particularly in relation to women. Over the 40-year span, access to income support such as Parenting Payment has increased. Since the 1980s, there has also been a strong increase in women's labour force participation which would affect the opportunity cost of foregone education for the younger group of women in the HILDA sample. To investigate how different the birth cohorts are, Appendix Table 2A presents a number of characteristics by birth cohort, which shows there are some differences in the characteristics of teenage mothers depending on which birth cohort they belong to. The proportion of women who became teenage mothers decreased in the more recent birth cohorts (possibly at least partly due to the increased use of effective contraception) as can be seen from the lower proportion of teenage mothers in the younger age groups in Appendix Table 3 and from the last row of Appendix Table 2A. Unfortunately, with the five years of panel data which are available it is impossible to separate the age from the birth cohort effects.

Appendix Table 2A is replicated for older mothers and presented in Appendix Table 2B. It is interesting to compare the change in characteristics of the two groups of mothers over the three birth cohorts. The highest education level attained clearly increases for older mothers in the more recent birth cohorts, in line with the increase in the age of compulsory schooling over time. However, for teenage mothers there is not much development in the education levels across birth cohorts. The only increase observed is in the proportion of teenage mothers who finish Year 12. In each cohort, older mothers are better educated than teenage mothers.

With regard to other characteristics, older mothers are better off as well. They have better marital status outcomes across all cohorts than teenage mothers, being more likely to be married. In addition, the older mother's start in life seems better (more stable). They were more likely to have grown up with both parents, their parents were more likely to have been employed when they were 14 years of age, and their father was less likely to have been unemployed for more than 6 months. For both groups of mothers, the stability in childhood has decreased for more recent birth cohorts. Fewer respondents grew up with both parents and not being employed was more likely for the father but not the mother. The latter is probably driven by the general increase in labour force participation by women in the last few decades.

Returning to Table 3, we observe that only 165 women of the 839 teenage mothers left school at the age of becoming a mother or the year before the event. Very few women (only 16) continue school beyond the age at which they have become a mother. The majority of women left school before they fell pregnant. From this we conclude that although teenage motherhood does not seem to lead to low educational attainment in most cases, teenage motherhood and continued education do not seem to go well together. That is, teenage motherhood does not appear to cause early school leaving directly, since by the time the teenager becomes a mother, she has already left school in most cases. However, there may be factors that contribute both to teenage motherhood and to early school leaving. Examples of unobserved factors, which may affect the probability of school leaving and teenage motherhood, are childhood disadvantage or peer groups' influences. As a result of these common factors, teenage mothers generally have low education levels. The last two columns in Table 3 show that older mothers and women without children are much more likely to stay at school until a later age (and are therefore more likely to finish at least Year 12). In addition to the effect through common factors, there may be a direct effect from early school leaving on teenage motherhood as well, but we cannot explore this with the HILDA data, since insufficient information is available on the activities of the teenagers at and before the time of their school leaving and pregnancy.

The question is whether teenage mothers returned to education later in life. To answer this question, Table 5 tabulates the highest education level obtained in the first and fifth wave of the survey by the age at which the women became mothers for the first time. Table 3 showed that 706 women left school before finishing Year 12 (that is before age 17). Table 5 only reports 577 women who did not finish Year 12, which indicates that additional education must have been undertaken. Some further additional schooling occurs as is evident from the difference between the outcomes in wave 1 compared to those in wave 5. Between those two waves, out of the 839 teenage mothers, an additional 4 women finished a university level education and 41 women finished another post-school qualification.

The younger age group appears to have caught up on schooling to a lesser extent at the start of the survey, which is probably due to the shorter amount of time they have had since becoming a mother to enrol in additional education. Comparing wave 1 to wave 5,

this explanation is supported by the slightly larger extent to which younger women improve their education level over this period compared to the general population. That is, the younger group is still in the process of being educated and trained.

Table 5. Highest education level obtained in waves 1 and 5 by age of starting motherhood

Highest education level	Age became a teenage mother					
	All age groups together					
First wave	15	16	17	18	19	total
University degree	0	0	10	12	13	35
Post-school qualification	6	16	27	40	79	168
Year 12	1	3	6	18	31	59
Less than year12	16	55	103	174	229	577
Last wave						
University degree	1	0	12	12	14	39
Post-school qualification	6	20	34	52	97	209
Year 12	1	3	4	16	26	50
Less than year12	15	51	96	164	215	541
total	23	74	146	244	352	839
Age group of 20-29						
First wave						
University degree	0	0	0	1	2	3
Post-school qualification	1	4	3	8	12	28
Year 12	0	1	3	3	10	17
Less than year12	6	12	18	34	41	111
Last wave						
University degree	0	0	2	1	3	6
Post-school qualification	1	5	4	11	16	37
Year 12	0	1	1	3	8	13
Less than year12	6	11	17	31	38	103
total	7	17	24	46	65	159

Data source: Authors' own computations based on the HILDA
Note: First highest education level shows women's highest education when we first observed them in HILDA. Last highest shows women's highest education among all 5 waves.

This partial catching up with education is confirmed by Table 6, in which school-leaving age is tabulated with the highest education level obtained by the teenage parent in wave 5. Although the majority of women who left school before turning 17 years of age have less than Year 12 as their highest education level, a substantial proportion obtains post-school qualifications, some even a university degree. To a lesser extent this is also true for the younger age group.

Table 6. Highest education level obtained in the fifth wave by the age of leaving school

Age left school	Highest education level in wave 5				
	University degree	Post-school qualification	Year 12	Less than year12	total
Never went	0	0	0	2	2
Still at school	0	0	0	1	1
9-11	0	2	0	10	12
12-14	3	31	0	116	150
15	13	81	2	211	307
16	12	58	6	158	234
17	9	21	29	40	99
18	2	14	11	3	30
19	0	1	2	0	3
20-23	0	1	0	0	1
total	39	209	50	541	839
Age group of 20-29					
12-14	0	3	0	9	12
15	2	13	0	38	53
16	2	11	0	47	60
17	1	6	8	9	24
18	1	3	4	0	8
19	0	1	1	0	2
total	6	37	13	103	159

Data source: Authors' own computations based on the HILDA

4.1.2 Demographic and labour market characteristics

In the descriptive analysis that follows, the data from all five waves are pooled. The current socio-economic status of women who experienced teenage motherhood is documented in a number of tables in this subsection.

The summary statistics of the demographic characteristics of women who experienced teenage motherhood versus women who had their first child at an older age are presented in Table 7. This table shows that women who start motherhood as a teenager have slightly more children, on average, than older mothers have. A smaller proportion of them is legally married and a larger proportion of them has never been married compared to older mothers. In addition, at the time of the first birth, fewer teenage mothers were married and more teenage mothers were still living at their parent's home.

Their educational attainment is lower than for older mothers and a larger proportion of them, compared to the older mothers, lived in a single-parent household (mostly single-mother households) when they were 14 years old. In addition, both their father and mother were less likely to have been employed when they were 14 years old. On all fronts, teenage mothers are likely to have lived in less favourable circumstances

throughout their lives. Similar to the result in Section 3.2.2, the HILDA shows that being from an indigenous background increases the probability of being a teenage mother. Comparing country of birth, we find that women born in Australia and women born outside Australia whose first language was English are slightly more likely to be or have been a teenage mother. Finally, compared to the older mothers, a larger proportion of (former) teenage mothers report a low current life satisfaction indicating that overall they appear to be less satisfied with their circumstances than older mothers.

Table 7. Demographic characteristics for women who experienced teenage childbearing and for older mothers

	Teenage mothers		Older mothers	
	Proportion (%)	(std err)	Proportion (%)	(std err)
Age (mean)	42.20	(0.22)	43.55	(0.08)
Number of children ever had (mean)	2.99	(0.03)	2.36	(0.01)
Number of own resident children (mean)				
all ages together	1.19	(0.03)	1.54	(0.01)
aged 0-4 yrs	0.25	(0.01)	0.34	(0.01)
aged 5-14 yrs	0.57	(0.02)	0.76	(0.01)
aged 15-24 yrs	0.32	(0.01)	0.39	(0.01)
aged 25+ yrs	0.07	(0.01)	0.05	(0.00)
Marital status				
Never married	14.04		3.85	
Legally married	46.90		71.45	
De facto	16.18		8.56	
divorced/separated	19.63		13.58	
Widowed	3.22		2.54	
Missing	0.03		0.01	
Highest Education level				
Year 11 and below	65.65		36.59	
Year 12	7.18		15.32	
Post-school diplomas/certificates	22.49		25.71	
University degree (Bachelor or more)	4.68		22.30	
Undetermined			0.07	
Indigenous origin	8.48		1.58	
Missing	21.61		25.00	
Country of birth				
Australia	78.39		75.00	
Main English speaking	11.15		10.04	
Other	10.46		14.95	
Missing			0.01	
Among those not born in Australia				
English was first language learned	54.29		46.30	
English was not first language learned	45.11		53.57	
Missing	0.60		0.13	
Childhood background				
When you were age 14 Living with				
Both own parents	68.54		83.39	
One of own parents and step parent	7.35		4.66	
Father only	3.38		1.32	
Mother only	11.67		8.25	
other	9.07		2.36	
Missing			0.01	

Table 7. Continued

	Teenage mothers		Older mothers	
	Proportion (%)	(std err)	Proportion (%)	(std err)
While you were growing up, father was				
unemployed for 6 months or more	16.02		11.07	
Employed or unemployed for < 6 months	70.75		83.27	
Missing	13.23		5.66	
When you were age14, father was				
employed	83.52		91.08	
not employed	5.85		3.43	
deceased	3.12		2.90	
No father living with respondent	4.97		1.82	
Missing	2.53		0.78	
When you were age14, mother was				
employed	43.09		48.96	
not employed	50.34		48.72	
deceased	2.08		1.14	
No mother living with respondent	1.49		0.25	
Missing	2.99		0.93	
Left home before the first birth	82.52		98.07	
Missing	0.29		0.26	
Married prior to the first birth	53.20		84.97	
Missing	3.57		1.30	
Life satisfaction				
High 8-10	63.96		67.60	
Middle 5-7	30.61		29.57	
Low 0-4	5.39		2.80	
Missing	0.03		0.04	
Total number of observations	3077		15342	

Data source: Authors' own computations based on the HILDA

Women who experienced teenage childbearing are more likely to experience bad health outcomes in a number of dimensions. Table 8 and Figure 1 show current mental and physical health conditions of women who experienced teenage childbearing. The general self-reported health status of women who experienced teenage motherhood is poorer than the health status of women who became a mother at an older age. The proportion who report poor or fair health is nearly twice as high for teenage mothers, whereas the proportion reporting excellent or very good health is about 1.5 times higher for the older mothers.

Teenage mothers are also clearly more likely to report a long-term condition or to have been affected in their work or other activities due to physical or emotional reasons. In addition, they are more likely to be affected in these activities due to both physical and emotional reasons. That is, 41 per cent of teenage mothers who are affected in their work or other activities due to physical or emotional reasons are affected due to both reasons, whereas this is the case for 28 per cent of older mothers only. Their mental

health is also lower, as indicated by teenage mothers having felt down for a larger proportion of time and having been a happy person for a smaller proportion of time than older mothers.[4] In addition, teenage mothers are more likely to report a long-term health condition in relation to mental health. As can be seen in Appendix Table 4A,[5] teenage mothers are more likely to report a nervous or emotional condition which requires treatment (19.60 per cent) and any mental illness which requires help or supervision (5.15 per cent) than older mothers are (13.67 per cent and 3.74 per cent).

Table 8. Health status of women who experienced teenage childbearing and of older mothers

		Teenage mothers (in %)	*Older mothers (in %)*
Self-reported health			
Excellent		7.25	11.26
Very good		24.57	36.43
Good		33.31	32.06
Fair		18.23	10.20
Poor		5.00	2.24
	Missing	11.63	7.82
Have a long-term health condition		30.81	19.16
Spent less time in work or other activity due to:			
A physical reason		18.75	12.81
	Missing	12.77	7.96
An emotional reason		18.98	11.80
	Missing	12.64	7.93
Both physical and emotional reasons		10.89	5.40
Mental health: Felt down			
All of the time		2.18	1.05
Most of the time		5.56	2.72
A good bit of the time		7.31	5.69
Some of the time		22.59	19.60
A little of the time		34.25	40.49
None of the time		16.74	23.07
	Missing	11.37	7.37
Mental health: Been a happy person			
All of the time		8.51	7.91
Most of the time		40.33	48.19
A good bit of the time		15.60	17.51
Some of the time		16.96	13.82
A little of the time		5.78	4.35
None of the time		1.59	0.96
	Missing	11.21	7.25
Total number of observations		3077	15342

Data source: Authors' own computations based on the HILDA

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[4] This is true with the exception of the proportion who have been a happy person all of the time, which is slightly higher for teenage mothers.
[5] HILDA has no information on diagnosed mental health conditions, but from wave 3 onwards, respondents report the types of long-term health conditions from which they suffer. From these, some long-term mental health conditions can be identified.

Figure 1. Distribution of health measures for teenage mothers and older mothers
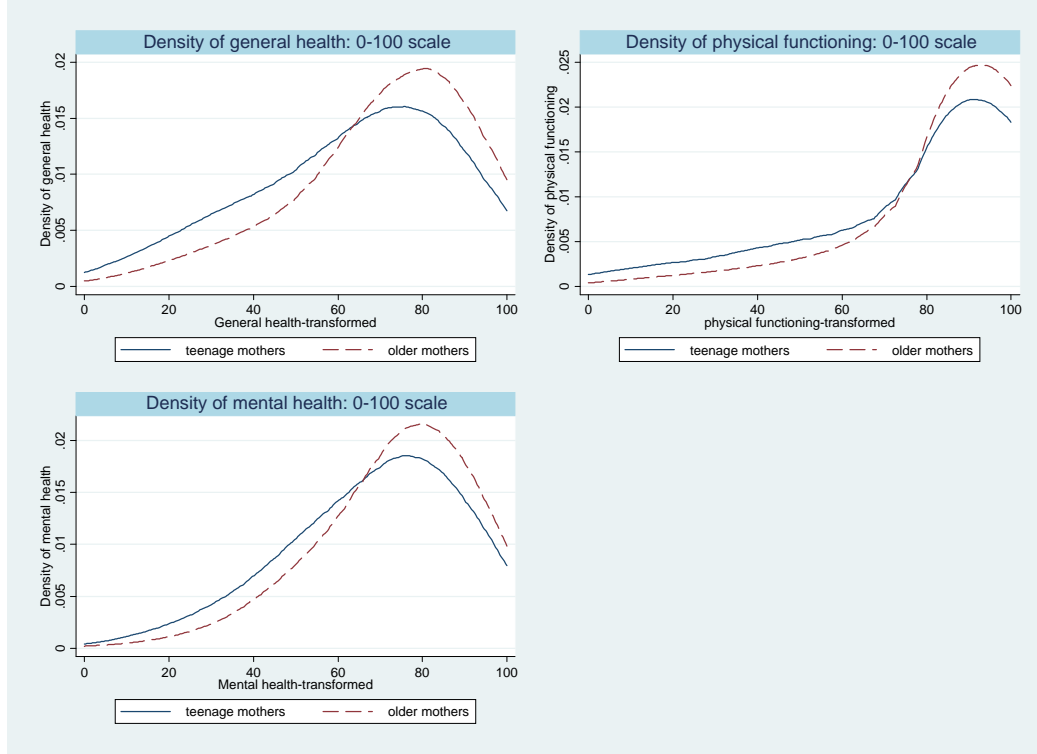
Data source: Authors' own computations based on the HILDA
Note: 0-100 health scales, derived from the survey's health-related questions, are used to produce these graphs.

Three different measures of health are presented in Figure 1, representing general health, physical functioning and mental health for the two groups of mothers. The measures range on a 0 to 100 scale, with 0 being the worst health outcome and 100 being the best health outcome. The graphs clearly show that on all three measures, teenage mothers have a higher probability of being at the low end of the score than the older mothers.

Table 9 presents a range of summary statistics on labour market characteristics for the two groups of mothers. Women, who experienced teenage motherhood, have spent less time in paid work and more time out of the labour force as a proportion of total time since leaving full-time education than older mothers did. Their current labour force participation is also lower. They are more likely to be unemployed or not in the labour force, and they are less likely to work, in particular part time, compared to women who had children at a later age. When working, they work on average more hours and appear somewhat more satisfied with their job than the older mothers. In addition to their own low labour market participation, their spouses' labour market participation rates are also

lower than the participation rates of older mothers' spouses. Just over 26 per cent of spouses of women, who experienced teenage motherhood, are currently not in the labour force. On average, both the teenage mothers' incomes and their spouse's incomes are lower than those of older mothers. On all aspects of labour market outcomes, teenage mothers have worse outcomes than older mothers.

Table 9. Labour market characteristics for women who experienced teenage childbearing and for older mothers

	Teenage mothers		Older mothers	
	Mean	(Std Err)	Mean	(Std Err)
Proportion of years since full-time education				
In paid work	0.51	(0.01)	0.68	(0.00)
Unemployed and looking for work	0.06	(0.00)	0.02	(0.00)
Not working and not looking for work	0.44	(0.01)	0.29	(0.00)
Employment status (%)				
Employed full time	22.91		27.70	
Employed part time	24.05		36.35	
Unemployed	5.91		2.56	
Not in the labour force	47.12		33.39	
Income				
Current weekly gross wages/salaries in all jobs (2005 $)	217.55	(6.39)	344.59	(3.60)
Financial year gross wages/salaries (2005 $)	11982.04	(337.02)	19253.19	(194.28)
For the employed				
Hours per week usually worked in all jobs	31.99	(0.44)	29.81	(0.15)
Job satisfaction (%)				
High 8-10	68.58		66.63	
Middle 5-7	26.30		28.30	
Low 0-4	5.12		5.01	
missing			0.06	
Partner's employment status (%)				
Employed Full time	62.61		77.55	
Employed part time	6.94		8.23	
Unemployed	4.24		2.02	
Not in the labour force	26.20		12.20	
Partner's income				
Current weekly gross wages/salaries in all jobs (2005 $)	563.44	(15.66)	834.03	(8.25)
Financial year gross wages/salaries (2005 $)	30377.11	(841.18)	46180.86	(464.10)
Number of observations	3077		15342	

Data source: Authors' own computations based on the HILDA

4.1.3 Welfare participation

Mothers are classified as welfare participants if they reported a positive amount of welfare payment from any of the following government pensions or allowances: NewStart Allowance, Mature Age (Partner) Allowance, Service Pension (paid by the Department of Veteran Affairs), Disability Support Pension (paid by Centrelink), Wife Pension, Carer Payment, Sickness Allowance, Widow Allowance (Widow B pension)

(paid by Centrelink), Special Benefit, Partner Allowance, Parenting Payment (not included are Family Allowance or Family Tax Benefit), Youth Allowance, and Austudy/Abstudy Payment. This classification of welfare participation is done separately for each wave.

Table 10 shows welfare participation rates of women who experienced teenage motherhood by age groups. On average over the five waves of HILDA, 45.2 per cent of women who experienced teenage motherhood are income support recipients. The statistics are based on pooled data, in which the total number of observations on teenage mothers is 3,077, of which 1,391 women were on welfare at the time of the observation. The women are grouped into six age categories based on their age in each wave. The two youngest age categories have the highest welfare participation rates, probably reflecting the young age of their children. The welfare participation of women who became mothers at an older age is clearly much lower (21.7 per cent) due to their own and their partners' incomes from employment as reported in Table 9. The patterns of participation in welfare across age are similar for the two groups of mothers. The highest participation rate is found for mothers aged between 20 and 29 years of age and the lowest participation rate is found for mothers aged between 40 and 49 years of age.

Table 10. **Welfare participation rates of women who were once teenage mothers and of older mothers by current age**

Age group	Teenage mothers			Older mothers		
	Number of observations	Rate of welfare participation	Std. Err	Number of observations	Rate of welfare participation	Std. Err
15-19	136	.588	.042			
20-29	450	.662	.022	1170	.357	.014
30-39	631	.410	.020	4529	.217	.006
40-49	783	.349	.017	5068	.178	.005
50-59	910	.437	.016	3704	.213	.007
60-62	167	.497	.039	871	.273	.015
Total	3077	.452	.009	15342	.217	.003

Data source: Authors' own computations based on the HILDA

The distribution across the different types of pensions and allowances for welfare recipients are shown in Table 11. For both groups of women, Parenting Payment is the most likely type of welfare payment at 41 per cent for teenage mothers and 46 per cent for older mothers. In both groups, the next most likely payment is Disability Support Pension at 23 per cent for teenage mothers and 15 per cent of older mothers, and the difference between the two groups (7.9 percentage points) is the largest of all types of

payments. Conditional on being on income support, teenage mothers are much more likely to receive Disability Support Pension. There are small differences in the prevalence of the other types of payments, with the largest difference observed for the "don't know" category. Older mothers are more likely to not know the type of payment they receive.

Table 11. Proportion of all welfare recipients in each type of payment (in %)

Type of payment	*Teenage mothers*	*Older mothers*
Don't know	3.52	9.85
NewStart Allowance	7.40	6.51
Mature Age Allowance	0.50	0.48
Mature Age Partner Allowance	0.86	1.05
Service Pension	1.80	1.71
Disability Support Pension	23.15	15.25
Wife Pension	2.95	2.94
Carer Payment	8.84	7.66
Sickness Allowance	0.43	0.45
Widow Allowance	2.66	2.64
Special Benefit	0.29	0.48
Partner Allowance	7.62	6.93
Parenting Payment	40.91	46.26
Youth Allowance	1.73	0.42
Austudy/Abstudy Payment	2.59	1.14
Total proportion on income support	45.2	21.7

Data source: Authors' own computations based on the HILDA

Note: The reported percentages do not add up to 100 per cent, since about 5 per cent of teenage mothers and 4 per cent of older mothers report receiving more than one type of payment. Although this is impossible according to the rules, we have no way of determining which payment is actually received.

Teenage mothers are about three times more likely to be on Disability Support Pension compared to older mothers (10.46 per cent versus 3.31 per cent).[6] The first two columns of Table 12 present the distribution for both groups of mothers across the age categories. The distribution is somewhat different, but the general pattern is very similar with a larger proportion of Disability Support Pension recipients being in the higher age groups in both groups. The last two columns present the proportion of mothers on Disability Support Pension by age group. The proportion on Disability Support Pension increases with age in both groups and at all ages (except between 20 and 29 years of age) are teenage mothers more likely to receive Disability Support Pension than older mothers. However, when the mother is aged between 40 and 49, the difference in the

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[6] Among all women aged between 15 and 62, 28.47 per cent of DSP recipients are women who experienced teenage motherhood, whereas 44.92 per cent of DSP recipients are older mothers. Although teenage mothers are a small group in the general population, they are a substantial proportion of all female DSP recipients since they are overrepresented in this category.

proportion on Disability Support Pension is at its largest in relative terms. That is, teenage mothers in this age category are about 5 times more likely to be on Disability Support Pension than older mothers. In absolute terms, the difference between the two groups remains very large for mothers over 49.

Table 12. Distribution of Disability Support Pension (DSP) receipt across age groups (in %)

	Age distribution of DSP recipients		Proportion of DSP recipients among each group of mothers per age group	
Age group	Teenage mothers	Older mothers	Teenage mothers	Older mothers
<=19	0	0	0	0
20-29	2.17	4.13	1.56	1.79
30-39	7.76	13.78	3.96	1.55
40-49	27.02	21.85	11.11	2.19
50-59	52.17	47.05	18.46	6.45
60-62	10.87	13.19	20.96	7.69
Total	100	100	10.46	3.31

Data source: Authors' own computations based on the HILDA

The information in the HILDA on DSP receipt can be crosstabulated with reported health to investigate the correlation between the two variables. Table 13 shows that among teenage mothers who report long-term health conditions, 29.64 per cent are current DSP recipients. This indicates that the presence of a self-reported long-term health condition in most cases does not lead to DSP receipt. However, the majority of mothers who receive DSP report having a long-term health condition.

Table 13. Distribution of Disability Support Pension (DSP) receipt across long-term health condition (in %)

For all waves	Long-term health condition					
	Teenage mothers			Older mothers		
DSP recipients	yes	no	total	yes	no	total
yes	29.64	1.93	10.46	15.21	0.49	3.31
no	37.45	33.54	34.74	23.48	17.61	18.44
missing (not asked)	32.91	64.54	54.79	61.31	82.26	78.25
Total (%)	100	100	100	100	100	100
Total number of observations	948	2129	3077	2939	12403	15342

Data source: Authors' own computations based on the HILDA

Certain types of disability, conditional on reporting a long-term health condition, can be identified from Appendix Tables 4A and 4B. In general, teenage mothers are more likely to suffer from any of the types of long-term health conditions than older mothers are. In addition, Appendix Table 5 shows that teenage mothers are more likely to have multiple long-term health conditions than older mothers are. Appendix Tables 4B and 5

also show that DSP recipients are much more likely to suffer from any of the types of long-term health conditions than other women and that they are much more likely to suffer from 3 or more conditions at the same time. Differences in the prevalence of long-term health conditions between teenage and older mothers are less pronounced for Disability Support Pension recipients.

4.1.4 Welfare transitions

Welfare transitions have been defined based on the welfare participation in two consecutive waves. A woman's welfare transition is counted as an entry into welfare if she is a participant in wave *t* and a nonparticipant in the previous wave *t-1*. Conversely, a woman's welfare transition is counted as an exit from welfare if she is a non-participant in wave *t* and a participant in the previous wave *t-1*.

The top panel of Table 14 presents the annual rates of welfare entry and exit for women who experienced teenage childbearing, disaggregated by age group. Over the five waves of HILDA, 139 entries (7 of which are a second entry by a woman who had entered before in the 5-year timeframe) and 153 exits (8 of which are a second exit by a woman who had exited before in the 5-year timeframe) are observed among the 839 women who experienced teenage motherhood. The average entry rate is 12.43 per cent and the average exit rate is 16.65 per cent for the teenage mother group.

Table 14. **Welfare transition rates of women who were once teenage mothers and mothers who had their first child at an older age**

| Age group | Teenage mothers | | | |
	Average Rate of Entry	Std. Err	Average Rate of Exit	Std. Err
15-19	.486	.086	.162	.061
20-29	.348	.051	.204	.029
30-39	.121	.020	.207	.031
40-49	.072	.014	.168	.027
50-59	.090	.015	.082	.016
60-61	.136	.052	.077	.033
Total	.124	.010	.166	.012
Age group	Older mothers			
20-29	.141	.015	.289	.028
30-39	.076	.005	.302	.017
40-49	.045	.004	.267	.017
50-59	.042	.004	.138	.015
60-61	.071	.012	.129	.027
Total	.061	.003	.252	.009

Data source: Authors' own computations based on the HILDA

Transition rates are quite different across age groups. Women aged under 30 have substantially higher rates of entry than the other age groups. The exit rates are distributed more evenly across all age groups. For women aged between 20 and 39, the exit rate is 4 percentage points higher than the average exit rate over all age groups. We have excluded the 62 year olds from the oldest group, since we could not properly account for exits due to eligibility for Age Pension. As a result, the women aged 62 showed a very high exit rate even after excluding those who are observed to exit to Age Pension. Although a large proportion of women did not report Age Pension receipt, we believe that a large proportion of those exiting were leaving for the Age Pension.

The welfare transitions of those who became mothers at an older age are shown in the bottom panel of Table 14. The average entry rate is 6.05 per cent and the average exit rate is 25.21 per cent. In general, for all age groups, this group's entry rates are lower and exit rates are higher than those of teenage childbearing mothers, resulting in a smaller proportion depending on income support.

The patterns of entry and exit over all age groups are similar in the two groups of mothers. Women aged between 20 and 29 are most likely to enter welfare and women aged between 20 and 39 are most likely to exit from welfare possibly due to children growing up and/or due to no longer being eligible for Parenting Payment which is the dominant payment for all mothers.

4.2 Census 2001 (extended version)

4.2.1 Age of becoming a mother and education

Among the 1,058 women, aged between 20 and 34 in the Census 2001, who had their first child between ages 15 and 19, 27 women became a mother at age 15, 65 women at age 16, 176 women at age 17, 304 women at age 18, and 486 women at age 19. The distribution across the age at birth is similar to that found in the HILDA for the teenage mothers currently aged 20 to 29 years and for all age groups together (Tables 4 and 3 respectively). As mentioned in Section 3.2.2, a disproportionate number of teenage mothers are of indigenous background. In addition, this group of teenage parents has their child at an earlier age on average, compared to other teenage mothers.

To examine the potential interference with the women's school education, such as dropping out of school due to childbearing, Table 15 shows a cross tabulation between the woman's age at which she became a teenage mother and the age at which she left school. As before, this table only shows the time sequence of becoming a mother and leaving school. It does not represent any causality between teenage childbearing and leaving school early.

Table 15.   Age at birth of first child and highest school attainment (women aged 20-34)

Highest level of schooling completed	Teenage mothers by age at birth of first child						Older mothers	Childless women	All Women
	15	16	17	18	19	Total			
All women									
Still at school	0	1	2	3	1	7	13	116	136
Did not go to school	2	6	15	21	14	58	131	136	325
Year 9 or equivalent (15)	5	17	31	48	55	156	286	171	613
Year 10 or equivalent (16)	7	26	79	127	189	428	1,600	1,161	3,189
Year 11 or equivalent (17)	4	6	22	60	76	168	935	857	1,960
Year 12 or equivalent (18)	7	6	18	32	126	189	3,201	7,866	11,256
Not stated	2	3	9	13	25	52	126	198	376
Total	27	65	176	304	486	1058	6,292	10,505	17,855
Indigenous women									
Still at school	0	0	0	0	0	0	0	1	1
Did not go to school	0	1	2	4	3	10	9	14	33
Year 9 or equivalent (15)	1	1	4	3	7	16	13	13	42
Year 10 or equivalent (16)	2	5	11	9	11	38	42	36	116
Year 11 or equivalent (17)	1	0	1	8	7	17	32	17	66
Year 12 or equivalent (18)	0	0	0	0	7	7	35	61	103
Not stated	1	0	1	3	5	10	9	11	30
Total	5	7	19	27	40	98	140	153	391

Data source: Authors' own calculations based on the Census 2001 extended version

The Census 2001 only provides the highest level of schooling completed, including all students who left school for the first time at a young age and then returned to school later. Hence, we cannot infer accurately whether the experience of having the first child during the teenage years is before or after leaving school and we will underestimate the proportion that left school (temporarily) before becoming pregnant. Keeping this in mind, we find that similar to Table 3 based on the HILDA data, Table 15 indicates that most teenage mothers had already left school before becoming pregnant. This is even more the case for teenage mothers of indigenous background.

Comparing the highest level of schooling obtained across the different groups of women, clear differences are observed. Overall, teenage mothers obtained less schooling than older mothers, with the lowest categories of education clearly overrepresented compared to the other women in their age group. In addition, among teenage mothers, the younger the age at which they became mothers, the lower the level of schooling these teenage mothers have, although it seems to remain the case that school leaving precedes pregnancy.

Women from an indigenous background are less likely to complete Year 12 than other women. Completing Year 12 becomes even less likely for teenage mothers of indigenous background. This drop in educational attainment for teenage mothers is larger in relative terms for indigenous women than for other women (3.5 times less likely versus 2.8 times less likely). Noteworthy is that both in the indigenous group and in the overall population there are a considerable number of teenage mothers as well as older mothers who have Year 10 as the highest schooling. It might relate to the decision of taking up apprenticeships or similar training. Therefore, we have further examined the post-school attainment by the highest level of schooling in Table 16.

The post-school attainment for indigenous mothers who completed Year 11 or less schooling is poor. The majority of mothers did not obtain any further post-school qualifications after leaving school before Year 12, and of those who finished Year 12 only a small proportion has any form of post-school qualifications. Education levels for those indigenous mothers who had children at an older age were somewhat better, and compared to the older mothers, those who had no children had a similar proportion with post-school qualifications. The education levels of women in general were much higher, although teenage mothers have clearly fewer post-school qualifications than the other groups. It is interesting to note for the general population, in this age group from 20 to 34 years, that women without children were also better educated than older mothers, whereas this result was not found for the indigenous women.

Table 16. **Post-school attainment by level of highest schooling obtained (number of observations in the sample)**

	Diploma/ higher	Certificates	Not stated	None	Total
Teenage mothers	*52*	*99*	*75*	*832*	*1,058*
Still at school	2	0	0	5	7
Did not go to school	0	1	4	53	58
Year 9 or equivalent	2	12	10	132	156
Year 10 or equivalent	15	44	13	356	428
Year 11 or equivalent	4	18	4	142	168
Year 12 or equivalent	28	23	6	132	189
Not stated	1	1	38	12	52
Older mothers	*1,424*	*984*	*288*	*3,596*	*6,292*
Still at school	3	1	0	9	13
Did not go to school	1	3	4	123	131
Year 9 or equivalent	5	32	10	239	286
Year 10 or equivalent	82	324	68	1126	1,600
Year 11 or equivalent	61	173	37	664	935
Year 12 or equivalent	1249	443	106	1403	3201
Not stated	23	8	63	32	126
Childless women	*3,782*	*1,600*	*497*	*4,626*	*10,505*
Still at school	25	5	9	77	116
Did not go to school	5	5	12	114	136
Year 9 or equivalent	7	26	10	128	171
Year 10 or equivalent	67	296	72	726	1,161
Year 11 or equivalent	74	231	47	505	857
Year 12 or equivalent	3570	1031	238	3027	7,866
Not stated	34	6	109	49	198
All Women	**5,258**	**2,683**	**860**	**9,054**	**17,855**
Indigenous women	Diploma/ higher	Certificates	Not stated	None	Total
Teenage mothers	*1*	*5*	*10*	*82*	*98*
Still at school	0	0	0	0	0
Did not go to school	0	0	0	10	10
Year 9 or equivalent	0	1	1	14	16
Year 10 or equivalent	1	3	0	34	38
Year 11 or equivalent	0	0	0	17	17
Year 12 or equivalent	0	1	1	5	7
Not stated	0	0	8	2	10
Older mothers	*13*	*22*	*12*	*93*	*140*
Still at school	0	0	0	0	0
Did not go to school	0	2	0	7	9
Year 9 or equivalent	0	2	0	11	13
Year 10 or equivalent	3	7	2	30	42
Year 11 or equivalent	4	4	2	22	32
Year 12 or equivalent	6	7	1	21	35
Not stated	0	0	7	2	9
Childless women	*9*	*24*	*20*	*100*	*153*
Still at school	0	0	1	0	1
Did not go to school	0	0	1	13	14
Year 9 or equivalent	0	1	2	10	13
Year 10 or equivalent	1	7	4	24	36
Year 11 or equivalent	0	4	0	13	17
Year 12 or equivalent	8	12	5	36	61
Not stated	0	0	7	4	11
All indigenous women	**23**	**51**	**42**	**275**	**391**

Data source: Authors' own calculations based on the Census 2001 extended version

36

4.2.2 Demographic and labour market characteristics

Similar variables as in Section 4.1.2, which uses the HILDA data, have been summarised in Table 17 using the Census data. However, a direct comparison is not possible due to only selecting women aged between 20 and 34 in the sample of analysis in this section. Nevertheless, relative differences in characteristics between the different groups of women can be compared.

The summary statistics of the demographic characteristics of women who experienced teenage motherhood versus women who had their first child at an older age or who had no children are presented in Table 17. This table shows that women who start motherhood as a teenager have slightly more children, on average, than older mothers have. A smaller proportion of them is legally married and a larger proportion of them has never been married compared to older mothers, whereas compared to single women without children a smaller proportion of teenage mothers has never been married. The difference in marital status between older mothers and teenage mothers is more pronounced for the general population than for indigenous women. The educational attainment of teenage mothers is lower than for older mothers, which for the general population is again lower than the educational attainment of women without children. For indigenous women, the latter difference is not so clear-cut, with fewer childless women having a diploma or higher than older mothers, but more childless women having a certificate or Year 12.

Teenage mothers are much more likely to be a single parent than the older mothers, and much less likely to be married to an employed partner. Non-indigenous teenage mothers are less likely to live in a household with at least one employed person than older mothers are; no difference is observed for indigenous women. Women without children are more likely than older mothers to live in a household with at least one employed person, and this is the case for the general population of women as well as women from an indigenous background. As a result, family income is highest for the women without children followed by the older mothers. Finally, teenage mothers are also much more likely to rent a home from the government, with these percentages being much higher for all indigenous women across the three subgroups compared to the general population. Similar to the results obtained from the HILDA, it appears that on all fronts, teenage mothers live in less favourable circumstances.

Table 17. Demographic characteristics for women who experienced teenage childbearing, for older mothers and for women without children (aged 20-34)

	Indigenous Women			All Women		
	Teenage mothers	Older mothers	Childless women	Teenage mothers	Older mothers	Childless women
Age (mean)	26.58	29.04	25.73	27.13	29.90	25.70
Country of birth/indigenous status (%)						
Non-indigenous, Australian born	-	-	-	71.93	75.59	75.92
Major English Speaking migrant	-	-	-	6.10	6.72	7.18
Non-English Speaking migrant	-	-	-	12.70	15.50	15.45
Indigenous	-	-	-	9.30	2.23	1.46
Language spoken at home (%)						
English	-	-	-	83.70	81.42	80.54
Other	-	-	-	16.40	18.60	19.46
Number of own resident children (mean)						
all ages together	2.79	2.09	-	2.38	1.81	-
aged 0-4 yrs	1.18	1.15	-	0.81	1.07	-
aged 5-14 yrs	1.54	0.94	-	1.46	0.73	-
aged 15-24 yrs	0.06	0.00	-	0.11	0.00	-
Marital status (%)						
Legally married	18.37	26.43	9.80	39.22	69.91	21.09
De facto	22.45	28.57	19.61	18.81	11.68	16.76
Divorced/separated	7.14	2.86	7.84	9.83	7.14	3.26
Widowed	0.00	2.14	0.65	0.47	0.24	0.12
Never married	52.04	40.00	62.09	31.66	11.03	58.76
Highest Education level (%)						
Diploma/higher	1.02	9.29	5.88	4.73	22.58	35.76
Certificates	15.31	24.29	28.10	16.45	20.20	19.83
Year 12	5.10	15.00	23.53	12.48	22.30	28.81
Year 11 and below	76.53	50.00	39.22	64.56	34.20	14.02
Undetermined	2.04	1.43	3.27	1.80	0.72	1.57
No. of employed persons in household (%)						
0 persons	47.96	47.14	28.76	38.19	16.10	8.13
1 person	37.76	27.86	18.95	38.09	41.50	23.49
2 persons	10.20	20.00	33.99	20.23	40.03	46.91
3+ persons	3.06	4.29	18.3	4.52	2.37	21.47
Home type (%)						
Home Owner :fully own	2.04	6.43	8.50	7.18	14.67	24.18
Home Owner :purchasing	5.10	19.29	18.30	25.52	46.28	30.40
Private Renter	23.47	22.86	27.45	39.04	27.05	37.07
Government Renter	62.24	42.86	32.68	20.89	5.34	2.46
Other Renter	3.06	5.00	8.50	2.46	3.27	2.94
Not Stated	4.10	3.57	4.58	4.91	3.39	2.96
Household type (%)						
One family	94.90	90.71	71.90	96.31	96.36	71.30
Two or three families	5.10	9.29	5.23	3.69	3.64	2.24
Lone person household	0.00	0.00	10.46	0.00	0.00	11.78
Group household	0.00	0.00	12.42	0.00	0.00	14.68

Table 17. Continued

	Indigenous Women			All Women		
	Teenage mothers	*Older mothers*	*Childless women*	*Teenage mothers*	*Older mothers*	*Childless women*
Family type (%)(a)						
Single women: employed	15.31	10.71	30.07	11.81	6.52	47.95
Single women: not employed	40.82	33.57	35.95	28.92	11.70	13.51
partner-employed, women employed	9.18	19.29	22.22	18.71	39.80	30.00
partner-employed, women not employed	18.37	12.86	2.61	25.33	33.03	3.01
partner- not employed, women employed	2.04	5.00	0.65	1.98	2.24	1.54
partner and women are not employed	10.20	17.14	3.27	10.87	5.86	1.44
Not able to derive	4.08	1.43	5.23	2.36	0.86	2.56
Family weekly income (%)						
$199 or less	8.16	8.57	1.31	3.21	2.19	3.21
$200-$299	6.12	7.86	1.96	6.24	2.81	0.36
$300-$399	19.39	18.57	5.23	15.69	8.60	1.69
$400-$499	16.33	9.29	1.96	11.81	6.58	1.91
$500-$599	8.16	10.00	5.23	9.92	6.58	1.61
$600-$699	8.16	5.71	4.58	8.98	7.84	2.88
$700-$799	4.08	5.00	7.19	6.62	6.98	2.56
$800-$999	8.16	7.14	8.50	11.06	15.85	7.01
$1,000- or more	9.18	20.00	26.80	18.43	38.49	46.62
Not stated	12.24	7.86	5.88	8.03	4.08	5.45
Not applicable (b)	0.00	0.00	31.37	0.00	0.00	29.16
Total number of observations	98	140	153	1,058	6,292	10,505

Data source: Authors' own calculations based on the Census 2001 extended version
Notes: (a) Derived from the marital status, employment status of women and their partners.
(b) Family incomes for individuals who are single or live in group households are not calculated.

Table 18 presents a range of summary statistics on labour market characteristics for the two groups of mothers and childless women. Labour force participation of women who experienced teenage motherhood is lower than the participation of older mothers. This effect is even more pronounced when teenage mothers are compared to childless women. Teenage mothers are more likely to be unemployed or not in the labour force, and they are less likely to work, in particular part time (unless they are from an indigenous background), compared to women who had children at a later age. When working, they are more likely to work more hours than the older mothers (except for the indigenous women). Women without children work the most hours, both amongst women of indigenous descent and other women. In addition to teenage mothers' own low labour market participation, their spouses' labour market participation rates are also lower than the participation rates of older mothers' spouses, with the spouses working fewer hours if working (except, again, for the indigenous women). Just over 22 per cent of spouses of women, who experienced teenage motherhood, are currently not in labour force.

Table 18. Labour market characteristics for women who experienced teenage childbearing, for older mothers and for other women (aged 20-34).

	Indigenous women			All women		
	Teenage mothers	*Older mothers*	*Childless Women*	*Teenage mothers*	*Older mothers*	*Childless women*
Employment status (%)						
Employed Full time	3.06	15.00	28.76	12.85	14.80	55.82
Employed part time	23.47	19.29	20.26	18.90	32.68	23.29
Employed: hours are not stated	0.00	0.71	4.58	0.85	1.16	1.97
Unemployed	5.10	9.29	14.38	7.09	3.96	5.46
Not in the labour force	64.29	54.29	28.10	58.32	46.76	12.71
Not stated	4.08	1.43	3.92	1.98	0.65	0.74
Hours worked per week						
None	7.69	4.08	2.44	5.51	7.55	2.85
1-15 hours	38.46	22.45	9.76	20.00	23.99	9.00
16-24 hours	23.08	14.29	12.2	17.10	21.44	6.84
25-34 hours	19.23	14.29	13.41	15.36	14.22	10.03
35-39 hours	3.85	22.45	29.27	19.13	11.86	22.59
40 or more hours	7.70	20.40	24.39	20.29	18.56	46.25
Not stated	0.00	2.04	8.54	2.61	2.39	2.430
Weekly income of employed women						
$119 or less	3.85	2.04	3.66	2.32	7.06	3.01
$120-$199	7.69	8.16	17.07	3.77	8.63	4.91
$200-$299	15.38	6.12	7.32	11.59	14.05	6.66
$300-$399	30.77	26.53	19.51	22.90	15.00	10.25
$400-$499	23.08	10.20	15.85	20.29	15.07	13.42
$500-$599	7.69	18.37	13.41	18.84	12.55	15.60
$600-$699	3.85	8.16	8.54	6.67	8.33	13.14
$700-$799	0.00	6.12	7.32	4.35	5.59	9.93
$800-$999	7.69	10.20	4.88	4.64	6.76	11.31
$1,000- or more	0.00	4.08	0.00	3.19	5.42	10.01
Not stated	0.00	0.00	2.44	1.45	1.54	1.77
Partner's labour market variables						
Partner's employment status (%)						
Employed Full time	40.00	41.56	56.82	58.56	75.47	75.97
Employed part time	22.50	14.29	25.00	14.36	11.32	11.91
Employed: hours are not stated	5.00	2.60	4.55	3.43	2.86	1.83
Unemployed	2.50	12.99	2.27	10.11	4.31	3.8
Not in the labour force	27.50	28.57	11.36	12.07	5.69	4.32
Not stated	2.50	0.00	0.00	1.47	0.35	2.18
Hours worked per week (employed						
None	0.00	4.44	2.63	2.35	3.52	3.25
1-15 hours	7.41	11.11	7.89	4.27	2.37	2.51
16-24 hours	18.52	4.44	5.26	4.70	2.56	3.11
25-34 hours	7.41	4.44	13.16	7.48	4.17	4.41
35-39 hours	18.52	15.56	18.42	17.95	15.58	16.5
40 or more hours	40.74	55.56	47.37	58.76	68.60	68.17
Not stated	7.41	4.44	5.26	4.49	3.19	2.04
Employed partner's weekly income						
$119 or less	0.00	2.22	0.00	1.07	1.22	1.15
$120-$199	11.11	8.89	15.79	2.56	1.33	1.09
$200-$299	18.52	4.44	2.63	6.41	2.39	2.33
$300-$399	25.93	6.67	10.53	9.40	4.24	3.43
$400-$499	7.41	6.67	13.16	11.32	8.56	8.50
$500-$599	11.11	4.44	7.89	20.09	12.95	12.70
$600-$699	7.41	13.33	15.79	12.18	10.78	12.10
$700-$799	0.00	15.56	10.53	8.55	12.21	11.66
$800-$999	0.00	17.78	7.89	14.10	16.78	18.20
$1,000- or more	11.11	15.56	15.79	12.39	27.78	27.19
Not stated	7.41	4.44	0.00	1.92	1.76	1.64
Number of observations	98	140	153	1,058	6,292	10,505

Data source: Authors' own calculations based on the Census 2001 extended version.

On average, both the teenage mothers' incomes and their spouse's incomes are lower than those of older mothers. Similar to the results from the HILDA data, we conclude that on all aspects of labour market outcomes, teenage mothers have worse outcomes than older mothers, although the difference appears less pronounced for women of indigenous descent. However, it should be noted that indigenous women are much worse off with respect to labour market outcomes than the general population for all three types of women.

5. Multivariate analysis

A random effects transition probit model has been estimated, following Bruce (2000), to estimate welfare exit conditional on changes in women's lives. However, the resulting estimates are not reliable and unsuitable for presentation. This is due to the number of observations on the occurrence of welfare exits conditional on socio-demographic changes being insufficient to produce reliable results and precise parameter estimates. Therefore, we only present results from the dynamic random effects probit model here.

First, the dynamic random effects probit model is described in Section 5.1, followed by the estimation results based on this model using the HILDA data in Section 5.2.

5.1 Methodology: Dynamic random effects probit model

A dynamic random effects probit model is applied to estimate state dependence, which is defined as the extent to which the participation in welfare in one year increases the probability of participating in welfare in the following year. The model, to be estimated here, accounts for the endogeneity of the initial conditions, while controlling for differences in observed and unobserved characteristics between individuals (observed and unobserved heterogeneity). To be specific, the approaches suggested by Wooldridge (2005) and Heckman (1981) are implemented to deal with the initial conditions problem in the dynamic random effects probit model.

In its most general form, the dynamic empirical model for welfare participation can be written as:

$$y_{it}^{*} = \gamma y_{it-1} + \beta' X_{it} + v_{it} \qquad (1)$$

$$y_{it} = \begin{cases} 1 \text{ if } y_{it}^{*} \geq 0 \\ 0 \text{ otherwise} \end{cases}$$

where y_{it}^* is the underlying latent variable for observed welfare participation (y_{it}). X_{it} is a vector of observed variables which may affect welfare participation (y_{it}) but which are uncorrelated with the error term v_{it}. In the dynamic model, γ (representing state dependence) is a parameter to be estimated, while static models restrict γ to be equal to 0. Repeated observations for a given group of individuals over time allow us to construct a model in which individuals may differ in their propensity to participate in welfare. Such individual (unobserved) heterogeneity is specified in estimation by decomposing the error term v_{it} into two separate terms: a constant component for each individual and a time-varying component. This is written as:

$$v_{it} = \alpha_i + u_{it} \qquad (2)$$

where α_i is an individual-specific and time-invariant random component, assumed to be normally distributed, having zero mean and variance σ_α^2, and u_{it} is a time- and individual-specific disturbance, assumed to be a serially independently distributed standard normal, which is uncorrelated with X_{it} and α_i.

Thus, we estimate a random effects dynamic probit model of welfare participation (y_{it}), which is specified as:

$$y_{it}^* = \gamma y_{it-1} + \beta' X_{it} + \alpha_i + u_{it} \qquad (3)$$

$$y_{it} = \begin{cases} 1 \text{ if } y_{it}^* \geq 0 \\ 0 \text{ otherwise} \end{cases}$$

Since the total error term ($v_{it} = \alpha_i + u_{it}$) of the model is correlated over time due to the individual-specific time-invariant α_i component, we have:

$$\rho = Corr(v_{it}, v_{is}) = \frac{\sigma_\alpha^2}{\sigma_\alpha^2 + \sigma_u^2} \qquad t, s = 2,...,T \quad \text{and} \quad t \neq s \qquad (4)$$

where ρ measures the proportion of the total variance contributed by the individual–level (or panel-level) variance component. Based on this statistic, a likelihood ratio test can be constructed to test the null hypothesis that $\rho = 0$, which tests for the presence of unobserved heterogeneity. If ρ is zero, the panel-level variance component is not important. That is, the panel estimator would not be different from the pooled estimator, in which no account is taken of individual-specific unobserved differences. In addition,

42

although the random effects model assumes α_i to be uncorrelated with X_{it}, we also add $\bar{x}_i$, which is the average of the observations on the exogenous variables over the sample period, as regressors to the model in the actual estimation (Mundlak, 1978). This is aimed at controlling for the potential correlation between α_i and X_{it}.

We now turn to a potential source of bias arising from the initial conditions problem. The presence of state dependence in the form of a lagged dependent variable y_{it-1} introduces what is called an initial conditions problem. This is caused by our lack of knowledge of the data-generating process governing the initial welfare participation outcome. If the individual initial conditions are correlated with the α_i, the estimator will be inconsistent and tend to overestimate γ (that is, overstate the extent of state dependence). Heckman (1981) therefore suggested that the initial welfare participation states are approximated by a reduced form equation:

$$y_{i1}^* = \pi'z_{i1} + \eta_i \tag{5}$$

where z_{i1} contains information from the first wave; and η_i is the standard normal distribution and correlated with α_i, but uncorrelated with u_{it} for $t \geq 2$. Using an orthogonal projection, the latter can be written as $\eta_i = \theta\alpha_i + u_{i1}$, ($\theta > 0$) with α_i and u_{i1} independent of one another. Consistent estimates can then be estimated by jointly estimating the approximate reduced form probability of welfare participation for the initial state of the sample (5) and the latent dynamic welfare participation (3), using maximum likelihood. In the next section, only the results for (3) are presented since (5) is just an auxiliary equation. The only parameter of interest arising from (5) is θ, its significance indicating whether there is endogeneity of the initial conditions. Therefore, θ is included in the discussion of the results in the next section.

Wooldridge (2005) suggested an alternative approach to deal with the initial conditions problem. Rather than approximating the conditional distribution of the initial condition, Wooldridge (2005) suggests modelling the distribution of the unobserved effect (α_i) conditional on the initial value (y_{i1}) and any exogenous explanatory variables:

$$\alpha_i = \alpha_1 y_{i1} + \bar{x}_i\alpha_2 + a_i \tag{6}$$

where $\bar{x}_i$ is the average over the sample period of the observations on the exogenous variables, and a_i is normally distributed with mean 0 and variance σ_a^2, independent of

43

$\bar{x}_i$ and the initial condition. Equation (6) is substituted into (3), where the significance of coefficient α_1 indicates whether accounting for the endogeneity of the initial condition is relevant. This approach maximises a likelihood function which is based on the joint distribution of the observations, and which is conditional on the initial observation of an individual's welfare participation and the exogenous variables in all periods.

The estimation results are presented in the next section. In order to compare the behaviour of mothers who experienced teenage motherhood with those of older mothers, all women who are less than 20 years old (that is, those who are currently still teenage mothers) are excluded from the multivariate analyses. This is to ensure that similarly aged women are compared.

5.2 Results from the dynamic random effects probit estimation

Estimation results from the pooled dynamic probit and dynamic random effects probit allowing for the endogeneity of the initial conditions are reported in this section. In addition, for ease of interpretation, the average partial effects (APE) for the variables of interest from these models are presented. The average partial effects are computed by averaging individual marginal effects over the sample. The individual marginal effect of a variable is the predicted change in probability arising from a one unit increase in the relevant explanatory variable, while all other variables are kept at their observed value. For dummy variables, the marginal effect is calculated by first predicting the probability at the observed values of each of the variables while the relevant dummy variable is set to zero and then predicting the probability while the dummy variable is changed to one. The latter probability is subtracted from the first probability to obtain the individual marginal effect of this dummy variable.

Table 19 provides the definitions for each of the control variables used in the modelling. Before discussing the results, it is important to note that the random effects models and the pooled probit model, which ignores the cross-correlation between the composite error terms in different time periods for the same individual, use different normalisations. The random effects models use a normalisation based on the random error u_{it}; that is, in those models unobservable individual effects are taken out of the error term. In the pooled probit, the unobservable individual effects are still part of the

error term on which the normalisation is based. This is equivalent to the total error term v_{it} where no account is taken of the fact that individuals are observed more than once: observations on an individual at different points in time are treated as if they are observations on different individuals. As a result, to make the random effects estimates comparable to the pooled probit estimates, they need to be rescaled by multiplying the parameters by an estimate of $\sigma_u/\sigma_v = \sqrt{1-\rho}$, where $\rho = \dfrac{\sigma_\alpha^2}{\sigma_\alpha^2 + \sigma_u^2}$.[7] For consistency, the average partial effects are also computed using the scaled coefficients.

Table 19. Variable definitions

Variable	Definition
Lwfp	=1 if participated in welfare in wave T-1: *Lagged welfare participation*
age	Age in each wave
age^2	Age squared
divsep	=1 if divorced/separated
wid	=1 if widowed
nvrmar	=1 if never married
tcr04	Number of own resident children aged 0-4
tcr514	Number of own resident children aged 5-14
tcr1524	Number of own resident children aged 15-24
unideg	=1 if the highest education level is a university degree
pstsch	=1 if the highest education level is a post-school diploma/ certificate
yr12	=1 if the highest education level is Year 12
aborig	=1 if of indigenous origin
good	=1 if self-reported health is good
fair	=1 if self-reported health is fair
poor	=1 if self-reported health is poor
pertemp	Since full-time education, proportion of years in paid work
pertuemp	Since full-time education, proportion of years of unemployment and looking for work
mrbfmum	=1 if married prior to the first birth
bnengc	=1 if born in non-English speaking country
waved2	=1 for Wave 2
waved3	=1 for Wave 3
waved4	=1 for Wave 4
wfp0	=1 if participated in welfare in wave 1: *Initial welfare participation*

The importance of allowing for the individual random effect is shown by the strong rejection by the likelihood ratio test of the null hypothesis that $\rho = 0$ (the absence of individual heterogeneity) in both the Wooldridge and Heckman specifications in Table

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[7] See Arulampalam (1999) for a detailed discussion.

20. Allowing for the endogeneity of the initial conditions in the random effects model, the coefficient of initial welfare participation status in Wooldridge (columns 2 and 5) is significant, and in Heckman (columns 3 and 6) the estimator of θ is also significant. These results thus validate our choice for the dynamic random effects model which allows for the endogeneity of the initial conditions.

Table 20. Coefficients for pooled and dynamic random effect probit

Variable	Teenage mothers			Older mothers		
	(1)	(2)	(3)	(4)	(5)	(6)
	pooled coef.	Wooldridge scaled coef.	Heckman scaled coef.	pooled coef.	Wooldridge scaled coef.	Heckman scaled coef.
Lwfp	1.407***	0.874***	0.722***	1.492***	0.875***	0.563***
age	-0.086	-0.08	-0.242*	-0.131**	-0.130**	-0.129*
age^2	0.023	0.023	0.055	0.022	0.028	0.058**
divsep	0.828***	0.814***	0.637***	1.779***	1.712***	1.343***
wid	0.875*	0.857*	0.716*	1.005***	0.966***	0.705***
nvrmar	0.835***	0.858***	0.908***	1.815***	1.790***	1.386***
tcr04	-0.011	-0.023	0.012	0.118***	0.133***	0.153***
tcr514	0.107**	0.110**	0.090*	0.085***	0.093***	0.126***
tcr1524	-0.107*	-0.115*	-0.09	-0.114***	-0.107***	-0.080**
unideg	-0.416**	-0.481**	-0.390*	-0.312***	-0.354***	-0.390***
pstsch	-0.007	-0.02	-0.019	0.001	-0.006	-0.045
yr12	0.135	0.122	0.139	-0.072	-0.084	-0.126**
aborig	0.277*	0.293*	0.360*	0.115	0.161	0.25
good	-0.079	-0.087	-0.104	0.031	0.018	-0.013
fair	0.358**	0.350**	0.361**	0.152	0.121	0.064
poor	0.194	0.16	0.19	0.171	0.147	0.092
pertemp	-3.883**	-3.662**	-3.228**	-3.438***	-3.235***	-2.334***
pertuemp	0.136	0.262	0.241	0.558**	0.537*	0.752**
mrbfmum	-0.113	-0.122	-0.227**	-0.088	-0.092	-0.266***
bnengc	-0.118	-0.104	-0.103	0.096	0.102	0.134
waved2	-0.252	-0.205	-0.581	-0.266*	-0.218	-0.164
waved3	-0.111	-0.09	-0.36	-0.197*	-0.179	-0.143
waved4	-0.02	-0.009	-0.125	-0.098	-0.096	-0.078
wfp0	0.564***	0.914***		0.659***	1.049***	
constant	-1.142*	-1.11	0.409	-1.117**	-0.924*	0.415
Rho (ρ)		0.286***	0.469***		0.31***	0.590***
theta (θ)			1.254***			1.087***

Data source: Parameters are estimated using the HILDA

Notes: 1. additional covariates are the averages per individual over the sample period of the observations on the exogenous variables and missing dummies.
2. *** significant at 1%; ** significant at 5%; * significant at 10%.
3. Likelihood-ratio test of rho=0:
Teenage mothers: Wooldridge (2): chibar2(1) = 15.79   Prob >= chibar2 = 0.000
          Heckman (3):   chi2(1) = 167.18   Prob > chi2 = 0.0000
Older mothers: Wooldridge (5): chibar2(1) = 117.76 Prob >= chibar2 = 0.000
          Heckman (6):   chi2(1) = 762.02   Prob > chi2 = 0.0000

The effect of lagged welfare participation is smaller when the endogeneity of the initial conditions is allowed for together with including random effects estimators compared to the pooled estimator. The effect of lagged welfare participation is greater when using the Wooldridge approach compared to using the Heckman approach. The estimated effects of the other independent (*X*) variables are, in general, greater (in absolute value) when using the random effects estimators than the pooled probit estimator. In columns (2), (3), (5) and (6) of Table 20, the coefficients of lagged welfare participation are statistically significant and positive. The APEs in Table 21 suggest that being a welfare recipient in the previous wave increases the probability of welfare participation in the current wave by approximately 22 to 24 percentage points for the group of teenage mothers and 13 to 18 percentage points for the group of older mothers.

Table 21. Average Partial Effects from pooled and dynamic random effect probit (based on estimated parameters in Table 20)

Variable	Teenage mothers			Older mothers		
	(1)	(2)	(3)	(4)	(5)	(6)
	pooled	Wooldridge	Heckman	pooled	Wooldridge	Heckman
Lwfp	42.46***	24.44***	21.89***	37.69***	18.48***	12.81***
age	-1.11	-1.18	-4.54*	-5.06**	-5.16**	-3.4*
divsep	17.67***	18.67***	17.39***	39.76***	38.7***	34.93***
wid	17.95*	19.2*	19.14*	19.04***	19.13***	16.63***
nvrmar	18.03***	20.42***	25.45***	42.66***	43.18***	38.09***
tcr04	-0.15	-0.34	0.22	4.58***	5.28***	4.02***
tcr514	1.37**	1.62**	1.69*	3.29***	3.68***	3.32***
tcr1524	-1.38*	-1.7*	-1.7	-4.39***	-4.25***	-2.1**
unideg	-8.1**	-10.26**	-9.88*	-4.21***	-5.1***	-6.95***
pstsch	-0.13	-0.43	-0.49	0.01	-0.09	-0.86
yr12	2.64	2.66	3.65	-0.99	-1.25	-2.34**
aborig	5.53*	6.51*	9.69*	1.65	2.54	5.21
good	-1.55	-1.89	-2.72	0.43	0.27	-0.24
fair	7.24**	7.84**	9.83**	2.2	1.88	1.25
poor	3.85	3.52	5.04	2.51	2.32	1.82
pertemp	-0.50**	-0.54**	-0.61**	-1.33***	-1.29***	-0.61***
pertuemp	0.02	0.04	0.05	0.22**	0.21*	0.20**
mrbfmum	-2.23	-2.67	-6.02**	-1.26	-1.42	-5.51***
bnengc	-2.29	-2.24	-2.66	1.37	1.57	2.64

Note: *** significant at 1%; ** significant at 5%; * significant at 10%.

The probability of welfare participation is significantly and negatively associated with the time spent in paid work since full-time education for both groups of mothers. For the group of teenage mothers, the probability of welfare participation decreases by

approximately 0.54 to 0.61 percentage points for a one percentage point increase of the proportion of years in paid work.

Being 'divorced/separated' or 'never married' significantly increase the probability of welfare participation for both groups of mothers. Relative to teenage mothers who are currently partnered (married/de facto), teenage mothers who have never been married (or who are divorced/separated) are expected to have a probability of welfare participation which is 25 (or 17) percentage points higher (see column 3 of Table 21). The effects are much larger for older women. Older mothers who have never been married (or who are divorced/separated) are expected to have a probability of welfare participation which is 38 (or 35) percentage points higher (see column 6 of Table 21). This difference in the effect of marital status is possibly due to the "higher" quality of the older mothers' partners if they are married or living in a de facto relationship.

For teenage mothers, having fair general health increases the probability of welfare participation by 8 to 10 percentage points relative to having excellent or very good general health. None of the health variables are significant for the older mothers. Ageing lowers the probability of welfare participation for both groups of mothers, but it is not very significant for teenage mothers after controlling for other characteristics.

The effects of the number of children and the level of highest education on teenage mothers' welfare participation are less significant than the effects of these characteristics for older mothers. However, the size of the effect on welfare participation of having a university degree compared to having less than Year 12 is larger for teenage mothers than for older mothers. The expected decrease in welfare participation is around 10 percentage points for teenage mothers, and between 5 and 7 percentage points for older mothers.

6. Conclusions

This report shows clear correlations between education and a range of other characteristics and teenage motherhood; this is evident from the first five waves in HILDA and from the Census 2001. Teenage mothers have lower levels of education and

tend to leave school early. Although there is a strong correlation between low education levels and teenage motherhood, it seems unlikely that teenage motherhood causes low education outcomes, given the timing of school leaving which is usually before the teenagers actually fall pregnant. Therefore, it seems more likely that common unobserved factors cause both teenage parenthood and low education outcomes. Comparing education levels across three birth cohorts of teenage mothers, it is shown that their education outcomes have hardly improved over time, whereas comparing the same birth cohorts of older mothers a strong increase in educational attainment is observed.

There are a number of individual and household characteristics that are associated with teenage motherhood. Census and HILDA data show similar patterns. Overall the descriptive analysis indicates that teenage mothers are relatively disadvantaged when compared to the group of older mothers. Teenage mothers were more likely to have lived in a single-parent household in their childhood and to be of indigenous background. They were less likely to have had an employed father and/or mother when they were aged 14. Their current circumstances also look less favourable than those of older mothers. Teenage mothers are less likely to be partnered (and were less likely to be married at the time the first child was born), and they have on average more children. Finally, on a range of health measures (physical and mental), teenage mothers are considerably worse off than the older mothers.

In terms of labour market outcomes, teenage mothers are worse off as well. They are more likely to be unemployed or out of the labour force, as are the teenage mothers' partners for those who are partnered. However, if teenage mothers are working they are more likely to work longer hours. As a result of the low labour force participation, the teenage mother's own income and her partner's income are lower than for older mothers. It is therefore perhaps not surprising that teenage mothers' overall life satisfaction is somewhat lower than for older mothers.

Descriptive analysis based on the Census 2001 shows that women from an indigenous background are clearly worse off than women from the general population, independent of whether they are or have been teenage mothers. However, similarly to the general population, the group of teenage mothers was particularly disadvantaged within the

group of indigenous women. Relatively speaking the differences between older and teenage mothers with regard to labour market outcomes were less pronounced than for the general population, but here it is important to highlight that the older mothers within the group of indigenous women were already not well off.

The analyses in this report do not try to answer what causes teenage parenthood. The descriptive analyses only aim at providing a summary of the characteristics of teenage mothers versus older mothers to show in what ways teenage mothers are disadvantaged compared to older mothers. The main question in this report is how teenage parenthood affects welfare participation, and which teenage mothers are most likely to be on welfare at any given time. These results are then compared to the results for women who had their first child at an older age.

From descriptive analyses, it is clear that teenage mothers are much more likely to participate in welfare than older mothers. They are particularly more likely to depend on Disability Support Pension, especially once aged over 40. This may be related to the poor health outcomes evident from a comparison of a number of individual characteristics of teenage mothers to the characteristics of older mothers. Entry rates into welfare are much higher and exit rates are lower, which leads to a larger proportion of teenage mothers depending on some form of income support. The patterns across age are similar in the two groups of mothers: entry into welfare is at its highest when aged between 20 and 29 whereas exit off welfare is at its highest when aged between 20 and 39.

The multivariate analysis of welfare participation uses dynamic random effects probit modelling, in which the panel data features of the HILDA data are fully taken into account. These results are compared to a more simple pooled probit analysis, which does not take the panel feature of the data into account. We investigate whether the factors that determine welfare participation of women who experienced teenage motherhood differ from the factors that determine welfare participation of older mothers.

Both specifications of the dynamic random effects probit model indicate that accounting for unobserved individual-specific effects and for the endogeneity of the initial condition (that is, welfare participation in the first observed period) are important. In

addition, there is a considerable degree of state dependence. That is, all three models indicate that welfare participation in the previous period is extremely important in determining current welfare participation, and it is more important for teenage mothers than for older mothers.

Mothers who spent a larger proportion of time in paid work since leaving full-time education are less likely to participate in welfare. The effect for older mothers is higher than for teenage mothers. Health status is important for teenage mothers but not for older mothers. Compared to good or excellent health, having fair health increases the probability of welfare participation for teenage mothers. Education is important for both groups of mothers, but only a university degree decreases the probability of welfare participation significantly for teenage mothers. The probability of welfare participation decreases with age for both groups of women, although it is not quite significant for teenage mothers after controlling for other characteristics. Being divorced or separated or having never been married are important for both groups of women, with the effect being much larger for older mothers, possibly due to the higher "quality" of the partners of the older mothers.

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Appendix Table 1. Indigenous status of women aged 15 to 62 in HILDA (five waves pooled together)

	Teenage mothers	Older mothers	Childless women	All women
Non-indigenous	2,151	11,264	7,799	21,214
(row percentage)	*(10.14)*	*(53.10)*	*(36.76)*	*(100.00)*
Indigenous	261	243	205	709
(row percentage)	*(36.81)*	*(34.27)*	*(28.91)*	*(100.00)*
Missing	665	3,835	1,612	6,112
(row percentage)	*(10.88)*	*(62.75)*	*(26.37)*	*(100.00)*
Total	3,077	15,342	9,616	28,035
	(10.98)	*(54.72)*	*(34.30)*	*(100.00)*

Data source: Authors' own calculations based on the HILDA

Appendix Table 2A. **Demographic characteristics for women who experienced teenage childbearing by birth cohorts**

		Teenage mothers		
		Born in or before 50's	*Born in 60 and 70's*	*Born in 80's*
Current age (mean)		52.44	34.44	19.81
[std err]		[0.13]	[0.17]	[0.14]
Number of children ever had (mean)		3.37	2.97	1.13
[std err]		[0.04]	[0.04]	[0.05]
		Proportion (%)	Proportion (%)	Proportion (%)
Marital status				
Never married		3.31	17.48	56.33
Legally married		56.37	44.57	6.67
De facto		9.62	19.72	36.33
divorced/separated		24.46	18.07	0.67
Widowed		6.18	0.17	
	Missing	0.06		
Highest Education level				
Year 11 and below		67.26	63.55	65.67
Year 12		5.61	7.95	12.33
Post-school diploma/certificate		22.04	23.20	22.00
Post graduate (Bachelor or more)		5.09	5.30	
Childhood background				
When you were aged 14 Living with				
Both own parents		76.24	66.28	37.33
One of own parents and step parent		5.86	7.12	16.00
Father only		3.69	3.07	3.00
Mother only		6.88	13.09	31.00
other		7.32	10.44	12.67
While you were growing up, father was				
unemployed for 6 months or more		10.13	19.72	32.00
Employed		80.32	68.68	29.00
	Missing	9.55	11.60	39.00
When you were aged 14, father was				
employed		89.43	82.27	57.67
not employed		2.80	8.12	12.67
deceased		3.95	2.32	2.00
No father living with, so don't know		2.04	5.55	18.00
	Missing	1.78	1.74	9.67
When you were aged 14, mother was				
employed		38.47	46.81	52.33
not employed		56.94	45.57	35.00
deceased		2.04	2.32	1.33
No mother living with, so don't know		0.64	1.82	4.67
	Missing	1.91	3.48	6.67
Married prior to the first birth		77.01	34.80	2.67
	Missing	0.70	2.15	24.33
Total number of observations		1570	1207	300
Proportion of all women in the birth cohort (%)		15.51	9.43	6.02

Data source: Authors' own calculations based on the HILDA

Appendix Table 2B. Demographic characteristics for older mothers by birth cohorts

		Older mothers		
		Born in or before 50's	*Born in 60 and 70's*	*Born in 80's*
Current age (mean)		51.93	35.85	22.40
[std err]		[0.06]	[0.06]	[0.11]
Number of children ever had (mean)		2.54	2.20	1.19
[std err]		[0.01]	[0.01]	[0.04]
		Proportion (%)	Proportion (%)	Proportion (%)
Marital status				
Never married		1.49	5.56	33.33
Legally married		71.02	72.81	24.18
De facto		5.33	11.06	40.52
divorced/separated		17.27	10.24	1.96
Widowed		4.87	0.34	0
	Missing	0.03	0	0
Highest Education level				
Year 11 and below		42.27	31.25	28.76
Year 12		12.30	17.93	32.03
Post-school diploma/certificate		24.58	26.69	32.02
Post graduate (Bachelor or more)		20.77	24.08	6.54
	Missing	0.08	0.05	0.65
Childhood background				
When you were aged 14 Living with				
Both own parents		87.08	80.44	52.29
One of own parents and step parent		2.87	6.04	22.87
Father only		1.11	1.49	3.27
Mother only		6.53	9.72	18.30
other		2.41	2.29	3.27
	Missing	0.01	0.01	0
While you were growing up, father was				
unemployed for 6 months or more		8.59	13.29	20.26
Employed		86.54	80.49	64.05
	Missing	4.87	6.22	15.69
When you were aged 14, father was				
employed		91.68	90.59	86.27
not employed		2.98	3.85	3.92
deceased		3.67	2.22	0
No father living with, so don't know		1.23	2.28	7.19
	Missing	0.44	1.06	2.61
When you were aged 14, mother was				
employed		43.15	54.34	61.44
not employed		54.67	43.33	30.07
deceased		1.34	0.97	0
No mother living with, so don't know		0.19	0.30	0.65
	Missing	0.66	1.06	7.84
Married prior to the first birth		93.48	77.89	26.14
	Missing	0.68	1.48	22.22
Total number of observations		7474	7715	153
Proportion of all women in the birth cohort (%)		48.72	50.29	1.00

Data source: Authors' own calculations based on the HILDA

Appendix Table 3. Proportion of women who experienced teenage childbearing in the relevant current age group of all women

Current age	Proportion of teenage mothers in the relevant age group (%)
<=19	4.53
20-29	8.46
30-39	9.41
40-49	11.48
50-59	18.03
60<=	14.78
Total	10.98

Data source: Authors' own calculations based on the HILDA

Appendix Table 4A. The types of long-term health condition among women who reported to have a long-term health condition (in waves 3 to 5)

Type of long-term condition (more than one can be selected)	Teenage mothers (in %)	Older mothers (in %)
Sight problems not corrected by glasses or lenses	5.98	5.31
Hearing problem	6.64	7.05
Speech problem	0.66	0.87
Blackouts, fits or loss of consciousness	4.32	2.55
Difficulty learning or understanding things	3.65	2.39
Limited use of arms or fingers	13.79	9.76
Difficulty gripping things	14.45	9.06
Limited use of feet or legs	15.45	12.20
A nervous or emotional condition which requires treatment	19.60	13.67
Any conditions that restricts physical activity or work (e.g. back problems, migraines)	38.04	34.65
Any disfigurement or deformity	1.16	2.22
Any mental illness which requires help or supervision	5.15	3.74
Shortness of breath or difficulty breathing	11.63	8.19
Chronic or recurring pain	26.08	22.45
Long-term effects as a results of a head injury, stroke or other brain damage	2.66	2.44
A long-term condition or ailment which is still restrictive even though it is being treated or medication being taken for it	26.91	22.83
Any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.	40.53	38.34
The number of observations in which a long-term health condition is reported from wave 3 to wave 5	602	1844
Total number of observations from wave 3 to wave 5	1741	8842

Data source: Authors' own calculations based on the HILDA
Note: These types of long-term conditions are not mutually exclusive.

Appendix Table 4B. The types of long-term health condition among women who reported to have a long-term health condition and received DSP (in waves 3 to 5)

Type of long-term condition (more than one can be selected)	Teenage mothers (in %)	Older mothers (in %)
Sight problems not corrected by glasses or lenses	8.33	6.27
Hearing problem	8.93	9.59
Speech problem	1.79	2.58
Blackouts, fits or loss of consciousness	8.33	9.59
Difficulty learning or understanding things	5.36	7.01
Limited use of arms or fingers	26.79	27.68
Difficulty gripping things	29.17	21.77
Limited use of feet or legs	29.76	29.52
A nervous or emotional condition which requires treatment	31.55	28.04
Any conditions that restricts physical activity or work (e.g. back problems, migraines)	50.60	47.23
Any disfigurement or deformity	3.57	6.27
Any mental illness which requires help or supervision	12.50	11.07
Shortness of breath or difficulty breathing	17.26	19.19
Chronic or recurring pain	38.10	40.59
Long-term effects as a results of a head injury, stroke or other brain damage	4.76	8.49
A long-term condition or ailment which is still restrictive even though it is being treated or medication being taken for it	41.07	44.65
Any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.	45.83	47.23
The number of observations in which a long-term health condition is reported from wave 3 to wave 5	168	271
Total number of observations from wave 3 to wave 5	1741	8842

Data source: Authors' own calculations based on the HILDA
Note: These types of long-term conditions are not mutually exclusive.

Appendix Table 5. The number of different long-term health conditions for teenage and older mothers with and without DSP

Number of long-term health conditions	Among mothers who have a long-term health condition		Among mothers who have a long-term health condition and who receive DSP	
	Teenage mothers (%)	Older Mothers (%)	Teenage mothers (%)	Older Mothers (%)
1	47.51	58.41	19.05	23.62
2	21.10	18.87	23.21	18.08
3	11.96	9.00	14.29	14.39
4	6.48	5.10	14.29	10.33
5	4.32	3.52	8.93	9.96
More than 5	8.63	4.99	20.23	23.62
missing	-	0.11	-	-
Number of observations	**602**	**1844**	**168**	**271**