

# Final Report

## What determines how long women spend out of the labour force after the birth of a child?

Project 5/2007

Hielke Buddelmeyer and Yin King Fok

*Melbourne Institute of Applied Economic and Social Research*

December 2007

Final report prepared for the Australian Government Department of Employment and Workplace Relations under the Social Policy Research Services Agreement (2005-09) with the Melbourne Institute of Applied Economic and Social Research.

### **Acknowledgements:**

*This research was commissioned by the Australian Government Department of Employment and Workplace Relations (DEWR) under the Social Policy Research Services Agreement (2005-09) with the Melbourne Institute of Applied Economic and Social Research. The views expressed in this paper are those of the authors alone and do not represent those of DEWR.*

*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 (FaCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the author and should not be attributed to either FaCSIA or the MIAESR*

## Table of Contents

Executive Summary .....	3
1. Introduction .....	10
2. Previous Research .....	13
3. The HILDA Survey .....	15
3.1. Selection and identification of mothers with newborns .....	15
4. Descriptive Statistics .....	18
4.1. Comparing working hours pre- and post-childbirth .....	18
4.2. Length of labour market interruption following birth .....	21
4.3. Work-Life balance entitlements and return to work rates .....	23
5. Economic Modelling .....	26
5.1. Returning to work .....	26
5.1.1. Explanatory variables affecting the probability of returning .....	28
5.1.2. Results .....	29
5.2. Returning to work: Part-time or Full-time .....	34
5.2.1. Results .....	34
5.3. The length of the interruption .....	39
5.3.1. Results .....	40
6. Concluding remarks .....	43
Appendix .....	45

## Executive Summary

This report uses the first five years of the Household, Income and Labour Dynamics in Australia (HILDA) Survey - spanning the period 2001 to 2005 - to investigate mothers' employment status after childbirth.<sup>1</sup> This report looks at three major questions:

1. What factors affect the return to work after the birth of a child?<sup>2</sup>
2. What factors determine the incidence of part-time versus full-time employment upon re-entry after the birth of a child?
3. What factors determine *how long* women spend out of the labour force after the birth of a child?

### Summary statistics on mothers' employment based on simple cross tabulations

During the period from 2001 to 2005:

- 75 per cent of mothers who worked in the year before they gave birth subsequently returned to work. This contrasts with mothers who did not work in the year before they gave birth – 26 per cent of this group subsequently returned to work.
- When women did return to work, they were most likely to work part-time (less than 35 hours a week), even if they worked full-time before giving birth. However, some mothers did work longer hours after having their child.
- Of mothers who worked full-time (35 hours or more) in the year before giving birth, 36 per cent had returned to full-time work, 44 per cent were working part-time, and 20 per cent had not yet returned to work.
- Of mothers who worked part-time in the year before they gave birth, 67 per cent had returned to part-time work, 8 per cent were working full-time, and 25 per cent had not yet returned to work.

---

<sup>1</sup> This report concerns women who gave birth in the years 2001 to 2005. Note that the data for mothers who gave birth in 2001 covers their employment status over the next four years of surveys, while the data for mothers who gave birth in 2002 only covers their employment status over the next three years of surveys, and so forth.

<sup>2</sup> Note: A return to work refers to paid work. Note also that all mothers in the sample have been in employment at some time prior to giving birth, but not necessarily in the year immediately preceding the birth.

- Of mothers who did not work in the year before giving birth, 74 per cent had not taken up employment, 24 per cent were working part-time and 2 per cent were working full-time.
- Of mothers who were in work prior to giving birth, simple cross tabulations of maternity leave entitlement and return to work rates show that:
  - Women entitled to paid maternity leave (PML) were much more likely to return to work. 64 per cent of women entitled to PML were working within a year of the birth, compared with 40 per cent of women who were not entitled to PML. In particular, women entitled to PML were much more likely to return to full-time work (31 per cent, compared to 10 per cent of women without this entitlement).
  - 57 per cent of women entitled to unpaid maternity leave were working within a year of the birth, compared with 38 per cent of women who were not entitled to it<sup>3</sup>.

**What factors affect the return to work after the birth of a child? Results from a logistic regression.**<sup>4</sup>

- In line with international, as well as more limited Australian research, the biggest predictor for post-childbirth labour market participation is to be in work prior to giving birth. Mothers who were employed in the year prior to giving birth are 30 to 36 percentage points more likely to be in work post-childbirth than mothers who were not.
- The probability to return to work depends on the amount of time that has passed since giving birth. With the probability to return in the first year (i.e. at the 1<sup>st</sup> interview post-birth) as the reference, the probability to return after two years (i.e. 2<sup>nd</sup> interview) is 8 to 11 percentage points higher, and the probability to return after 3 or more years is 4 to 6 percentage points higher – depending on the model specification. Thus, the probability to return first rises over time, then falls.<sup>5</sup>

---

<sup>3</sup> Entitlement to unpaid maternity leave is based on the respondent’s answer to the question “Following is a list of conditions and entitlements that employers sometimes provide. For each, indicate whether you would be able to use it if you needed to in your current job”.

<sup>4</sup> The logistic regression uses all mothers that are observed to give birth in the first 5 waves of the HILDA survey. They are followed until they are observed to be working (or the survey ends).

<sup>5</sup> In the economic model one needs to set one of the time effects to “zero”. This does not mean that the probability to return to work in this reference period is zero (which is captured by the constant in the model) but it does imply that time effects can only be expressed in deviations from the reference period.

- The likelihood of working after childbirth has increased over time, and quite strongly so. When comparing 2002 with 2005, the probability of being in work for the first time post-childbirth is about 20 percentage points higher in 2005 than in 2002, all other things equal.
- Higher educated mothers and mothers in professional occupations are most likely to return to work after childbirth. Age plays a role too, with younger mothers more likely to return to work. Mothers in the youngest age group (under 25) are about 30 percentage points more likely to be in work than mothers in the oldest age group (35 or older). These effects are obtained using regressions and thus control for other contributing factors such as occupation, industry, calendar time effects, family composition and the like.
- Women working in government administration and defence, and in wholesale trade, are the most likely to return to work after having a child. Women working in accommodation, restaurants and cafes, transport and storage, and communication services are the least likely to return to work after childbirth.
- Paid maternity leave increased women's likelihood of returning to work after childbirth. However, the identified effect did not reach conventional levels of statistical significance and hence caution needs to be applied in regards to the robustness of this finding. Furthermore, the identified effect was much smaller than could have been expected based on the simple cross tabulations of entitlements and return rates. Thus, after controlling for other factors that influence return rates, such as education, occupation, industry, age, household composition etc., the apparently strong effect of paid maternity leave on return rates is very much reduced and in fact almost disappears. Phrased differently, it is not access to paid maternity leave per se that increases return rates, it is the characteristics of the mothers that hold jobs with such entitlement that are driving the observed strong correlation between return rates and access to paid maternity leave. One caveat is that the HILDA sample is a short panel. Because paid maternity leave also implies a family is able to finance a longer leave period it may well be that the sample is too short to record the return.
- The two entitlements that increase the probability to return the most are flexi-time and unpaid maternity leave. Women with access to these entitlements were about 7 to 12

percentage points more likely to return than women without access to these entitlements - depending on the model specification.<sup>6</sup>

**What factors determine the incidence of part-time versus full-time employment upon re-entry after the birth of a child? Results from a multinomial logistic regression.**

- Overall, the proportion of mothers who work increases as their children age, but the return pattern is different for full and part-time work. The increase in this proportion is smooth and gradual for full-time work, meaning that mothers who return to full-time employment are approximately equally likely to do so after just one year, 2 years, or 3 or more years. The increase in the proportion of mothers who return to part-time work is not smooth and gradual. That is, relatively few mothers return after 1 year, the bulk returns after 2 years and others –more than after 1 year, but fewer than after 2 years- return after 3 or more years.
- Note that the combined pattern for full-time and part-time work (i.e. all those who return to work) is what was identified in the simple logistic regression of the probability to return or not: the probability to return first rises over time, then falls. This shape, it turns out, is driven by the return to part-time work.
- The increase in the probability of working post-childbirth over the period 2002 to 2005 is due to the increase in the probability of working part-time post-childbirth. The return rates to full-time work over time are much more stable, although higher post-2002 than they were in 2002.
- Mothers with young children (0 to 4 years) are less likely to work full-time and more likely to work part-time post-childbirth than mothers with school-aged children (5 to 14 years).
- Older mothers are less likely to be observed in either full-time or part-time employment post-childbirth, compared to younger mothers. These effects are obtained using regressions and thus control for other contributing factors such as occupation, industry, calendar time effects, family composition and the like.

---

<sup>6</sup> Entitlement to unpaid maternity leave is based on the respondent's answer to the question "Following is a list of conditions and entitlements that employers sometimes provide. For each, indicate whether you would be able to use it if you needed to in your current job". This question is asked in the self-completion questionnaire.

- Mothers in professional occupations were more likely to be employed post-childbirth (and particularly, more likely to be working full-time) than mothers in intermediate or elementary occupations. Interestingly, mothers in intermediate occupations were the most likely to be not working.
- The two industries with the highest incidence of women working full-time after the birth of their child are government administration and defence, and wholesale trade. The two industries with the lowest incidence of women working full-time after the birth of their child are cultural, recreational, personal and other services, and accommodation, restaurants and cafes.
- The two industries with the highest incidence of women working part-time after the birth of their child are wholesale trade, and construction plus agriculture, forestry and fishing. The two industries with the lowest incidence of women working part-time after the birth of their child are transport and storage, and communication services.
- Being employed in the year immediately prior to giving birth increases the likelihood of mothers returning to work after childbirth. Compared to mothers who did not work, this increase is 17 and 13 percentage points for part-time and full-time post-birth employment, respectively.
- Access to paid maternity leave entitlements increases the likelihood of being in full-time employment by about 5 percentage points, but this is offset by an equally large decrease in the likelihood of being in part-time employment post-childbirth.
- Women who are born in a non-English speaking country are more likely than other women to work full-time after childbirth, but they are also less likely to work part-time. The net effect of ethnicity (as measured by country of birth) on post-childbirth employment is close to zero.

**What factors determine how long women spend out of the labour force after the birth of a child?<sup>7</sup>**

---

<sup>7</sup> The data below only refer to women who give birth and return to work during the time span of our data,

- Using mothers who gave birth between 2001 and 2005 and who were working in the year prior to giving birth, on average, approximately 34 percent returned within the first 6 months, a further 27 percent returned between 6 months and a year, a further 20 percent returned after 1 to 2 years and around 8 percent returned after more than 2 years.
- Mothers who were working after – but not before – giving birth generally did not take up employment until at least one year after giving birth.
- The more educated the mother, the lower is the probability that she returns to work in the first year after childbirth and the higher is the probability of her being in work three or more years after giving birth. Mothers with lower levels of education return to work faster, which may indicate a greater financial need to return to work.
- Women’s relationship status also appears to impact their ability to afford a longer break from the workforce when they have a child. Mothers who have a partner are less likely than single mothers to be back in work within a year of giving birth.
- Mothers with young children are more likely to take several years off work when they have a child. In contrast, mothers with school-aged children tend to have a relatively short break from work following childbirth.
- The lower the occupational status (professional, intermediate and elementary) the less likely is a short break from work after having children, all else being equal. Women in an intermediate occupation tend to have a long time away from work—they are 14 percentage points more likely than professional women to be out of the workforce until at least 3 years after the child is born.
- Mothers who work in cultural, recreational, personal and other services, or wholesale trade industries are most likely to return to work within the first year. At the other end of the spectrum, mothers who work in the accommodation, restaurants and cafes, or communication services industries are most likely to return to work after a relatively long break after birth, i.e. three or more years..
- Being in the workforce before giving birth has much more of an impact on women’s likelihood of returning to work after childbirth, than on the length of time women take off work when they give birth.



## 1. Introduction

This report seeks to answer three major questions. They are:

1. What factors affect the return to work after the birth of a child?
2. What factors determine the incidence of part-time versus full-time employment upon re-entry after the birth of a child?
3. What factors determine *how long* women spend out of the labour force after the birth of a child?

This report is part of a larger research agenda that seeks to understand the factors that influence women's workforce participation. Several factors play a role, but for women, giving birth or having children greatly affects attachment to the labour market. As such, a greater understanding of factors that determine how long women spend out of the labour force after the birth of a child, and what factors determine whether they return, is important to assist in future policy analysis and formulation.

To address the three major research questions we use a combination of techniques. First, to give an overview of the Australian case regarding female labour supply and childbirth we use a wide series of descriptive statistics. The advantage of these descriptive statistics is that they are free of any modelling assumptions and are very powerful in summarizing the key stylised facts. The disadvantage is that when one wants to assess the impact of a variety of factors, such as age, education, or industry of employment, a breakdown of descriptive statistics by such factors results in a myriad of tables, which then undermines the strength of the descriptive analysis: summarizing the key stylised facts. To capture the effects of various factors simultaneously, and to maintain a clear overview, the second part of the report will use economic modelling to describe female labour supply post-childbirth.

Specifically, the first research question related to the factors influencing the return to work will use all women who are observed to give birth during the HILDA survey and for whom we have information on their employment state in the wave<sup>8</sup> immediately prior to giving birth. Restricting it to mothers for whom we have pre-childbirth employment information is based on the fact that the literature consistently finds that it is crucial to control for it. A return

---

<sup>8</sup> The HILDA survey collects data annually. The different years of data are referred to as waves. The HILDA survey started in 2001, with wave 1.

to work is broadly defined. A woman who was not working in the wave immediately preceding childbirth is also considered to have returned to work if she is observed to be in work at some time after childbirth.<sup>9</sup> The outcome variable of interest is the probability of having returned for the first time at a given post-childbirth interview, e.g. at the first, second or later interview. This outcome is modelled using a logistic regression. The second research question then builds on this analysis by looking at the decision to work part-time or full-time post-childbirth. This part of the analysis requires a multinomial discrete choice model. We use a multinomial logistic regression. Finally, the last research question then returns to the dichotomous outcome of employment, but rather than the outcome variable of interest being the probability of a return (over time), we focus on the length of time it takes to return. This length of time is measured in post-childbirth interview waves and the analysis uses a multinomial logistic regression. The outcome variable - the length of the interruption – can take on three values: 1, 2, or 3<sup>+</sup>. They correspond to being observed to be in work for the first time post-childbirth at the 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> or later post-childbirth interview.

Prior to discussing the results from the model and the descriptive statistics it is useful to highlight the difference between the two approaches in more detail. An understanding of this difference will help to interpret what would otherwise appear to be inconsistencies. Descriptive statistics are crosstabulations of two variables of interest, say access to paid maternity leave and post-childbirth employment incidence. This crosstabulation does not account for the fact that paid maternity leave may be strongly correlated with, say, occupational status. If professionals are much more likely to have access to paid maternity leave but are also much more likely to be working post-childbirth irrespective of having access to paid maternity leave (e.g. because the mother's lifestyle requires her to work to meet financial obligations or, alternatively, because the work is highly intellectually stimulating) then a simple crosstabulation of access to paid maternity leave and post-birth employment outcomes will show that mothers with access have higher post-birth employment rates than mothers without access. What is driving this effect however is that mothers with access are likely to be professionals, and professionals are more likely to work post-childbirth. To overcome this effect of confounding factors and to obtain a “net” effect of access to paid maternity leave (or education, or occupational status, or industry, or any other factor of interest) a regression model is estimated where all factors are included simultaneously.

---

<sup>9</sup> In the economic models used in section 5 we control for industry and occupation. These variables are only available for individuals who have been in employment, but not necessarily in the wave immediately preceding childbirth, hence the broad interpretation of a return to work.

Identification of these net effects comes from the fact that not all mothers whose occupational status is professional will have access to paid maternity leave, and that not all mothers who work(ed) in wholesale trade industries will have below Year 12 levels of education, to name but two examples.

The report consists of the following 5 sections. In section 2 we give a very brief and limited overview of the relevant literature regarding female labour supply and childbirth with a focus on Australian evidence. Section 3 describes the dataset used in this study. Section 4 contains the descriptive statistics of several elements of female labour supply and childbirth, such as a comparison of the number of hours worked pre- and post-childbirth (section 4.1), the length of the interruption (section 4.2) and the return rates by work-life entitlements in the job prior to giving birth (section 4.3). Section 5 comprises the economic modelling that estimates the probability of returning, the probability of returning part-time or full-time and the length of the labour market interruption in subsections 5.1, 5.2, and 5.3, respectively. Section 6 contains some concluding remarks, drawing together the lessons from the various sections in the report.

## 2. Previous Research

There has been relatively little research undertaken in Australia on the factors that determine how long women spend out of the labour force after the birth of a child and what factors affect their return to work. International studies are more plentiful, e.g. Joesch (1994), Barrow (1999), and Miller and Xiao (1999) for the US, and Gutierrez-Domenech (2002) for Spain. The general finding from the international literature is that labour market attachment around first birth is a very good predictor of labour market attachment around subsequent births. Many studies also highlight the role of institutions such as the tax system or the provision of paid/unpaid maternity leave.

Baxter (2005) examines transitions to work after the birth of a child in Australia using the Negotiating the Life Course (NLC) survey that covers the period 1996-2000. Her research shows there are differences in return to work rates by sector and occupation, with mothers who had worked as managers or (para-) professionals most likely to be in work post-childbirth. One of the strongest predictors for post-childbirth employment is whether or not the mother was employed the year before childbirth. There exists related Australian research on the availability and uptake of parental leave (e.g. Baird and Litwin, 2005), and the existence and/or size of an earnings gap for re-entering mothers (e.g. Breusch, T. and E. Gray, 2004). Baird and Litwin (2005) provide a very detailed discussion on the provision of paid and unpaid maternity leave in Australia and find that unpaid maternity leave, available since 1993 to all employees after 12 months of continuous service, is heavily underutilised. Furthermore, access to paid maternity leave is, more or less, restricted to public sector employees, union members, and employees in larger workplaces and organisations. One finding that is of interest is that the authors conclude that many women cannot afford to take time off from work and that low income does not act as a compensating wage differential for access to paid maternity leave. Diamond, Baird and Whitehouse (2006) describe a case study of the patterns of maternity leave take-up in a large state utility and describe very complex arrangements that combine paid maternity leave with annual leave, long service leave and unpaid maternity leave. Almost all maternity leave periods by employees of the firm included the maximum paid leave entitlement of 9 weeks, or when taken as half-time, 18 weeks. The case study also provides an interesting insight into the reasons women list when asked why they returned to work after the birth of a child: a love of the work, wanting to maintain their human capital, enjoying the interaction with colleagues, and money.

Although not directly relevant for the research questions under investigation in this report, we do briefly mention the findings in Breusch and Gray (2004) because returning to work is only one aspect of post-childbirth employment. Another aspect of post-childbirth employment is the impact of having a baby on a woman's earnings. Breusch and Gray (2004) estimate a model of earnings for women which allows them to simulate the effect of having children on women's potential lifetime earnings. They find that the first child reduces potential lifetime earnings by about 31 per cent, the second child reduces it by an additional 13 per cent and a third child reduces it once more by an additional 9 per cent. We do agree that the question of (reduced) earnings after a return to the labour market following childbirth is a very interesting one, but the study here is focussed on post-childbirth *participation*.

### 3. The HILDA Survey

The data used in this study come from the first five waves of the HILDA Survey, a longitudinal survey which focuses on work, income and family issues, that has been following a sample of Australians every year since 2001.<sup>10</sup>

Details about the evolution of the responding sample over the first five waves are provided in Table 1. The key statistic in this table is the number of people interviewed in all five waves – 10,392, or 74 per cent of those persons initially interviewed in wave 1.

Note that while the original sample was intended to be representative of all persons in Australia living in private dwellings (with the exception of a small number of people living in the remotest parts of the country), relatively high levels of non-response in wave 1 together with subsequent sample attrition raises the spectre of response bias. Included in the dataset, however, is a set of population weights designed to correct for both sampling and response bias. These weights are used whenever population estimates are being reported.

**Table 1 Individual Response (N) by Wave, HILDA Survey**

<i>Wave first interviewed</i>	<i>Wave 1</i>	<i>Wave 2</i>	<i>Wave 3</i>	<i>Wave 4</i>	<i>Wave 5</i>
Wave 1	13969	11993	11190	10565	10392
Wave 2	-	1048	705	594	572
Wave 3	-	-	833	543	482
Wave 4	-	-	-	706	494
Wave 5					819
TOTAL	13969	13041	12728	12408	12759

Source: HILDA Survey, release 5.1.

#### *3.1. Selection and identification of mothers with newborns*

The population of interest are mothers who give birth during the time span of our data. Two dummy variables are created to identify these mothers. The purpose of using two dummy

<sup>10</sup> The HILDA survey is described in more detail in Goode and Watson (2006).

variables in conjunction is to ensure that all mothers with newborns are captured in the sample. Otherwise, due to incorrect responses, some mothers that should be in the sample will not be.

One dummy variable is derived from the variables `_tchad` (the number of children the respondent ever had) and `_tchave` (the number of children the respondent currently has). Specifically, it takes on the value of 1 when the number of children an individual currently has increases from one wave to the next and 0 otherwise.

In the HILDA survey, respondents are asked how many children they have ever had in waves 1 and 5, as opposed to how many children they currently have in waves 2, 3 and 4. Hence, the variable `_tchave` is missing in waves 1 and 5. In contrast, the variable `_tchad` is in each wave of HILDA. For waves 1 and 5, it represents the answer given directly by the respondent. For waves 2, 3 and 4, `_tchad` is derived. Specifically, for waves 2, 3 and 4, `_tchad` is calculated as the sum of `_tchad` in the previous wave plus any new children born to the household. Adjustments are made for inconsistent individual responses including the following:

- for those who responded that they have never given birth while simultaneously indicating that the number of children they currently have is positive, the number of children ever had is set to equal the self-reported number of children they currently have.
- the number of children they currently have is adjusted to eliminate inexplicable discrepancies between waves (respondents sometimes declare a number of children that is less than the value they report for both the previous wave and subsequent waves).
- the number of children they currently have is set to equal the value of the derived variable `_tchad` where the respondent reports a number for `_tchave` that is greater than that of `_tchad` within a particular wave.

The second dummy variable is derived using the `_rcage` and `_ncage` variables to denote a mother's resident and non-resident children, respectively. If one of these children is aged 0 in a particular wave, then the dummy indicating childbirth took place takes on a value of 1.



## 4. Descriptive Statistics

### 4.1. Comparing working hours pre- and post-childbirth

Table 2 below cross tabulates the hours worked in the last wave before giving birth and the number of hours worked the first time the mother is observed to be in work again. This could be immediately after birth, but also several years later. The word ‘return’ here also captures women who are observed to be not working in the last wave prior to giving birth, but who are in work some time after giving birth.<sup>11</sup> For mothers that give birth in say, wave 2, we will have more post-childbirth data available to observe a return than we do for women giving birth in say, wave 5. However, the goal of Table 2 is to provide an overview of the observed combinations of pre and post-childbirth hours of work in the HILDA data.

An overall impression from Table 2 is that about 75 per cent of mothers who were working in the wave prior to birth are observed to be working at a later wave during the time span of the data. For mothers who were not working in the wave prior to giving birth the reverse holds. That is, about 26 per cent are observed to be working at a later wave during the time span of the data.

**Table 2 Hours worked before and after birth: All mothers**

Hours worked in year before birth		Hours worked when first returned to work after birth				Total
		Not yet returned to work	Less than 20 hours	20-34 hours	35 hours and more	
Did not work	(N)	193	47	17	5	262
	(%)	73.66	17.94	6.49	1.91	100
Less than 20 hours	(N)	23	55	8	6	92
	(%)	25.00	59.78	8.70	6.52	100
20-34 hours	(N)	20	29	25	7	81
	(%)	24.69	35.80	30.86	8.64	100
35 hours and more	(N)	40	51	36	71	198
	(%)	20.20	25.76	18.18	35.86	100
Total	(N)	276	182	86	89	633
	(%)	43.60	28.75	13.59	14.06	100

<sup>11</sup> They may have worked prior to the last wave before childbirth so in that respect one could speak of a return.

Source: HILDA Survey, release 5.1.

Table 3 below is an alternative representation of Table 2 and focuses on the distinction between part-time and full-time and only considers mothers who were working in the wave prior to giving birth. Upon return, part-time hours (i.e. less than 35 hours) are the most prevalent, but we do observe mothers working more hours after giving birth, too. When the sample is limited to those mothers working full-time pre-childbirth, then the proportion returning to full-time versus part-time is close to 45/55, conditional on them having returned to work (35.86 per cent for full-time versus 25.76 plus 18.18 per cent for part-time). For mothers who worked part-time in the wave before giving birth the proportion returning to full-time versus part-time is close to 10 to 90. However, the small proportion of women who changed from part-time to full-time employment (7.56 per cent) implies that this result should be interpreted with considerable caution given the small sample size.

**Table 3 Hours worked after birth by PT/FT status pre-childbirth**

PT/FT status in year before birth		Hours worked when first returned to work after birth				Total
		Not yet returned to work	Less than 20 hours	20-34 hours	35 hours and more	
PT (less than 35 hours)	(N)	43	83	33	13	172
	(%)	25.00	48.26	19.19	7.56	100
FT (35 hours or more)	(N)	40	51	36	71	198
	(%)	20.2	25.76	18.18	35.86	100
Total	(N)	83	134	69	84	370
	(%)	22.43	36.22	18.65	22.70	100

Source: HILDA Survey, release 5.1.

Table 4 and Table 5 below separate the mothers into two broad age groups, but display the same information as in Table 2. Given that we identify only about 600 women giving birth in the HILDA sample for which we have pre-childbirth employment information a finer breakdown of age groups was not practical as it lead to some cell sizes becoming very small. Hence the broad split into younger and older mothers, with the threshold age set at 33.

Compared to all mothers, mothers under 33 years of age when giving birth are less likely to have returned to work compared to all mothers, *if they were in part-time employment in the*

*year prior to giving birth* (Table 4). The immediate implication is that older mothers must exhibit a greater tendency towards returning to work when compared with all mothers, if they

**Table 4 Hours worked before and after birth: Mothers under 33 years of age**

Hours worked in year before birth	Hours worked when first returned to work after birth					Total
	Not yet returned to work	Less than 20 hours	20-34 hours	35 hours and more		
Did not work	(N)	130	30	10	4	174
	(%)	74.71	17.24	5.75	2.30	100
Less than 20 hours	(N)	16	21	4	2	43
	(%)	37.21	48.84	9.30	4.65	100
20-34 hours	(N)	17	14	15	4	50
	(%)	34.00	28.00	30.00	8.00	100
35 hours and more	(N)	25	34	21	40	120
	(%)	20.83	28.33	17.50	33.33	100
Total	(N)	188	99	50	50	387
	(%)	48.58	25.58	12.92	12.92	100

Source: HILDA Survey, release 5.1.

were in part-time employment in the year prior to giving birth, which is indeed displayed in Table 5 below. There is no difference in non-return rates by age group for mothers who were in *full-time employment* in the year before giving birth, which is close to 20 percent. One possible explanation for the higher return rates for older mothers could be that older mothers are more likely to experience the birth of an additional child whereas younger mothers may be more likely to be experiencing a first birth. If it is true that mothers take more time off for the first child than they do for the second child then this could give rise to this stylised fact. Alternatively, older mothers may have stronger attachments to the labour market or higher paying jobs in line with their higher (potential) work experience. Overall though, there does not appear to be any large behavioural difference between mothers of different ages when it comes to return to work rates. Furthermore, the role of age in the descriptive tables does not account for education, occupation or family composition. Once these confounding factors are controlled for in the economic models in section 5 the effect of age may very well change, and in fact it does.

**Table 5 Hours worked before and after birth: Mothers 33 years of age or older**

Hours worked in year before birth	Hours worked when first returned to work after birth					
	Not yet returned to work	Less than 20 hours	20-34 hours	35 hours and more	Total	
Did not work	(N)	63	17	7	1	88
	(%)	71.59	19.32	7.95	1.14	100
Less than 20 hours	(N)	7	34	4	4	49
	(%)	14.29	69.39	8.16	8.16	100
20-34 hours	(N)	3	15	10	3	31
	(%)	9.68	48.39	32.26	9.68	100
35 hours and more	(N)	15	17	15	31	78
	(%)	19.23	21.79	19.23	39.74	100
Total	(N)	88	83	36	39	246
	(%)	35.77	33.74	14.63	15.85	100

Source: HILDA Survey, release 5.1.

#### 4.2. *Length of labour market interruption following birth*

Table 2 to Table 3 analyse mothers' labour market status before birth and report the number of hours worked when first observed to be in work post-childbirth. Table 6 and Table 7 below display the length of time between giving birth and being in work post-childbirth. This data is available in wave 5 where respondents are asked to think of their last pregnancy and report when they stopped working and when they returned. This data is then linked to the last pregnancy of the respondent that can be identified using the dummy indicator for having given birth between waves. Doing this allows us to link each respondent's answer to the year in which they had their baby. Obviously, for those mothers who gave birth early during our sample we have more post-childbirth data available. Table 6 displays the information for mothers who were working before giving birth. Table 7 is the counterpart for mothers who were not working before giving birth.

As in Table 2, labour market status before giving birth is a strong predictor of future labour

market status. Mothers who were working before birth are more likely to be working after giving birth than do mothers who were not working. Focussing on the result in Table 6, and using mothers who gave birth between 2001 and 2002 (first column), there appear to be spikes in the return dates at less than 3 months (25 per cent), 3 to 6 months (20 per cent), and 1 to 2 years (also 20 per cent).

**Table 6 Duration out of labour force after birth: mothers who worked in year before birth**

Duration	Years between which birth occurred			
	2001-2002	2002-2003	2003-2004	2004-2005
	(%)	(%)	(%)	(%)
Has not returned to work yet	7.14	10.39	15.31	61.67
Less than 3 months	25.00	18.18	12.24	20.00
3-6 months	17.86	14.29	20.41	10.00
6-9 months	14.29	18.18	22.45	6.67
9-12 months	5.36	9.09	12.24	1.67
1-2 yrs	19.64	24.68	17.35	
2-3 yrs	7.14	5.19		
More than 3 years	3.57			
Total (%)	100	100	100	100
Total (N)	56	77	98	60

Source: HILDA Survey, release 5.1.

Mothers that were not working prior to giving birth (Table 7 below), but who are observed to be in work at a later wave, generally do not start work until at least one year after giving birth.

**Table 7 Duration until entering labour force after birth: mothers who did not work in year before birth**

Duration	Years between which birth occurred			
	2001-2002	2002-2003	2003-2004	2004-2005
	(%)	(%)	(%)	(%)
Has not returned to work yet	55.10	61.76	68.33	77.14
Less than 3 months	8.16	7.35	3.33	2.86
3-6 months	0.00	0.00	6.67	8.57
6-9 months	6.12	4.41	8.33	8.57
9-12 months	2.04	0.00	3.33	2.86
1-2 yrs	6.12	20.59	10.00	
2-3 yrs	12.24	5.88		
More than 3 years	10.20			

Total (%)	100	100	100	100
Total (N)	49	68	60	35

Source: HILDA Survey, release 5.1.

Note: 29 mothers who reported they had *never* worked, either before or after given birth, were omitted. The total number of mothers in Table 6 and Table 7 is less than the total in Table 2 due to the additional restriction that the mothers are observed in wave 5.

### 4.3. *Work-Life balance entitlements and return to work rates*

Table 8 below is limited to mothers who were in work prior to giving birth. It compares mothers' labour force status immediately after birth and their entitlements in the job prior to giving birth. These entitlements are entitlements that can be expected to significantly enhance the ability to obtain a desired work-life balance and to affect the return to work rates. They are

- Paid maternity leave
- Unpaid maternity leave
- Parental leave
- Flex-time options
- The ability to work from home
- The ability to work permanently part-time

Table 8 shows that mothers who hold jobs with such entitlements prior to giving birth are more likely to be observed to have returned to work in the first post-childbirth interview. Unpaid maternity leave is the entitlement with the largest difference between mothers who had access and mothers who did not, with mothers with access to unpaid maternity leave entitlement having a probability of being in work of about 57 per cent, compared to about 38 per cent for mothers who did not.

The work-life balance entitlements in the job prior to giving birth are all analysed in isolation where in reality a combination of these entitlements is possible. Furthermore, they do not control for the level of education or occupational status. If it is true that higher educated women in premier occupations are more likely to return per se, but also more likely to have

access to work-life balance entitlements, then not controlling for education and occupation will lead to work-life balance entitlements absorbing the positive re-employment effects of education and occupation. A solution to this problem is provided in the next section where we will estimate models relating to post-childbirth employment that are able to control for a variety of factors simultaneously.

**Table 8 Entitlements in job prior to birth and LFS in first year after birth**

Entitlement	Labour force status in first year after birth					Total
	FT	PT	UE	NILF		
<b>Paid Maternity Leave</b>						
Not entitled	(N)	12	37	3	70	122
	(%)	9.84	30.33	2.46	57.38	100
Entitled	(N)	34	36	1	38	109
	(%)	31.19	33.03	0.92	34.86	100
<b>Unpaid Maternity Leave</b>						
Not entitled	(N)	5	12	1	27	45
	(%)	11.11	26.67	2.22	60.00	100
Entitled	(N)	41	62	3	74	180
	(%)	22.78	34.44	1.67	41.11	100
<b>Parental Leave</b>						
Not entitled	(N)	9	20	1	33	63
	(%)	14.29	31.75	1.59	52.38	100
Entitled	(N)	32	46	3	63	144
	(%)	22.22	31.94	2.08	43.75	100
<b>Flexi time</b>						
Not entitled	(N)	18	28	3	50	99
	(%)	18.18	28.28	3.03	50.51	100
Entitled	(N)	23	46	0	53	122
	(%)	18.85	37.7	0	43.44	100
<b>Home based work</b>						
Not entitled	(N)	28	47	3	84	162
	(%)	17.28	29.01	1.85	51.85	100
Entitled	(N)	14	28	0	19	61
	(%)	22.95	45.9	0	31.15	100
<b>Permanent Part-Time</b>						
Not entitled	(N)	7	7	1	21	36
	(%)	19.44	19.44	2.78	58.33	100
Entitled	(N)	35	63	2	77	177
	(%)	19.77	35.59	1.13	43.5	100

Notes: FT, PT, UE and NILF stand for full-time, part-time, unemployed and not in the labour force, respectively. Source: HILDA Survey, release 5.1.

## 5. Economic Modelling

This section presents the results of the economic modelling. There are three different models that are discussed and reported in three subsections which in turn address the three research questions. The first model focuses on the probability of returning to work without making a distinction between returning to part-time or full-time work. The second model is an extension of the first model and distinguishes between returning to full-time or part-time employment. Each of the models also investigates the role of time, i.e. the chances of returning to work as time goes by. The principal focus of the third subsection is to explain the length of time that women take to return to work, conditional on having returned.

The data used for the first two models is identical and consists of all mothers who give birth after the first wave (and for whom we have no missing data).<sup>12</sup> It includes women who were not working in the year immediately preceding birth and they are either observed to have returned to work or not.<sup>13</sup> The only difference between model 1 and 2 is that in model 1 we model the decision to return versus not to return using a probit regression and in model 2 we model a return to part-time versus a return to full-time versus not to return, using a multinomial probit regression. The data for model 3 is different in that the data is further restricted to those mothers who are actually observed to have returned. The variable of interest is no longer the decision to return, but the duration of the interruption.

### 5.1. *Returning to work*

To model the probability of returning to work after childbirth we follow Baxter (2005) and record the employment status of the mother at every interview following childbirth. Being employed is recorded as 1, not being employed is recorded as 0. We stop recording if the mother is observed to be working or when our observation window ends, i.e. in wave 5. When the mother has not been observed to be working by the time she is observed for the last time this observation is said to be ‘censored’. These data can be characterised as discrete time event history data. To give an example of the data collected, consider a mother who gives

---

<sup>12</sup> The work-life entitlements such as access to (un)paid maternity leave come from the self-completion questionnaire which not all respondents choose to complete.

<sup>13</sup> These women were however employed at some point in their lives. Hence a return to work should be interpreted broadly.

birth between waves 1 and 2 and who is observed to be in work for the first time post-childbirth in wave 5. This mother will be recorded as 0, 0, 0, 1 for waves 2, 3, 4 and 5, respectively. A mother who gives birth in wave 4 and who does not return to work is recorded as 0, 0 for waves 4 and 5 respectively. The example of the first mother is one of a so called completed spell, because we observe the event of interest (returning to work). The example of the second mother is one of a censored spell because the event of interest has not yet happened. All we know is that it may happen sometime after wave 5. Our empirical strategy explained below will use all available information of all mothers, that is, we either know exactly how long the interruption was or we know that it did not happen for as long as the mother was observed. Both reveal information that is used in the estimation technique.

Many women in our sample will not have returned to work by the time we observe them for the last time, i.e. their observations are censored. Many special methods have been developed to handle censored data. One type of approach to describe such event history data is hazard rate models. In such models the probability of returning to work some time between waves  $t$  and  $t+1$ , conditional on not having done so yet by wave  $t$ , is known as the hazard. This hazard is a function of time and other (time varying) personal characteristics. Let  $h_{it}$  denote the hazard at time  $t$  for individual  $i$ . In words,  $h_{it}$  is the probability that the mother is observed to be in work the next time she is interviewed, conditional on not yet being in work at the current interview. A series of variables that are expected to influence this probability, measured at the time of the current interview, are included and denoted by  $X_{it}$ . Formally we can express  $h_{it}$  as

$$h_{it} = \Pr(T_i = t+1 | T_i > t, X_{it})$$

where  $T_i$  represents the time, measured in the number of interviews, between childbirth and employment. In the case of the first example described above,  $T_i$  is 4. For the second example all we know is that  $T_i$  must be greater than 2.

We follow Baxter (2005) and use logistic regression to model the hazard rate so that

$$h_{it} = \frac{1}{1 + e^{(-\alpha_t - \beta'x_{it})}}$$

where  $\alpha_t$  represents time dummies and  $\beta$  the vector of coefficients for the explanatory variables in  $x_{it}$ .

As a robustness check we also estimate a version of the logistic regression that controls for unobserved heterogeneity. Unobserved heterogeneity is a collective term that captures factors that may play a role, but which are unobserved or not recorded in the data. Examples of such factors are motivation or ability. Accounting for unobserved heterogeneity in the logistic regression is operationalised using random effects. The expression for the hazard above is then slightly changed to

$$h_{it} = \frac{1}{1 + e^{(-\alpha_t - \beta'x_{it} - \varepsilon_t)}}$$

where  $\varepsilon_t$  represents the random effect.

### *5.1.1. Explanatory variables affecting the probability of returning*

The probability of returning can be expected to depend on numerous factors. In our empirical specification we focus on the main elements. The probability of returning to work following birth is expected to be a function of time. That is, the probability of being in work immediately after childbirth is expected to be relatively low. It will then increase up to a certain point that captures the most prevailing length of interruption (e.g. a year) after which it is expected to taper off again. These time effects are captured in the specification by dummy variables that denote the post-childbirth interview number (i.e. the first, second, third and so on). To capture general time effects, i.e. business cycle effects, we also include regular time dummies that denote calendar time, expressed by the HILDA wave number. Because we use information on the employment status in the wave prior to giving birth we are restricted to mothers who give birth after wave 1. When using dummy variables in a specification that also includes a constant one needs to pick one of the dummy variables that serves as the reference. The choice does not affect the estimation result, only the way results are expressed. The dummy variables in the specification are interpreted as ‘compared to the reference’. Our reference calendar time dummy is wave 2. For the time-since-childbirth dummies we use the indicator for the first interview since giving birth as the reference.

We include four educational attainment categories: Year 11 or below, Year 12, a completed certificate, and holders of a degree. Our reference category is Year 11 or below. We also use the age-at-childbirth of the mother to group them into three broad age groups, with mothers

under 25 years of age at childbirth chosen as the reference category. To capture household composition we include the number of children in three age categories (0 to 4, 5 to 9 and 10 to 14) as well as dummy indicators to identify the mother as married, in a de facto relationship or single. The latter is chosen as the reference category.

Career variables are captured by the inclusion of indicators for occupation and industry. We distinguish three occupational classes: professional (the reference category), intermediate, and elementary. Industries are classified into 13 broad industries with construction plus agriculture, forestry and fishing taken as the reference category. To capture employment histories and labour market attachment prior to childbirth we include work experience, measured in years, and a dummy indicator for the mother being employed in the last wave prior to giving birth. We further include an interaction term between being employed in the last wave prior to giving birth and having access to a variety of entitlements in that job. These entitlements are paid maternity leave, unpaid maternity leave, flexible working hours ('flexitime'), the ability to work from home, and the possibility of working permanently part-time.

### *5.1.2. Results*

Table 9 below displays the results of the logistic regression of the probability of being employed, with and without random effects. Presented are the coefficient estimates, the absolute values of the z-values and the mean marginal effects (MME). The discussion of the results is based on the MMEs because the MMEs have an intuitive interpretation. They present the effect of each of the explanatory variables measured in probability mass points. To give an example, consider the variable 'employed in the last wave before birth' in the specification without random effects. Its MME states that the probability of being in work after birth is 0.305 points higher for mothers who were in work in the last wave prior to giving birth, compared to mothers who were not. Alternatively, when expressing the probability of being in work on a 0 to 100 per cent scale rather than a 0 to 1 scale, the MME indicates a 30.5 percentage point higher probability.

As a first general observation it is noted that the results for the specification with and the specification without random effects are very similar. Although the size and sign of the

MMEs for the two specifications convey the same qualitative story, the discussion will be based on the model with random effects.

As was expected, the probability of returning over time shows a distinct pattern. Both estimates for the dummy variables ‘2<sup>nd</sup> wave after birth’ and ‘3<sup>rd</sup> wave after birth or later’, are positive. This implies that the probability of returning is lowest for the reference category -the first interview post-childbirth. It also implies that the probability of being observed in work for the first time post-childbirth is highest at the time of the second interview post-childbirth - about 11 percentage points higher than at the first interview post-childbirth.

The second set of time dummies that capture the business cycle, or calendar-time trend, show that the probability of being observed in work post-childbirth has increased over time, and quite strongly so. When comparing 2002 with 2005, the probability of being in work for the first time post-childbirth is about 20 percentage points higher in 2005 than in 2002, all other things being equal. This finding is in line with those reported by Megalogenis (2007) who, using ABS Census data, reports that in 1986 a typical partnered mother waited until her child was in primary school before returning to work. This period was halved to three years in 1996, further reduced to 2 years in 2001 and again halved to 1 year by 2006. Furthermore, Megalogenis (2007) reports that in 1996 only 32 percent of mothers with a child under 12 months old was employed and that by 2006 this had risen to 40 percent. These numbers highlight the very rapid, consistent growth in labour force participation of mothers in the last decade.

Ex ante one would have expected educational attainment to play a more (statistically) significant role. Although the estimates lack statistical significance, the pattern is one that could be expected, with the most educated mothers also being the most likely to be observed working post-childbirth. One possible reason for education not playing a more (statistically) significant role could be that the variable that captures employment status in the last wave prior to birth already incorporates much of the effect of education. Furthermore, the education effect, like all others, should be interpreted as net of all the other controls, including indicators for occupational status. With regard to occupational status, the results are what one would expect, with professionals most likely to be observed in work post-childbirth.

We do find strong age effects for the mothers that show that, all else being equal, the younger the mother is, the greater is her probability of being observed to be in work post-childbirth.

The difference between a mother in the youngest age group (under 25 years of age) and oldest age group (35 years of age or above) is quite large, with the former being about 30 percentage points more likely to be observed in work post-childbirth. The effect of age, controlling for other factors, is thus different from the unconditional effect of age observed in section 4.<sup>14</sup>

One of the downsides of controlling for industries is that it is difficult to describe any industry effects in simple terms as there are many industries to summarise. As the reference category we chose the combined industries of construction and agriculture, forestry and fishing. These industries are shown to exhibit a relatively high propensity for women to be observed in work post-childbirth. We identify only two other industries with a higher propensity: wholesale trade and government administration and defence. The latter is associated with the highest probability of being observed in work post-childbirth. Examples of industries at the other end of the spectrum are accommodation, restaurants and cafes, transport and storage, and communication services. The industry effects are jointly significant.<sup>15</sup>

To conclude we discuss the effects of the employment status in the last wave before birth and the entitlements in that job if employed. As has been identified in other studies, labour market attachment pre-childbirth is a very strong predictor of post-childbirth labour market attachment. Our results thus confirm this finding. The effect of the dummy variable indicating being employed in the last wave prior to birth strongly boosts the probability of being observed to be in work post-childbirth with an order of magnitude of about 36 percentage points. This MME is the largest in absolute value of all explanatory variables. The effect of pre-childbirth employment status is then further interacted with entitlements in the job prior to childbirth to see whether there are any additional impacts of entitlements, above and beyond the already captured effect of pre-childbirth employment. Although all coefficients point in the direction that entitlements are correlated with increased probabilities of being observed in work post-childbirth, there is not enough statistical significance to make any strong statements. In terms of the magnitude of the MME, the two entitlements that most increase the probability of being observed to be in work post-childbirth are unpaid maternity leave and flexible working hours.

---

<sup>14</sup> It was shown that younger mothers, under 33 years of age, were less likely to have returned to work if they were in part-time employment in the year before giving birth and equally likely to have returned to work if they were in full-time employment in the year before giving birth.

<sup>15</sup> In regressions that use a set of dummy variables where one dummy is taken as the reference category (i.e. omitted) statistical significance cannot be determined on an individual dummy basis. One should only speak in terms of joint significance.

**Table 9 Logit estimates for Employment following birth**

	Without random effect			With random effect			Mean
	Coeff	Z-value	MM	Coeff	Z-value	ME	
[First wave after birth]							
Second wave after birth	0.522	[1.98]**	0.080	0.536	[2.18]**	0.115	0.30
Third wave after birth or later	0.281	[0.86]	0.041	0.296	[0.95]	0.063	0.29
[Wave 2]							
Wave 3	0.222	[0.69]	0.033	0.223	[0.70]	0.047	0.26
Wave 4	0.608	[1.86]*	0.092	0.613	[1.86]*	0.132	0.32
Wave 5	1.033	[2.63]***	0.155	1.047	[2.73]***	0.233	0.27
[Year 11 or below]							[0.25]
Completed year 12	0.115	[0.40]	0.017	0.119	[0.41]	0.025	0.23
Certificate	0.233	[0.86]	0.035	0.235	[0.86]	0.050	0.26
Degree	0.511	[1.48]	0.080	0.519	[1.55]	0.112	0.26
Number of children aged 0-4 years	0.253	[1.52]	0.037	0.253	[1.52]	0.052	1.52
Number of children aged 5-9 years	0.177	[1.23]	0.026	0.177	[1.11]	0.037	0.36
Number of children aged 10-14 years	0.111	[0.49]	0.016	0.110	[0.49]	0.023	0.14
[Aged below 25]							[0.11]
Aged between 25 and 34 years	-0.969	[2.33]**	-0.143	-0.980	[2.46]**	-0.207	0.59
Aged 35 years or above	-1.796	[3.29]***	-0.228	-1.813	[3.52]***	-0.312	0.30
[Single]							[0.15]
Married	0.216	[0.64]	0.032	0.217	[0.66]	0.044	0.65
De facto	-0.317	[0.87]	-0.046	-0.323	[0.89]	-0.064	0.20
[Professional]							[0.38]
Intermediate	-0.483	[1.84]*	-0.072	-0.485	[2.00]**	-0.098	0.40
Elementary	-0.369	[1.12]	-0.054	-0.371	[1.13]	-0.073	0.22
[Construction, agriculture, forestry and fishing]							[0.06]
Manufacturing	-0.757	[1.44]	-0.105	-0.770	[1.63]	-0.136	0.08
Wholesale trade	0.444	[0.54]	0.068	0.445	[0.66]	0.099	0.02
Retail trade	-0.779	[1.63]	-0.111	-0.792	[1.83]*	-0.143	0.14
Accommodation, restaurants & cafes	-1.235	[2.20]**	-0.166	-1.253	[2.54]**	-0.202	0.10
Transport & storage	-2.324	[2.97]***	-0.260	-2.354	[3.11]***	-0.267	0.03
Communication services	-1.635	[2.25]**	-0.200	-1.668	[1.92]*	-0.224	0.02
Finance & insurance	-1.204	[2.09]**	-0.157	-1.225	[2.22]**	-0.190	0.05
Property & business services	-0.702	[1.35]	-0.098	-0.714	[1.58]	-0.129	0.10
Government administration & defence	0.997	[1.12]	0.159	1.003	[1.37]	0.236	0.02
Education	-0.727	[1.33]	-0.100	-0.740	[1.60]	-0.134	0.12
Health & community services	-0.450	[0.92]	-0.064	-0.461	[1.12]	-0.089	0.19
Cultural, recreational, personal & other services	-1.147	[1.81]*	-0.154	-1.163	[2.28]**	-0.187	0.07
Foreign born Non-English speaking country	-0.207	[0.72]	-0.030	-0.212	[0.63]	-0.042	0.10
Work experience (years)	0.103	[3.73]***	0.015	0.104	[4.05]***	0.022	10.14
Employed in wave prior to birth	1.671	[4.94]***	0.305	1.684	[4.33]***	0.359	0.39
.....* Paid maternity leave entitlements	0.005	[0.02]	0.001	0.006	[0.02]	0.001	0.19
.....* Unpaid maternity leave entitlements	0.476	[1.34]	0.076	0.485	[1.30]	0.104	0.32
.....* Flexible start/end times	0.550	[1.76]*	0.088	0.556	[1.74]*	0.122	0.20
.....* Home based work option	-0.112	[0.33]	-0.016	-0.114	[0.32]	-0.023	0.11
.....* Part-time option	-0.162	[0.46]	-0.023	-0.164	[0.41]	-0.034	0.32
Constant	-2.163	[2.90]***		-2.174	[3.21]***		
$\rho$				0.014	[1.11]		
Observations (person*waves)	860			860			860
Observations (persons)	440			440			
Pseudo R-squared	0.29						

\* significant at 10%; \*\* significant at 5%;\*\*\* significant at 1%; Robust z statistics in brackets. Square brackets represent omitted category.

Somewhat surprisingly, we do not identify any effect of *paid* maternity leave. Firstly, it is interesting the identified effect is small and secondly, it is different from the descriptive results in Table 8 that showed a large positive effect of access to paid maternity leave and return rates. These two issues will be elaborated on below. Although hard to pinpoint why, one possible reason for the effect being small is that paid maternity leave potentially has two effects. First, it enables women to take a longer time out of the labour market prior to returning. With the HILDA survey still being a relatively short panel, i.e. not covering many years, this may simply play out as women with paid maternity leave being observed not to return. Second, the literature also consistently finds that jobs with entitlements, such as paid maternity leave, are jobs that can be labelled ‘desirable’ or ‘good’ jobs for other reasons, such as pay or being intellectually stimulating. This would then tend to point in the direction of an increased probability of being observed in work post-childbirth as it is most likely a job one would like to return to. Because both effects operate in opposite directions the net effect may be close to zero.

Note that the two entitlements with the largest MME, unpaid maternity leave and ‘flextime’, do signal a ‘desirable’ or ‘good’ job that one would most likely like to return to (hence the positive effect on post-childbirth employment), but they do not entail an offsetting effect of making longer interruptions affordable, as does the paid leave entitlement. Comparing the results from the model in Table 9 with the results from the descriptive statistics in Table 8 shows that, after controlling for other factors that influence return rates, such as education, occupation, industry, age, household composition etc., the apparently strong effect of paid maternity leave on return rates is very much reduced and in fact almost disappears. Phrased differently, it is not access to paid maternity leave per se that increases return rates, it is the characteristics of the mothers that hold jobs with such entitlement and the remaining control variables that are driving the observed strong correlation between return rates and access to paid maternity leave identified in Table 8.

As will be discussed in the next section, for these work-life balance entitlements it is important to distinguish between part-time and full-time post-childbirth employment in order to be able to interpret the results, in particular with regard to paid maternity leave entitlements.

## 5.2. *Returning to work: Part-time or Full-time*

The analysis in this section builds on the previous section 5.1 that investigated the return to work post-childbirth as a yes/no outcome. In this section the return to work is further refined as part-time or full-time employment. The explanatory variables are identical to the ones discussed earlier in section 5.1.1. The extension is rather straightforward in terms of the model that needs to be estimated, so we will not formally define it here. Essentially, rather than estimating a logistic regression, the split between part-time and full-time requires the estimation of a multinomial logistic regression. Because the results in section 5.1.2 for the standard logistic regression showed that inclusion of random effects did not dramatically change the outcomes, we only estimate the model that distinguishes between part-time and full-time without random effects. The results of the estimation are presented in Table 10. The first four columns present the coefficient estimates and z-values. The last three columns, on which the discussion will be based, list the MMEs for the outcomes ‘not in work’ (NW) and ‘full-time’ and ‘part-time’ employment.<sup>16</sup>

### 5.2.1. *Results*

As a first general observation it is noted that the variables that were shown to be statistically significant in the standard logistic regression for the binary employment outcome are also the ones that are statistically significant in the multinomial regression. A second observation we make is that the MMEs estimated for the binary employment outcome are almost identical to the MMEs for the ‘not in work’ outcome in the multinomial regression, but with the opposite sign. The reason for this is straightforward and briefly detailing why will aid in the interpretation of the findings for the multinomial regression. In the binary logistic regression the MME represented the increase, in probability mass, of the probability of being observed in work post-childbirth. This increase in probability will have to be assigned to (divided between) part-time and full-time employment in the multinomial case. Because one is either in part-time employment, full-time employment, or not in work, any increase in the probability of being observed in work post-childbirth must be exactly offset by a reduced probability of being observed to be not in work post-childbirth. That is, the MMEs in a multinomial regression will always sum to zero. This then gives rise to the MMEs estimated

---

<sup>16</sup> Estimation of the multinomial logistic regression requires the coefficients for one of the outcomes to be normalised to zero. Hence only coefficient estimates are reported for two of the three outcomes: part-time and full-time employment. The choice which set of coefficients is normalised is arbitrary and does not affect the marginal effects, which are reported for all three choices.

for the binary employment outcome being almost identical to the MMEs for the not in work outcome in the multinomial regression, but with the opposite sign. We will therefore limit our discussion to the differences between the part-time and full-time employment outcomes.

The distinction between part-time and full-time employment is interesting because it sheds light on how employment enhancing factors operate, be it through part-time, full-time, or both types of employment. It even allows for the possibility of affecting part-time employment in a negative way and full-time employment in a positive way, or vice versa.

Concerning the time pattern of the probability of returning, Table 10 shows that this is mainly driven by part-time employment. The MMEs for part-time (about 7 percentage points) are larger than those for full-time (about 2 percentage points). An alternative way of interpreting these results is to say that for full-time employment post-childbirth there is no discernable time pattern, i.e. the probability of being observed working full-time in the first interview post-childbirth is about equal to the probability of being observed working full-time in subsequent interviews. For part-time employment post-childbirth there is a pattern over time and it shows the probability of being in work is highest at the 2<sup>nd</sup> post-childbirth interview and somewhat lower in the 3<sup>rd</sup> or later post-childbirth interview.

With regard to the calendar-time effects, the results of the standard logistic regression showed that the probability of being observed to be in work post-childbirth has increased over time, with the reference category being wave 2. By breaking this down into the full-time and part-time components we see that this increase over time is driven by part-time employment. That is, the MMEs for full-time are relatively stable at about 5 percentage points for the wave 3, 4, and 5 dummies, whereas the wave dummies for part-time employment increase from negative 2 percentage points for wave 2 to about 10 percentage points for wave 5. Popularly speaking then, the increase in the probability of being observed to be in work post-childbirth over time is because of more women working part-time. Over time return rates to full-time employment are much more stable, although higher post-2002 than they were in 2002 (the time of wave 2 of HILDA).

Splitting the return to work into part-time and full-time also allows a more flexible role of the household composition variables related to the number of children. They now also become statistically significant in two instances and show that young children (0 to 4) are associated with lower probabilities of working full-time and higher probabilities of working part-time,

whereas for children of school age (5 to 9 and 10 to 14 year old) we find the reverse. The effect of the mothers' age is shown to be consistent between part-time and full-time, meaning that the sign of the MMEs for part-time and full-time are the same. The MMEs show that older mothers are less likely to be observed to be in either full-time or part-time work compared to younger mothers.

Prior to discussing the industry effects it is noted that occupational status is one of the few variables where the effect on employment post-childbirth is driven by full-time employment. The reference category is professionals, resulting in the MMEs for intermediate and elementary occupations signalling an increased probability of not working post-childbirth. This effect is nearly all due to a reduced probability of being in full-time employment post-childbirth for elementary and intermediate occupations when compared to professionals.

Again, industry effects are hard to summarize but the distinction between full-time and part-time does highlight some interesting findings. For most industries (8 out of 12), the increased probability of being observed to be not working post-childbirth (compared to the reference industry of construction plus agriculture, forestry and fishing) is dominated by a reduced probability of working part-time. The effect on full-time employment is concurrent, but generally much smaller. There are only 3 industries where we do not observe any real difference in the size or sign of the MMEs for part-time and full-time employment: wholesale trade, health and community services, and cultural, recreational, personal and other services. Furthermore, the industry of government administration and defence again stands out. Not only is it one of only two industries (the other being wholesale trade) that exhibit a higher propensity to be observed in work post-childbirth compared to the reference industries, its effect is also almost entirely driven by full-time employment.

With regard to employment status in the wave just prior to giving birth, the MMEs for part-time and full-time employment are of approximately equal size. In that sense, being employed prior to giving birth enhances the probability of being observed to be in work post-childbirth approximately equally for both part-time and full-time. Where we do notice a difference between the effect on part-time and full-time employment is the entitlement to paid maternity leave and the option to work permanently part-time in the job held just prior to giving birth. For the paid maternity leave entitlement we find that it increases the probability of being observed in full-time employment by about 5 percentage points, but that this is offset by an approximately equally large negative effect on the probability of being observed in part-time

employment post-childbirth. With these effects cancelling each other out, the effect on employment post-childbirth is close to zero, as was already observed in the results for the standard logistic regressions. For the option to work permanently part-time in the job just prior to giving birth we find similar sized MMEs – both about 5 percentage points – but in this case the entitlement signals a higher probability of being observed in part-time employment post-childbirth. This makes sense as having this option in the job prior to giving birth means one can take up part-time work after the birth.

As a final note on the results for the multinomial logistic regressions, the effect of ethnicity again highlights the importance of distinguishing part-time and full-time employment. The effect of having been born in a non-English speaking country on the probability of being observed to be working full-time post-childbirth - all else being equal - is statistically significant and positive, but this is more than offset by a reduced probability, also statistically significant, of working part-time. The net effect on post-childbirth employment is close to zero.

**Table 10 MNL estimates for part-time and full-time employment following birth**

	Full-time		Part-time		MME			Mean
	Coe	Z-value	Coeff	Z-value	NW	Full-time	Part-time	
[First wave after birth]								
Second wave after birth	0.500	[1.25]	0.582	[2.05]**	-0.086	0.011	0.076	0.30
Third wave after birth or later	-0.339	[0.52]	0.392	[1.15]	-0.041	-0.027	0.068	0.29
[Wave 2]								
Wave 3	0.846	[1.40]	0.016	[0.05]	-0.027	0.051	-0.024	0.26
Wave 4	1.149	[1.91]*	0.452	[1.32]	-0.087	0.054	0.033	0.32
Wave 5	1.276	[1.87]*	0.935	[2.29]**	-0.148	0.046	0.102	0.27
[Year 11 or below]								[0.25]
Completed year 12	0.188	[0.33]	0.080	[0.26]	-0.015	0.008	0.007	0.23
Certificate	0.538	[0.96]	0.173	[0.61]	-0.036	0.026	0.010	0.26
Degree	0.302	[0.43]	0.573	[1.56]	-0.082	0.000	0.082	0.26
Number of children aged 0-4 years	-0.214	[0.63]	0.297	[1.73]*	-0.030	-0.020	0.050	1.52
Number of children aged 5-9 years	0.526	[2.07]**	0.101	[0.64]	-0.026	0.026	0.000	0.36
Number of children aged 10-14 years	0.333	[0.99]	0.039	[0.15]	-0.013	0.017	-0.003	0.14
[Aged below 25]								[0.11]
Aged between 25 and 34 years	-1.848	[2.35]**	-0.808	[1.79]*	0.146	-0.084	-0.062	0.59
Aged 35 years or above	-2.478	[2.62]***	-1.692	[2.84]***	0.230	-0.075	-0.155	0.30
[Single]								[0.15]
Married	-0.493	[0.82]	0.439	[1.18]	-0.037	-0.043	0.080	0.65
De facto	-1.076	[1.59]	-0.120	[0.30]	0.039	-0.046	0.007	0.20
[Professional]								[0.38]
Intermediate	-1.373	[2.71]***	-0.286	[1.02]	0.069	-0.060	-0.009	0.40
Elementary	-0.950	[1.58]	-0.218	[0.62]	0.050	-0.040	-0.010	0.22
[Construction, agriculture, forestry and fishing]								[0.06]
Manufacturing	-0.369	[0.49]	-0.809	[1.48]	0.099	0.001	-0.099	0.08
Wholesale trade	1.015	[1.00]	0.406	[0.47]	-0.080	0.053	0.027	0.02
Retail trade	-0.606	[0.81]	-0.838	[1.70]*	0.112	-0.011	-0.101	0.14
Accommodation, restaurants & cafes	-1.640	[2.01]**	-1.135	[1.93]*	0.165	-0.047	-0.118	0.10
Transport & storage	-1.011	[1.01]	-2.807	[2.53]**	0.243	-0.006	-0.238	0.03
Communication services	-1.351	[0.89]	-1.662	[2.04]**	0.195	-0.030	-0.165	0.02
Finance & insurance	-1.115	[1.30]	-1.391	[2.21]**	0.171	-0.024	-0.147	0.05
Property & business services	-0.910	[1.13]	-0.702	[1.31]	0.102	-0.027	-0.076	0.10
Government administration & defence	2.163	[2.26]**	0.505	[0.52]	-0.145	0.164	-0.019	0.02
Education	-0.621	[0.79]	-0.806	[1.42]	0.105	-0.011	-0.093	0.12
Health & community services	-0.760	[1.08]	-0.385	[0.76]	0.064	-0.028	-0.036	0.19
Cultural, recreational, personal & other services	-2.315	[2.01]**	-1.001	[1.53]	0.158	-0.062	-0.096	0.07
Foreign born Non-English speaking country	1.257	[2.89]***	-0.830	[2.03]**	0.028	0.123	-0.150	0.10
Work experience (years)	0.077	[1.89]*	0.106	[3.45]***	-0.015	0.001	0.014	10.14
Employed in wave prior to birth	2.986	[4.88]***	1.360	[3.65]***	-0.297	0.128	0.169	0.39
.....* Paid maternity leave entitlements	0.688	[1.49]	-0.215	[0.73]	0.005	0.046	-0.051	0.19
.....* Unpaid maternity leave entitlements	0.621	[1.10]	0.445	[1.19]	-0.076	0.022	0.054	0.32
.....* Flexible start/end times	0.657	[1.40]	0.418	[1.23]	-0.073	0.025	0.047	0.20
.....* Home based work option	-0.012	[0.02]	-0.042	[0.12]	0.005	0.001	-0.006	0.11
.....* Part-time option	-0.803	[1.49]	0.146	[0.39]	0.004	-0.052	0.048	0.32
Constant	-2.825	[2.23]**	-2.613	[3.29]***				
Observations (person*waves)	860		860					860
Observations (persons)	440		440					
Pseudo R-squared	0.28							

\* significant at 10%; \*\* significant at 5%;\*\*\* significant at 1%; Robust z statistics in brackets. Square brackets represent omitted category.

### 5.3. *The length of the interruption*

In the previous two sections the probability of being observed to be in work was modelled as being employed *per se* (section 5.1) as well as disaggregated by full-time and part-time employment (section 5.2). Both models included dummy variables to identify the number of interviews post-childbirth in order to capture a time-since-giving-birth pattern for the probability of being observed to be in work post-childbirth. Some mothers were observed to be in work post-childbirth (the completed spells) while others were not (the censored spells). The estimated models accommodate both types of cases. The analysis in this section is different and is of a more restrictive nature. For those women who are observed in work post-childbirth we make the length of time it took them to return to work, measured by the number of post-childbirth interviews, the dependent variable. That is, we use the same set of explanatory variables (except time) to explain the length of the interruption.

It is important to note that the estimation sample consists of mothers who are observed in work post-childbirth. This reduces the sample size, making it harder to obtain statistical significance.<sup>17</sup> It should also be pointed out that the HILDA survey is still a relatively short survey allowing only a relatively short-term view for the most part. The outcomes for the length of time between giving birth and being observed in work for the first time post-childbirth is measured in post-childbirth interviews. The possible outcomes are 1, indicating being employed in the first post-childbirth interview, 2, and 3 or more. Note that due to the inclusion of pre-childbirth employment status we can only use mothers who gave birth after wave 1. For a mother who gave birth between waves 1 and 2, we observe the maximum length of interruption of 4 if this mother is observed to be in work for the first time in wave 5 (the first post-childbirth interview is wave 2). Similarly, for a mother who gave birth between waves 4 and 5, the only possible observed length of the interruption would be 1 if she is observed to be in work at the first interview post-childbirth (i.e. wave 5 in this case).

---

<sup>17</sup> One solution to the smaller sample size is to also reduce the number of explanatory variables, e.g. by dropping the detailed industry classification. However, we are of the opinion that comparability between the models is more important so that all effects can be interpreted as, for instance, controlling for industry etc.

### 5.3.1. Results

Table 11 displays the results of the multinomial logistic regression on the length of the labour market interruption. The first four columns display the parameter estimates for a length of 2 waves and 3 or more waves, respectively. The MMEs are computed for all three outcomes and comprise the three right most columns of Table 11. Again, the MMEs have to sum to zero because an increased probability of one outcome needs to be offset by a reduced probability of any other outcome.

As a general observation it is noted that it appears to be more difficult to model the length of the labour market interruption than it is to model the probability of being observed to be in work post-childbirth. As alluded to in the introduction to the section, this is related to the smaller sample size because of the necessity of restricting the analysis to those mothers who are observed to be in work post-childbirth. Only the number of children, occupational status, some industry effects and one job entitlement pre-childbirth are identified with enough statistical precision to make any robust inference. However, we will discuss the findings of the model irrespective of the level of statistical significance.

With regard to educational attainment the findings show that mothers with education levels of Year 11 or below are more likely to be observed to be in work in the first post-childbirth interview, compared to mothers with higher educational attainment levels. In fact, the more educated the mother, the lower the probability that she is observed to be in work at the first post-childbirth interview. This may at first glance appear to be counterintuitive but can be easily understood when realising the sample consists of mothers who are observed to be working. Conditional on having returned, mothers with lower levels of education return faster, which may simply capture a greater financial need to return or less means to finance a longer interruption. Higher levels of education are associated with higher MMEs for being observed in work at the 3<sup>rd</sup> post-childbirth interview or later. The ability to finance longer interruptions may also be what is driving the observed effect of the partnering variables, with having a partner being associated with a lower probability of being observed to be in work at the first post-childbirth interview, compared to the reference category (single). That is, having a partner facilitates longer interruptions, all else being equal.

With respect to household composition, measured by the number of children in 3 age groups, it is shown that conditional on being in work post-childbirth, mothers with young children are

less likely to have taken a relatively short time and more likely to have taken 2 or more post-childbirth interviews. For mothers with school-aged children this is the reverse, that is, school-aged children seem to facilitate a relatively short labour market interruption following childbirth.

As mentioned at the start of the discussion of the results, occupational status is one of the variables that obtain a good level of statistical precision so we can be more confident in the finding that shows that the lower the occupational status the less likely is a short interruption, all else being equal. The occupational status most associated with a long interruption is the intermediate category. The 15.6 percentage point reduction in the probability of being observed to be in work at the first post-childbirth interview is almost entirely offset by a 14.2 percentage point increase in the probability of being observed to be in work for the first time since birth at the 3<sup>rd</sup> post-childbirth interview or later.

The industry effects now vary more widely due to the smaller sample sizes, but we can identify groups of industries that seem to have similar effects.<sup>18</sup> For instance, in all but one industry - communication services - the MME is positive for being employed at the time of the 2<sup>nd</sup> post-childbirth interview. That is, compared to the reference industry (construction plus agriculture, forestry and fishing), working in nearly all other industries is associated with a larger probability of being observed to be in work at the time of the 2<sup>nd</sup> post-childbirth interview. Furthermore, in all but two industries – wholesale trade and cultural, recreational, personal and other industries – the MME is negative for the probability of being observed to be in work at the first post-childbirth interview. This means that our reference industry exhibits the highest probability of observing mothers in work at the first post-childbirth interview, all else being equal. At the other end of the spectrum, industries that are most likely to exhibit mothers who are observed in work after a relatively long break since birth – three or more post-childbirth interviews – are manufacturing, accommodation, cafes and restaurants, and most strongly so, communication services.

Although not statistically significant, and care needs to be taken not to overemphasise the results, the dummy variable capturing mothers who are foreign born in non-English speaking countries shows that these mothers, conditional on being observed in work post-childbirth,

---

<sup>18</sup> Table 12 in the appendix displays the results of an alternative specification where the industries are grouped in broader categories. The results are very similar to those in Table 11.

either return right away or much later, i.e. at the first post-childbirth interview or at the 3<sup>rd</sup> or later post-childbirth interview.

Finally, being in work in the wave prior to giving birth has not nearly as strong a predictive power when it comes to the length of the interruption as it does when one models the probability of being in work post-childbirth. We do find a statistically significant interaction effect of being employed in the wave prior to birth and the availability of flexible working hours in the job. Like unpaid leave entitlements, this availability is associated with a relatively quick (re)entry into the labour market post-childbirth and lower probabilities of being observed to be in work at the 2<sup>nd</sup> or later post-childbirth interview.

**Table 11 MNL estimates on length of interruption following birth**

	2 waves		3 or more waves		MME			Mean
	Coeff	Z-value	Coeff	Z-value	1 wave	2 waves	3+waves	
[Year 11 or below]								[0.16]
Completed year 12	0.509	[1.03]	-0.016	[0.03]	-0.073	0.113	-0.040	0.19
Certificate	0.452	[0.87]	0.396	[0.67]	-0.085	0.067	0.018	0.24
Degree	0.684	[1.32]	0.663	[1.02]	-0.131	0.095	0.036	0.41
Number of children aged 0-4 years	0.555	[1.92]*	1.286	[3.74]***	-0.154	0.025	0.129	1.49
Number of children aged 5-9 years	-0.104	[0.39]	-0.252	[0.82]	0.030	-0.004	-0.026	0.28
Number of children aged 10-14 years	-0.144	[0.37]	-0.278	[0.59]	0.037	-0.010	-0.026	0.09
[Aged below 25]								[0.06]
Aged between 25 and 34 years	0.014	[0.02]	1.277	[1.33]	-0.074	-0.084	0.158	0.60
Aged 35 years or above	0.374	[0.42]	1.886	[1.58]	-0.164	-0.070	0.235	0.34
[Single]								[0.08]
Married	0.897	[1.54]	0.672	[0.85]	-0.167	0.139	0.029	0.79
De facto	0.153	[0.22]	-0.172	[0.19]	-0.013	0.045	-0.033	0.13
[Professional]								[0.56]
Intermediate	0.560	[1.41]	1.315	[2.35]**	-0.156	0.014	0.142	0.32
Elementary	1.599	[2.15]**	1.848	[2.27]**	-0.285	0.168	0.117	0.12
[Construction, agriculture, forestry and fishing]								[0.07]
Manufacturing	1.682	[1.87]*	1.941	[2.05]**	-0.288	0.169	0.118	0.08
Wholesale trade	0.103	[0.10]	-0.298	[0.30]	0.001	0.043	-0.044	0.03
Retail trade	0.536	[0.64]	0.007	[0.01]	-0.078	0.118	-0.039	0.10
Accommodation, restaurants & cafes	1.927	[1.79]*	2.257	[1.82]*	-0.312	0.173	0.139	0.05
Transport & storage	1.041	[0.75]	0.508	[0.29]	-0.169	0.191	-0.022	0.01
Communication services	1.162	[0.75]	2.576	[1.60]	-0.271	-0.037	0.308	0.01
Finance & insurance	0.891	[0.97]	0.685	[0.82]	-0.156	0.139	0.017	0.04
Property & business services	0.889	[1.23]	-0.425	[0.45]	-0.117	0.227	-0.110	0.11
Government administration & defence	0.427	[0.52]	0.467	[0.49]	-0.085	0.055	0.029	0.05
Education	0.730	[0.90]	0.068	[0.08]	-0.107	0.154	-0.046	0.16
Health & community services	0.976	[1.36]	0.183	[0.25]	-0.146	0.196	-0.050	0.25
Cultural, recreational, personal & other services	0.298	[0.34]	-1.340	[0.94]	0.005	0.144	-0.149	0.04
Foreign born Non-English speaking country	-0.386	[0.64]	0.365	[0.45]	0.024	-0.103	0.080	0.06
Work experience (years)	0.032	[0.88]	-0.021	[0.42]	-0.003	0.008	-0.005	12.42
Employed in wave prior to birth	0.588	[0.96]	-0.528	[0.62]	-0.039	0.161	-0.122	0.72
.....* Paid maternity leave entitlements	0.425	[1.12]	0.257	[0.49]	-0.074	0.072	0.002	0.37

.....* Unpaid maternity leave entitlements	-0.814	[1.63]	-1.043	[1.27]	0.178	-0.096	-0.082	0.60
.....* Flexible start/end times	-0.447	[1.04]	-1.227	[2.09]**	0.137	-0.010	-0.127	0.41
.....* Home based work option	0.421	[0.94]	0.039	[0.05]	-0.062	0.089	-0.027	0.22
.....* Part-time option	-0.584	[1.08]	0.065	[0.08]	0.080	-0.128	0.048	0.61
Constant	-3.386	[2.79]***	-4.326	[2.83]***				
Observations (persons)	299		299					299
Pseudo R-squared	0.16							

\* significant at 10%; \*\* significant at 5%;\*\*\* significant at 1%; Robust z statistics in brackets. Square brackets represent omitted category.

## 6. Concluding remarks

This report investigated what factors are associated with post-childbirth employment and how long mothers take to (re-)enter the labour market following childbirth. It was found that having a job in the year immediately preceding childbirth was the strongest predictor for post-childbirth employment. Policies directed towards increasing women's attachment to the labour market *before* they have children will also result in more mothers being observed in work post-childbirth. A second finding that is of relevance for policy formulation is that the return to work decision is shown to have changed relatively rapidly, even over the short time span from 2001 to 2005. Specifically, post-childbirth employment is more likely in 2005 than it was in 2002 or any time in between, and the driving force behind this increase is more women taking up part-time employment. This time effect is identified after controlling for several factors, including pre-childbirth employment status, industry, occupation, education, age, (un)paid maternity leave access and more.

The data used to investigate post-childbirth employment outcomes have been collected during a time of strong economic growth with corresponding job growth. How much of the identified time effect is due to the changing economic conditions and how much is due to a change in mothers' preferences regarding post-childbirth employment remains an open question. However, given that preferences generally do not rapidly change, our own assessment is that the time effect is driven by economic conditions.

## References

- Baird, M. and A.S. Litwin, 2005, "Rethinking work and family policy: The making and taking of parental leave in Australia", *International Review of Psychiatry*, 17(5): 385-400.
- Barrow, L. 1999, "An analysis of women's return-to-work decisions following first birth", *Economic Inquiry*, July, 37(3): 432-451.
- Baxter, J. 2005, "Women's work transitions around childbearing", Negotiating the Life Course Discussion Paper Series, The Australian Demographics and Social Research Institute, A.N.U. Discussion Paper DP-021, March.
- Breusch, T. and E. Gray, 2004, "New estimates of mothers' forgone earnings using HILDA data", *Australian Journal of Labour Economics* 7(2): 125-150.
- Diamond, C., M. Baird and G. Whitehouse, 2006, "Maternity leave: Patterns of use in a state utility", *Proceedings of the 20th Conference of the Association of Industrial Relations Academics of Australia and New Zealand (AIRAANZ) - Volume 1: Refereed Papers*, University of South Australia, 51-60, Adelaide, South Australia, 21st Century Work: High Road or Low Road - 20th AIRAANZ Conference, B Pocock, C Provis and E Willis (Eds).
- Gutierrez-Domenech, M. (2002), "The impact of the labour market on the timing of marriage and births in Spain", sourced from <http://cep.lse.ac.uk/pubs/download/dp0556.pdf> on 10/10/06.
- Joesch, J.M. 1994. "Children and the timing of women's paid work after childbirth: A further specification of the relationship", *Journal of Marriage and the Family*, 56(2): 429-440.
- Megalogenis, G. (2007), "Mortgages push return to work", Website of *The Australian* newspaper. Accessed on 30 December 2007 at [http://blogs.theaustralian.news.com.au/meganomics/index.php/theaustralian/comments/mortgages\\_push\\_return\\_to\\_work/](http://blogs.theaustralian.news.com.au/meganomics/index.php/theaustralian/comments/mortgages_push_return_to_work/)
- Miller, C.F. and J.J. Xiao (1999), "Effects of birth spacing and timing on mothers' labor force participation", *Atlantic Economic Journal*, December, 27(4): 410-421.

## Appendix

**Table 12 MNL estimates on length of interruption following birth: Grouped industries**

	2 waves		3 or more waves		MME			Mean
	Coeff	Z-value	Coeff	Z-value	1 wave	2 waves	3+waves	
[year 11 or below]								[0.16]
completed year 12	0.46	[0.99]	0.027	[0.05]	-0.068	0.100	-0.031	0.19
Certificate	0.31	[0.63]	0.251	[0.45]	-0.059	0.048	0.011	0.24
Degree	0.6	[1.20]	0.453	[0.78]	-0.110	0.094	0.016	0.41
Number of children aged 0-4 years	0.552	[1.97]**	1.273	[3.91]***	-0.158	0.025	0.133	1.49
Number of children aged 5-9 years	-0.08	[0.31]	-0.251	[0.88]	0.027	0.001	-0.028	0.28
Number of children aged 10-14 years	-0.078	[0.21]	-0.019	[0.04]	0.012	-0.015	0.003	0.09
[Aged below 25]								[0.06]
Aged between 25 and 34 years	-0.145	[0.21]	0.998	[1.05]	-0.039	-0.101	0.140	0.60
Aged 35 years or above	0.132	[0.16]	1.635	[1.48]	-0.128	-0.098	0.226	0.34
[single]								[0.08]
Married	0.945	[1.67]*	0.745	[0.85]	-0.182	0.144	0.038	0.79
Defacto	0.297	[0.46]	0.082	[0.09]	-0.047	0.059	-0.012	0.13
[professional]								[0.56]
Intermediate	0.515	[1.33]	1.316	[2.60]***	-0.156	0.004	0.152	0.32
Elementary	1.652	[2.33]**	2.037	[2.63]***	-0.301	0.153	0.148	0.12
[Construction, agriculture, forestry and fishing]								[0.07]
Manufacturing	1.559	[1.79]*	1.774	[1.98]**	-0.276	0.163	0.113	0.08
Health & community services	0.932	[1.34]	0.263	[0.38]	-0.145	0.182	-0.037	0.25
Wholesale and retail trade	0.342	[0.46]	-0.177	[0.24]	-0.041	0.088	-0.048	0.13
Finance, insurance, property & business services	0.862	[1.26]	-0.018	[0.02]	-0.125	0.193	-0.068	0.15
Government administration, defence & education	0.64	[0.90]	0.25	[0.34]	-0.104	0.120	-0.016	0.20
Remaining industries	0.946	[1.22]	0.663	[0.78]	-0.165	0.153	0.012	0.11
Foreign born Non-English speaking country	-0.354	[0.60]	0.406	[0.51]	0.015	-0.101	0.086	0.06
Work experience (years)	0.034	[0.95]	-0.022	[0.46]	-0.003	0.009	-0.005	12.42
Employed in wave prior to birth	0.743	[1.20]	-0.328	[0.40]	-0.072	0.177	-0.105	0.72
.....* Paid maternity leave entitlements	0.338	[0.93]	0.245	[0.48]	-0.062	0.054	0.008	0.37
.....* Unpaid maternity leave entitlements	-0.778	[1.55]	-0.883	[1.04]	0.167	-0.101	-0.066	0.60
.....* Flexible start/end times	-0.403	[0.98]	-1.078	[1.88]*	0.127	-0.010	-0.116	0.41
.....* Home based work option	0.315	[0.74]	0.000	[0.00]	-0.045	0.069	-0.024	0.22
.....* Part-time option	-0.598	[1.16]	-0.082	[0.09]	0.091	-0.122	0.031	0.61
Constant	-3.252	[2.76]***	-4.252	[3.09]***				
Observations (persons)	299		299					299
Pseudo R-squared	0.14							

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%; Robust z statistics in brackets. Square brackets represent omitted category.