HILDA Survey Research Conference 2009 16–17 July 2009

Effects of work–life harmonisation on the birth of a second child in Australia: an event history analysis using HILDA data

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1. Introduction

In many developed countries, there is growing concern about the challenges of balancing (or harmonising) paid work and life outside work, including family life and parenting. It has been suggested that these concerns are often related to low fertility. Although the recent total fertility rate in Australia is much higher than in the "lowest-low[1]" fertility countries such as Japan, Korea, Italy and Spain, avoiding any further decline in fertility remains an important priority for the political agenda of both countries. Despite the prevalence of discussions linking work–life issues with fertility, there is little statistical evidence of a causal relationship between them. This seems to be mainly because of the difficulty in inferring causality using a cross-sectional research design. The HILDA (Household, Income and Labour Dynamics in Australia) survey, as a panel data set, is a rich source of information that can be used for causal analyses.

In this paper I examine how the work–life experiences of partners affect fertility in Australia. Specifically, I examine the effects of work and life experiences of mothers after the birth of their first child on parity progression to their second birth. Although examining the effect of work–life experience on a first birth is also important, I focus on the second birth as the work–life challenge is more acute when we have a small child than when we have none, and we can see the impact of work during the parenting period on having another child only when people already have at least one child.

I use Waves 1 to 6 of the HILDA survey for this analysis. Event history analysis is conducted to make the best use of the longitudinal data within a limited observation period.

[1] Kohler *et al*. (2002) characterised the "lowest-low" countries as those with a total fertility rate (TFR) at or below 1.3 children per woman. Although the latest TFR in Japan is slightly higher than 1.3 (1.34 in 2007), it decreased to below this level in 2003 and remained there until 2005.

2. Existing studies

Although there is a sizable body of literature on the determinants of fertility (Hakim 2003), the main interest in this paper is not in exploring the most influential of these determinants, but in examining the importance of the work–life situation during periods when women have small children in terms of fertility in Australia, using a longitudinal data set. So, in this review of the existing literature I focus on the studies of parity progression (that is births after the first birth) in Australia and in particular those on the relation between work–life situations during the child-rearing period and the birth of a second child.

Risse (2006) examined the impact of maternity leave provisions, employment status (full-time or part-time), number of children, wage and education level on the pregnancy of working woman using Wave 3 of the HILDA survey. The study assesses the difference in the effects of paid and unpaid maternity leave on different age groups of working women and found that paid maternity leave has a statistically significant effect on the pregnancy rates of young women. A higher educational qualification or wages are associated with the lower probability of becoming pregnant. Employment status had no significant effect on the probability of pregnancy. This study focus on working mothers, analysing all pregnancies regardless of the parity (the number of children is included as an explanatory variable). Given the main interest of this paper, we need to review the result of the study on parity progression for women who already have at least one child.

Tesfaghiorghis (2005) compared parity progression ratios for Australian women with completed fertility (40 years and over) across different age groups and found that parity progression ratios have been declining over time. The 2001 HILDA survey (Wave 1) was used. As the analyses of parity progression ratios in the study is possible for women with completed fertility, women under 40 years were not analysed. For the younger cohort, their intention to have more children were estimated.

Parr (2007) used multivariate models to examine the likelihood that a woman with one child would not progress to a second child. As the study used only one wave of the HILDA survey (Wave 1), the explanatory variables are mostly constant over time, such as respondents' highest level of education, the occupation of the respondents' parents when the respondent was at the age of 14, their marital status at the time of the first birth and their age at the first birth. Parity progression was determined for women aged 40+ only.

A qualitative study by Newman (2008) clearly showed the influence of parenthood experiences on parity progression. Negative parenthood experiences such as exhaustion, which in some cases resulted when a partner was focused on paid work and had long

working hours, and domestic isolation for parents at home, were found to be hurdles for parity progression.

I could find no study that make the best use of the longitudinal characteristics of the HILDA survey. Thus in this paper I present the possibility of an analysis of parity progression and the effect of work–life situation on mothers with a small child.

3. Data and methods used in this study

Data

The data set used in this study is HILDA Release 6.0. All the available waves, (Waves 1 to 6; 2001–2006), were used to create a longitudinal data set. HILDA is a large-scale nationwide survey and a rich data source for the study of work–life issues, with both objective and subjective measures at home and at workplaces. In addition to its longitudinal nature, it is also distinctive for being designed to interview all members aged 15 or older of each sample household. By virtue of this sampling design we can match the response of each individual with their partner, children and whoever else is a household member, as long as they are 15 or older.

The event of main interest here is having another baby when a women is currently has one child. While many studies of parity progression use the total number of children for a woman with completed fertility to examine the determinants of the progression, I treat parity progression as an event that occurs over a certain period of time. This is made possible using the longitudinal data set from the HILDA survey.

Data management

Matching responses between partners

It may be useful to explain here how I created a data set for analysis in this study. I started by matching the responding person file in each wave with the responding person file of their partner. In this way the variables for each respondent are merged with those of their partner. I also merged variables such as the use of childcare from the corresponding household file.

Matching responses of the same respondent among different waves

For longitudinal data analysis I created a long file with information about an individual from all the waves in separate rows. The information includes a cross-wave person identity (ID) and a wave identifier. This data set contains multiple records for each person.

Each record (row) for the person has an identical (cross-wave) person ID, and a different wave identifier. With this information and using data management tools in statistical software, we can track how the variable for each individual changed over the waves.

Study sample

In this paper the analysis is restricted to female respondents with one child who was born during the survey period. Women whose partners did not respond to the survey are excluded from the analysis. A more detailed explanation of restricting the sample is given below, after the description of the statistical method used in this study.

Method and models

To examine the effect of the work–life conditions of a mother and her partner a discrete-time survival (event history) model (Rabe-Hesketh and Skrondal 2008;Yamaguchi 1991) was used. This model is specified in terms of the discrete-time hazard, defined as the conditional probability that the event occurs at time t, given that it has not occurred (Rabe-Hesketh and Skrondal). The event of interest here is the birth of a second child. Using the HILDA survey, this event is measured by comparing the total number of children that a person ever had at time t and at time t+1. To be specific, if a mother of a child at Wave 2 had two (or more) children at Wave 3, she is treated as giving birth to a second child at Wave 2 (more strictly, between Wave 2 and Wave 3). To denote this event, a binary variable for a second birth in the following year (B2) is set as a dependent variable, as follows:

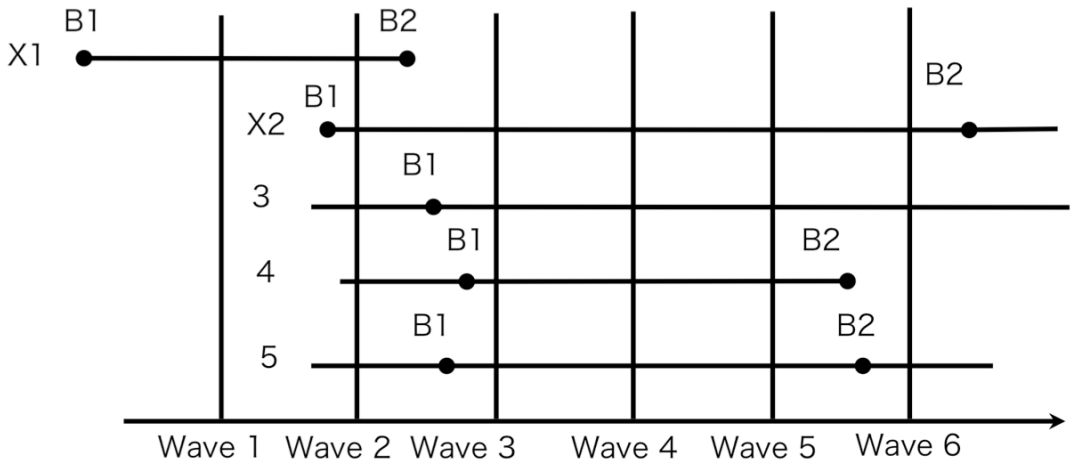
B2 = 0 if the woman did not give birth to a second child in the following year
= 1 if the woman gave birth to a second child in the following year

Multivariate discrete-time survival analysis estimates coefficients using logistic regression to assess how the covariates affect the discrete-time hazard, defined as the probability of the event B2, given that the event has not yet been experienced.

As the hazard is a conditional probability, we have to consider who is at risk (i.e., who has a probability) of experiencing this event. The dependent variable B2 is missing when a woman is not at risk of the event. If a woman already had two children at time t, she is not at risk of having a second child. If she has no child at the time, she is not at risk of a second child, except if she gives birth to multiple children. As we are interested in the work–life situation while a mother is taking care of a child, this case should be excluded from the current study. Thus, the analysis is restricted to women who have only one child at time t. It is important to note that a woman (at a certain wave) is also excluded from analysis if she has not responded to the survey in the following wave since we cannot tell whether she has had child in the following year, although she is at risk of having a second child. Although a woman who does not currently have a partner is able to have another child, she is excluded from the current study as I am interested in the effect of the allocation of work between partners within and outside home on fertility.

I have omitted the cases where the first birth has not been "observed", although this restriction decreases the sample size. The first birth is defined as a transition from having no child in one wave to having one child in the following wave. By this definition, a woman who already had a child when she responded to the survey for the first time is excluded from our analysis. As a discrete-time survival model includes set of dummy variables for the time from the birth of a first child, we need to know when she gave birth to her first child. If we retain in the analysis women who already had a child at the first observation, we will overestimate the duration before a second birth. This is because the earlier the second birth occurs, the less likely it is to be observed in the survey.

Figure 1 illustrates how different types of observation are treated in the discrete-time survival analysis in this paper. The five horizontal lines denote respondents at different observation periods and event experiences, while the vertical lines indicate waves. The numbers at the left side of each line represent the person's ID. A horizontal line crosses a vertical line when the individual responded to the survey in the corresponding wave. The X at the left of a person's ID indicates that that person has been totally omitted from the analysis. Respondent 1 was omitted because her first birth (B1) occurred some time before the first wave and therefore it was not observed during the survey period. Respondent 2 was also omitted because she did not respond to the survey in Wave 1, and already had



The horizontal lines represent the respondents. They responded where this line crosses the vertical line for each wave.
B1: Birth of the first child
B2: Birth of the second child

Figure 1: Illustration of different types of observations in discrete-time survival analysis using HILDA

one child when she responded for the first time in Wave 2, so we cannot determine when the first birth occurred. Respondents 3–5 are all included in the analysis s starting at Wave 3, which is the first wave after they had their first child. They were all at risk of having a second child in Wave 5, but respondent 4 was excluded from the analysis in Wave 5 as we cannot tell whether she had her child before Wave 6, given that she did not respond in Wave 6. Both respondents 3 and 5 are at risk in Wave 5, but respondent 3 did not experience a second birth in the following year, whereas respondent 5 did. Table 1 illustrates how these observations are stored in the data set.

Table 1: Illustration of the structure of a data file for a discrete-time survival analysis

Participant's ID	Wave	At risk	Birth of the second child before next wave	Years after first birth	Work hours of respondent	Work hours of partner
1	Ex					
2	Ex					
3	2	0	missing	missing	30	60
3	3	1	0	0	0	60
3	4	1	0	1	10	60

3	5	1	0	2	10	60
3	6	0	missing	3	10	60
4	2	0	missing	missing	30	50
4	3	1	0	0	0	40
4	4	1	0	1	20	40
4	5	0	missing	2	20	40
5	2	0	missing	missing	30	50
5	3	1	0	0	0	40
5	4	1	0	1	20	40
5	5	1	1	2	20	40
5	6	0	missing	3	20	40

Notes: At risk: having one child and observed in the next wave

Ex: excluded from the analysis because of unobserved 1st birth

Independent (explanatory) variables

A significant component of a multivariate discrete-time survival analysis is a set of dummy variables denoting the duration from the time when a person entered the risk period, which is the time of the first birth in the current study. As it is known that this duration substantially affects the probability of birth and the effect is not linear, including duration in the set of dummy variables and controlling for it is important in assessing the effect of work–life situations that this paper focuses on.

As the main focus here is on the work–life situation of a mother and her partner, the following explanatory variables are included in the model:

Female respondent: work hours, emotional experience of child rearing, perceptions of fair shares with her partner, use of childcare (from household questionnaire)

Partner (including de facto): work hours, hours of child rearing, outdoor tasks and house work

It is important to note that these states precede the event of interest because the dependent variable measures the event in the following, not the previous year, whether or not the respondent gave birth to a second child in the following year.[2]

[2] We also need to notice, however, that the pregnancy ending in the birth might precede the current situation.

Control variables

To control for factors that might correlate with the dependent variable and explanatory variables, the following variables are also included in the models:

Age at the first birth, respondent's annual salary, partner's annual salary, educational background

A more detailed explanation of the variables is given in the next section.

4. Results

Descriptive statistics of the relation between the work–life situation and the second birth

Table 2: Proportion of mother who gave birth to a second child in the following year

Variables	Proportion giving 2nd birth (%)	N
Years after first birth		
0	12.9	255
1	41.3	167
2	37.1	62
3	0	13
Usual work hours per week		
0 hour	18.7	225
1–15 hours	44	75
16–34 hours	32.1	106
35–40 hours	18.2	66
41–48 hours	15.4	13
49+ hours	16.7	12
Partner's usual work hours per week		
0 hour	21.9	32
1–34 hours	28.1	32
35–40 hours	24.1	158
41–48 hours	20.8	101
49–59 hours	29.7	101
60–69 hours	34.3	35
70+ hours	27.3	22
Partner's hours per week - child rearing		
less than 5 hours	22.2	45
5–10 hours	27.5	69
10–15 hours	25.2	115
15–20 hours	34.8	46
20–25 hours	29	62

25+ hours	25.5	102
Partner's hours per week - outdoor tasks		
less than 5 hours	24.9	277
5–10 hours	30	100
10–15 hours	29.7	37
15–20 hours	40	10
20–25 hours	14.3	7
25+ hours	33.3	9
Partner's hours per week - housework		
less than 5 hours	26.4	208
5–10 hours	24.6	122
10–15 hours	30.7	75
15–20 hours	16.7	12
20–25 hours	50	16
25+ hours	0	6
Used/thought about using any kind of childcare		
No	21.1	175
Yes	27.4	321
Highest education level achieved		
Year 11 or lower	20	55
Year 12	23.9	109
Tertiary	26.4	333

Table 2 compares the proportion of women who gave birth to a second child in the following year for different categories of independent variables (including the control variables). Years after first birth is defined as 0 when "the number of child ever had" turns from 0 to 1. This variable becomes 1 in the next wave. As explained in the previous section, we cannot measure a first birth when a woman is observed for the first time, and we cannot tell whether a mother gave birth to a second child in the following year if she is not observed in the next wave. Therefore, the amount of "years after first birth" is at most 3 (0 at Wave 2 and 3 at Wave 5) for the current analysis. The proportion of women who give birth to a second child in the following year increases from year 0 to year 1 and then decreases, and we saw no cases in the current sample in which second baby arrived between years 3 and 4, although the women who remained with only one child might give

birth to a second child later on. This shows how the probability of giving birth to a second child is affected by the duration of time after a first birth.

The usual working hours (per week) of a mother are also associated with the proportion of mothers who give birth to a second child in the following year. Mothers working 1–15 hours a week had the largest probability of giving birth to a second child within a year.[3] Since working hours are likely to be associated with the age of the first child we need to examine this more closely later on in the multivariate analysis controlling for the years after the first birth.

It is difficult to find any simple pattern in the relationship between the partner's usual working hours and the proportion of mothers giving birth to a second child. Where a partner spends 15–20 hours in child rearing (including playing with the children, helping them with personal care, teaching, coaching or actively supervising them, or getting them to childcare, school and other activities), a mother seems more likely to have another baby in the following year, and where a partner spends less than 5 hours in child rearing, a mother seems to least likely have a second birth. However, there are no simple linear or curvilinear relationships between the partners' hours spent in child rearing and the second birth. The amount of the partners' hours spent in house-related work inside or outside also make a difference in the probability of a second birth, but it is difficult to find a clear pattern for this.

The variable for the use of any childcare is a combination of the responses to the question "at any time in the last 12 months have you used, or thought about using, any of these forms of childcare so you (or your partner) could undertake paid work?" and: "What about childcare while you are not undertaking paid work? Looking at SHOWCARD Q6b, and thinking of your usual week, do you use any of these forms of childcare while you (or your partner) are not working?" Both SHOWCARDs indicate various kinds of childcare, including those performed by relative and friends. Those who use, or think about using, childcare seem more likely to have a second child in the following year.

The mother's education level makes a difference. The higher her highest education level, the more likely she is to have another child.

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[3]Pocock *et al.* distinguish short part-time work (less than 16 hours per week) from long part-time work (16–34 hours per week) and found that part-timers working short hours experience much less frequent work–life interference (Pocock *et al.* 2007).

Table 3: Comparison of mean between stopping at one child and having a second child (t test)

	Mean for remaining cases	N	Mean for progressing cases	N
Age at first birth	29.5	372	29.6	125
Often feel tired (7 point scale)	4.8	348	4.6	119
Being a parent is harder than I thought it would be (7 point scale)	4.3	347	3.8	119*
Often feel very lonely (7 point scale)	2.4	352	2.2	120
Do a fair share of looking after children (7 point scale)	2.0	348	2.1	119
Financial year gross wages and salary ('000 dollars)	24.4	367	18.0	121*
Partner's financial year gross wages and salary ('000 dollars)	46.6	346	48.9	122

Note: *** p < 0.001, ** p <0.01, * p <0.05.

The 7 point scale ranges from 1 = strongly disagree to 7 = strongly agree.

Table 3 shows the comparison of the means of continuous independent variables in the results of the t-test between mothers who stop at one child and those who progress to a second child. Unlike findings from existing studies (Parr 2007), there seems to be no difference in the mother's age at first birth between the two outcome groups. We can see a significant difference in the answer to the statement "Being a parent is harder than I thought it would be" in terms of a mother's own gross wage and salary over the financial year. These comparisons arise from descriptive statistics and need further examination using multivariate models.

Table 4: Proportion of women who progress to a second child by their work–life conditions

		Work hours of women, % (N)			
		None	1–19 hours	35–40 hours	Total
Partner's child rearing hours per week	Less than 10 hours	20.0 (60)	43.2 (37)	5.9 (17)	25.4(114)
	10–19 hours	21.6 (74)	37.0 (54)	27.3 (33)	28.0 (161)
	20+ hours	15.6 (64)	42.0 (69)	16.1 (31)	26.8 (164)
	Total	19.2 (198)	40.6 (160)	18.5 (81)	26.9 (439)

Note: N represents the denominator for calculating the proportion of parity progression. That is, 20.0 (60) means that 20% of 60 women have a second birth.

As we saw in Table 2, it is difficult to see the relation between a progression to a second birth and the number of hours a partner spends in child rearing. However, the effect of a partner's participation in childcare might vary depending on a mother's working hours. Therefore, it may be useful to calculate the proportion of women giving birth to those progressing to a second child using a combination of the mother's working hours and the number of hours her partner spent in child rearing (Table 4). We found a substantial difference in the proportion of mothers who gave birth to a second child, depending on their partner's participation when the mother was working full time. Only 5.9% of mothers who were working full-time gave birth to a second child in the following year where their partner did less than 10 hours of child rearing a week, while 27.3% gave a birth to a second child where their partners spent 10 to 19 hours in child rearing. This was not the case for mothers who were working part-time. They were most likely to give birth again when their partners spent more than 10 hours a week in child rearing.

Table 5: Discrete-time survival analysis of the second birth

	Model 1	Model 2	Model 3
Years after first birth			
(Reference: 0)			
1	4.018***	3.507***	3.469***
2	2.976**	2.806**	3.280**
Usual work hours per week			
0 hour	0.462**	0.396**	0.401**
(Reference: 1–34 hours)			
35+ hours	0.368**	0.395*	0.399*
Partner's usual work hours per week			
0 hour	0.881	0.991	0.788
(Reference: 1–34 hours)			
35–40 hours	0.78	0.819	0.788
41–48 hours	0.562	0.621	0.542
49–59 hours	1.059	1.177	1.135
60+ hours	0.906	0.857	0.855
Partner's hours per week in child rearing			
Less than 10 hours	1.000	1.005	1.036
(Reference: 10–19 hours)			
20+ hours	0.816	0.885	0.998
Age at first birth		1.063	0.839
Highest education level achieved			
(Reference: Year 11 or lower)			
Year 12		1.151	1.162
Tertiary		1.011	1.014

Annual wage and salary		0.993	0.989
Partner's annual wage and salary		0.999	0.999
Used or though about using any kind childcare (1=yes, 0=No)		0.752	0.733
Often feel tired, worn out or exhausted from meeting the needs of my children			0.996
Being a parent is harder than I thought it would be			0.834*
Often feel very lonely			0.951
Do fair share of looking after children			1.182
Observations	429	415	406
Bayesian information criterion	518.9	540.2	544.6

Exponentiated coefficients (odds ratios)
Note * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results obtained from discrete-time event history analyses are shown in Table 5. The entries are the odds ratios estimated from logistic regression, which measure the relative odds (the probability of experiencing an event divided by the probability of not experiencing it) of giving birth to a second child in the following year. In short, it shows the proportion of the increase in odds for a one-unit increase of a covariate. For example, if the odds ratio for variable *x* is 1.5, the odds of experiencing an event increases by 50% (1.5 times) if *x* increases from 0 to 1, or from 1 to 2. As most of the covariates used in our model are categorical and expanded to sets of dummy variables for the regression models, interpretation here is somewhat complicated. I wanted to estimate the effect of work hours of women on their second birth. Work hours *per se* are continuous but we do not expect this to have a linear effect on the probability of a second birth. So I treated work hours as a categorical variable and used the same categories as were used in Table 4. Out of three categories (0 hour, 1–34 hours and 35+ hours), I have omitted 1–34 hours and used two dichotomous variables in the model. The odds ratios for these two variables show the proportion of odds for each category to the reference category (1–34 hours). In Model 1 of Table 5, the odds ratio for "work 0 hours is" 0.462. This implies that a mother of one child who is not working is less likely to have a second child in the following year by approximately 50%, compared with a mother of one child who works from 1–34 hours.

Model 1 of Table 5 contains years after birth as the time dimension characterising the discrete-time event history analysis and three sets of explanatory variables: the working hours of the mothers and their partners, and the partners' hours spent in child-rearing. The variables for the time dimension assess the hazard function estimated with the

discrete-time survival models. Compared to the first wave after the first birth (year 0, the reference category), the probability of giving birth to a second child increased one year later (year 1) and decreased one more year later (year 2). Since there was no second birth (the probability is 0%) in the year following year 3, observations (person-years) for year 3 (that is, 3 years after first birth) were omitted from the analysis.[4]

As expected from the descriptive statistics presented in Table 2, among three explanatory variables, only the working hours of the mothers have a significant effect on the second birth. A mother who is not working is 0.462 times more likely (that is, approximately 50% less likely) to give birth to a second child in the following year

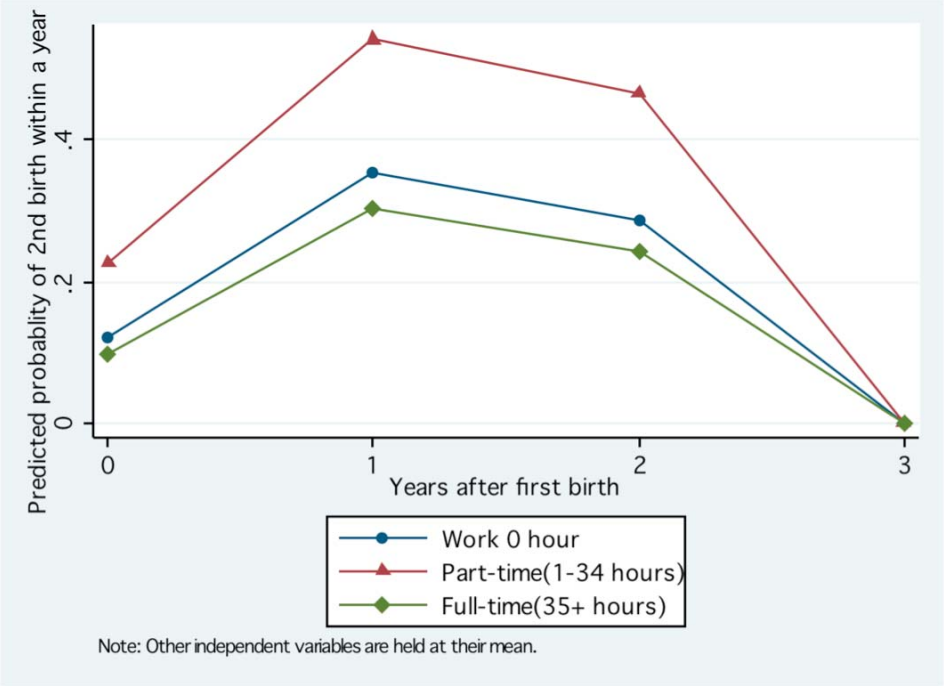

Figure 2: Differences in hazard functions of giving birth to a second child by working hours of mothers

Note: Although the probability is not estimated in the model for year 3 as explained earlier, I have added its value as 0 to create this figure, as no second births were observed in the following year at year 3.

[4] This is because there is no variation of the outcome regardless of the values of any covariates other than years after a first child and we cannot estimate the effects of covariates.

compared with one who is working 1–19 hours per week, while a mother working full time (35+ hours per week) is also significantly less likely to give a second birth compared to the reference category.

Figure 2 shows the shape of the estimated hazard function (the predicted probabilities by time after the first birth) and the difference of its level by the mothers' hours of work (retaining the other variables at their means).[5] The effects of the explanatory variables can be interpreted as the effect on the level hazard function.

To verify whether the effect of the working hours of the mothers is reflected in the difference of other factors, some control variables, including the annual salary of the mother and her partner, the age of the mother at the first birth, the mothers' highest education level and the use of childcare were introduced in Model 2. The effect of the working hours of the mother remained significant even after controlling for these variables. On the other hand, neither the mother's education level nor her use of childcare had a significant effect, unlike the result in the descriptive statistics we saw in Table 2. The relation between these two variables and the second birth might have been the result of a pseudo correlation based on the correlation of these variables and other significant factors, that is, the mothers' working hours and/or the years after the first birth. The mother's age at the first birth did not have a significant effect. This implies that the age at the first birth does not affect the timing of a second birth, although it might decrease the total number of children born by the time fertility is completed.

Model 3 contains variables for the emotional experience of child rearing. Among the four variables only the response to the statement, "Being a parent is harder than I thought it would be" was significant, which is consistent with the descriptive statistics in Table 3. Although I expected the negative effect of not working and full-time work as a result of stress and therefore to become insignificant when controlling for the emotional experience of child rearing, the effects of working hours remained significant.

As we saw in Table 4 there was a substantial difference in the proportion of mothers who gave birth to a second child in accordance with their partner's participation in child rearing when the mother was working full-time. To examine this in a discrete-time survival model, I estimated a model by restricting the sample to mothers who were

[5] To calculate the predicted probability with specified values of the dependent variables, I used the 'prvalue' command implemented into STATA by Scott Long and Jeremy Freese (Long and Freese, 2006, p. 188).

Table 6: Discrete-time survival analyses of a second birth for women with one child

Mothers working full-time (35+ hours per week) only			
	Model 1	Model 2	Model 3
Years after first birth (Reference: 0)			
1	3.31	2.275	8.086
2	3.972	0.94	0.131
Partner's hours per week spent in child rearing			
Less than 10 hours	0.198	0.114	0.0224*
(Reference: 10-19 hours)			
20+ hours	0.37	0.361	0.347
Highest education level achieved (Reference: Year 11 or lower)			
Year 12		0.676	1.198
Tertiary		1.347	6.55
Age at first birth		1.055	1.146
Annual wage and salary		1.035*	1.113*
Partner's annual wage and salary		0.996	1.007
Used or thought about using any kind of childcare (1 = yes, 0 = no)		5.97	45.51*
Often feel tired, worn out or exhausted from meeting the needs of my children			0.210*
Being a parent is harder than I thought it would be			0.65
Often feel very lonely			1.959
Do fair share of looking after children			0.309
Observations	79	75	75
Bayesian information criterion	90.27	96.73	97.19

Exponentiated coefficients (odds ratios)

Note * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

working full-time (Table 6). In all models, and consistent with the comparison of probability in Table 4, compared to the situation where a partner spends 10–19 hours (the reference) in child rearing, mothers are less likely to have a second child when their partners spend less time in child rearing. However, this is significant at the 5% level only in Model 3 when variables for emotional (or subjective) parenthood experience are included. This can be interpreted as showing that the importance of support by their partner is clearer when controlling for the emotional situation of the mothers. It is

reasonable to surmise that the partner's participation in child rearing is important when a mother works full-time. When we restrict the sample to mothers (of one child) working full-time, we see other differences in the estimates from the models in which all mothers (of one child) included. Annual wages and salary significantly increased the probability of a second birth, which was not the case in the sample of all mothers. The significant negative impact of the response to the statement, "I often feel tired, worn out or exhausted from meeting the needs of my children" was not seen in the models using all mothers in the sample. It is also interesting to see that the use of any form of childcare also increases the probability of a second birth, but this might be the result of the small number of mothers who were working full time and were not using or thinking about using childcare.

5. Discussion and conclusions

Working hours

The working hours of the mothers have a consistent effect on the probability of giving birth in the following year. Mothers of one child who were working part time (1–34 hours) were most likely to give birth to a second child within a year. This can be interpreted as showing that mothers with one child who are working full-time are less likely to have a second child because of the stress and the time pressure of work. However, the effect remains statistically significant even when a variable measuring the negative subjective experience of child rearing was introduced. I cannot exclude the possibility that full-time employment reflects the possibility that a mother is not expecting another birth in a short period. Although working time was measured prior to measuring the timing of a second birth, it is possible that the respondent was already pregnant and expecting to give birth in a couple of days. This is the limit of measuring births in one-year intervals.

How should we interpret the negative effect of not working? This can be interpreted as resulting from the stress of being at home with a small child. But again, this effect remained statistically significant even when variables measuring negative subjective experience related to child rearing were included. This might be because we cannot fully measure stress with the variables used in this model. It is also possible that not being in work reflected a short duration from the first birth. Although we controlled for duration from the first birth, each unit is 12 months' long.

Partners' participation in child rearing

The partners' hours per week spent in child rearing did not have a statistically significant effect on the birth of second child in the whole sample, but once we limited the sample to mothers working full-time, it mattered significantly. Although we should be cautious in drawing conclusions from this because of the small number in the sample, this finding implies that fathers' participation in the care of the first child has an important effect on the second birth, at least when a mother works full-time.

Emotional experiences relating child rearing

The more strongly mothers of one child agree to the statement "Being a parent is harder than I thought it would be", the less likely they are to have second child in the following year, but responses to other statements such as, "I often feel tired, worn out or exhausted from meeting the needs of my children" did not have a significant effect. However, once we restricted the sample to mothers working full-time the responses to the statement of tiredness referred to above have a statistically significant impact on the second birth. We can interpret this to indicate that the difficulty of reconciling work and parental responsibility makes it difficult for mothers to have another child only when they work full time.

In this paper I have tried to show the importance of a longitudinal design for analysing the effects of the work–life situation of mothers with a small child on parity progressions. Although the findings of this paper, summarised above, are worthy of note, we should be cautious not to draw concrete conclusions from it. This is partly because of the small number of observations of women who work full-time, and partly because time span used for measurement in this paper is one year, which seems to be too long for the analysis of fertility. These limitations should be addressed in further examinations with a more accurate measurement of the timing of births and additional observations using more panels.

Acknowledgements

An earlier version of this paper was presented at the Kansai regional meeting of Population Association of Japan on 29 November 2008, the Centre for Work + Life (University of South Australia) seminar on 13 March 2009 and the meeting of Kansai Association of Family Sociology on 18 April 2009. The author thanks all the participants for their helpful suggestions. He is especially grateful to Professor Barbara Pocock for her support and advice with my research on work–life issues in Australia, and Ms Carole Pearce for copy-editing drafts of this paper.

This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Community Services and Indigenous Affairs and is managed by the Melbourne Institute of Applied Economic and Social Research.

The research project of which this paper is a part is funded by a Grant-in-Aid for Scientific Research (C 20604008).

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