Workforce transitions following childbearing in Australia

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In Australia, women's employment is often disrupted to some extent by childbearing, with women taking time out of the labour force to care for young children, and then often returning to work part-time to better manage the competing priorities of work and family. This paper explores the relationship between childbearing and employment by examining the workforce transitions after childbearing. The work history collected as part of the 1996-97 and 2000 waves of the Negotiating the Life Course Survey, along with the birth and relationship history and other key variables, makes it possible to construct a broad timeline of transitions back to work after childbearing, differentiating between transitions to full-time or part-time work. This report uses descriptive and multivariate methods to analyse the possible exit from work on commencement of childbearing, then the return to work after.

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1 Introduction

Statistics on employment amongst mothers consistently show that age of youngest child is an important determinant of the probability of being employed. The relationship between childbearing and employment is well-known, and has been demonstrated to be true in a range of studies using Australian data (for example, Brusentsev 2002; for example, Gray *et al.* 2003; Wooden and VandenHeuvel 1997). This in fact recognises transitions out of and into work following childbirth — some women continue to work through their childbearing years while others take a break from paid work. Of those that take a break, some return to work faster than others.

As shown by Beggs and Chapman (1988) and Breusch and Gray (2004) there are significant lifetime earning losses experienced by those women who take a break from employment. Arun, Arun, and Borooah (2004) also showed, using Australian data on career breaks, that women who have taken a child-related career break have lower income than otherwise similar women, holding other human capital variables constant. This is consistent with studies of the family wage gap in the international literature (for example, Budig and England 2001; Joshi, Paci and Waldfogel 1999; for example, Waldfogel 1998). Women benefit financially if they are able to maintain job continuity, minimising their loss of human capital and minimising the impact of children on lifetime earnings.

This work focuses on the transitions that occur on the birth of a child, and for those who left work after a birth (or were not working before the birth), the transitions to work after childbearing. The data used cover women who had their first child between 1970 and 200, and so changes over time in these transitions are also evaluated. The aim is to consider what factors are associated with a higher maternal attachment to work as evidenced by a greater tendency to stay at work on commencement of childbearing, or a faster return to work if a break from work is taken.

The paper firstly summarises the relevant Australian findings and then reviews the relevant international literature. This is followed by a description of the data used.

The next section focuses on transitions around the first birth, and includes the methodology, results and discussion as they apply to that analysis. The following section covers these areas looking at the transitions to work after childbearing, looking at the timing of return to work after childbearing. A concluding section draws together these results.

2 Literature review

2.1 The Australian situation

There is little work on the workforce transitions of mothers in Australia. The most notable exceptions are the study on maternity leave by Glezer (1988) and analyses of workforce transitions by Young (1978; 1989; 1990).

Young (1978) reported that by 1971 there were already increasing proportions of women working continuously while their children were young and by this time, women were more likely to be working after marriage and before having children. Of all women interviewed about employment at different life cycle stages, 48 per cent had worked after marriage and before childbearing, 19 per cent worked while they had pre-school aged children and 37 per cent had worked while at least one child was school-aged. At each stage, education was strongly associated with employment, with higher education being linked to a higher rate of employment. Young found that higher education was associated with a working sequence in which women worked before the first birth, withdrew when their children were pre-school aged, and resumed work when their children were school-aged.

Glezer studied the use of maternity leave and the return to work of a sample of women who had a birth in 1984. She found that of all first-birth mothers, 39 per cent returned to work in the 18 months following this birth. For those first-birth mothers who had been working while they were pregnant (73 per cent of the women), the rate was higher, at 55 per cent (Glezer 1988:69,72). Many of these women returned to work part-time. Glezer's results showed that whether or not a woman returned to work after her first birth was an important determinant of whether she returned to work after later births. If a mother was working while pregnant with her second or third child, for example, she was more likely to return to work after that birth than was a mother who was not working during the pregnancy. For first and other births, there were other factors associated with a greater likelihood of returning to work.

These were having a low-income husband, a high-status occupation, high earning potential, higher work commitment (as measured by having worked up until just before the birth and having worked longer for their employer), and a view that child care was not detrimental to young children (Glezer 1988:77).

As discussed further below, access to leave after childbearing can affect the timing of return. In Australia there is no universal system of paid maternity leave, although one year's unpaid maternity leave has been available to all permanent employees since 1979. Since 2001, casual workers who have worked for 12 months with their employer are also entitled to one year's unpaid maternity leave. Paid maternity leave is only available in those jobs where it is provided as a condition of employment, and this has been the case throughout this period.

Although Australia's formal child care program has expanded significantly since the 1970s, a high proportion of parents still rely on informal care while they work. In fact, the use of formal child care in Australia ranks very low compared to other OECD countries, with 15 per cent of children aged under three using formal care, and 60 per cent of children aged three to five using formal care in 2000 (OECD 2001:144). Child care affordability remains an issue, as does the availability of places, particularly for young children.

Part-time work has grown very strongly amongst women during the 1980s and 1990s in Australia (Borland, Gregory and Sheehan 2001). Working mothers in Australia have increasingly taken up part-time work on return to employment after childbearing. Studies consistently report this is a preference amongst the majority of mothers with young children (Glezer and Wolcott 1997). Of employed women, partnered mothers have a higher rate of part-time work, but single parents have also increasingly worked part-time since the beginning of the 1980s (Renda 2003). In 2000, 54 per cent of employed women aged 25 to 54 in Australia with one child, and 63 per cent with two or more children worked part-time. This compared to OECD averages of 29 per cent and 37 per cent respectively (OECD 2002:78). In Australia, the choice to work part-time is likely to be influenced by the ability to earn reasonable incomes from part-time work. The hourly wage rate of part-time workers is not affected by a large part-time work penalty as is found in other countries (Rodgers 2004).

2.2 Human capital

Human capital influences — measured as labour market experience or education level — are found to be an important determinant of transitions out of work on childbearing and on the return to work. Usually, women with greater levels of human capital are less likely to exit from work on childbearing (Wenk and Garrett 1992), and to return to work faster (Cramer 1979; Dex *et al.* 1998; Hofferth 1996; Macran, Joshi and Dex 1996; McLaughlin 1982; Polachek and Sieber 1993; Pylkkanen and Smith 2003; Shapiro and Mott 1979; Shapiro and Mott 1994). This is consistent with the argument that these women might seek to minimise job breaks to reduce the opportunity cost of childbearing, and to minimise the deterioration of skills. However, the effect of human capital may be smaller where women of all education levels have equal access to leave arrangements and child care, which facilitate the return to work, as is the case in Sweden (Gustafsson *et al.* 1996; Gutierrez-Domènech 2004).

2.3 Marital status

Married women are found to be more likely than single women to exit employment on childbearing (Drobnic, Blossfeld and Rohwer 1999), and to have a slower return to employment (McGovern *et al.* 2000; Miller 1993). This finding is linked to the financial aspect — that married women have financial support from their husband, while single women do not have this option. Of course, the degree of financial support provided by husbands varies considerably across families. For this reason, studies generally show that women with lower-income husbands are likely to resume work faster (Hofferth 1996; Joesch 1994; McGovern *et al.* 2000). Financial need cannot be looked at in isolation, however, as to return to work requires access to affordable child care, and is likely to be associated with other costs of working as well as loss in government assistance.

Drobnic found that in the United States and in West Germany, single parents return to work full-time, rather than part-time. She attributed this to the interaction with the potential loss of government assistance if working part-time — part-time employment did not bring sufficient financial compensation for the loss of this assistance to bring single parents out of poverty. These parents then had the options of no work, with government assistance, or full-time work (Drobnic 2000).

2.4 Work prior to birth

Having worked before childbearing is a strong predictor of the incidence and timing of return to work after childbearing (Hofferth 1996; Joesch 1994). Women who worked up to the birth have a faster return to work. This is likely to be related to a number of factors. The most important are that these women are more likely to have access to maternity leave, and that the human capital acquired through employment is likely to be higher for these women. Joesch (1994) suggests that the effect of work status before the birth captures both the opportunity cost effect as well as a preference effect — that those working during pregnancy had a stronger preference for work. Both Joesch (1994) and Hofferth (1996) find that working during pregnancy is such a strong predictor of the return to work timing, that many other covariates become insignificant once this variable is included.

In Australia, the characteristics of the job before childbearing are expected to have an association with the likelihood of return. In part, this would be because maternity leave is not available to everyone, but varies from job to job depending on the employment conditions. Also, for some occupations it might be preferable to return to work faster, to maintain job-specific skills and to ensure continuity of a career. For low-skilled jobs this may be less of an issue, although women in low-skilled jobs may have husbands in low-paying jobs that may necessitate a faster return to work to meet financial obligations.

2.5 Part-time work

For women returning to work, in Australia and in many other industrialised countries, part-time work helps to maintain a balance between work and family commitments. For some, a preference to work part-time may be so strong that taking up a full-time job on return to work is inconceivable, or perhaps not even possible if the availability and/or cost of non-parental child care are prohibitive to working longer hours. The availability of part-time work is of course an issue, as not all women can work part-time, even if they want to. Part-time work has become much more readily available in Australia, and the availability of part-time work was more likely to have been a constraint on employment in the 1970s compared to the 1980s or 1990s. Cross-country comparisons find that the availability of part-time work is an important factor in explaining differences across countries. This was found by Gutierrez-Domènech (2004), who suggested that fewer women in Italy and Spain might choose non-

employment if there were more opportunities to combine child care with part-time work.

In analysing returns to work it is particularly relevant to consider whether there are different factors associated with a return to part-time work over a return to full-time work. Hofferth's (1996) analysis of the return to work in the United States found that having access to part-time work was associated with a faster return to work. Her study also analysed the covariates associated with returning to part-time work and full-time work separately. She found that having a higher other family income suppressed the return to full-time work, and having higher own wage increased return to part-time work. As Hofferth says, "This makes sense. Mothers who do not need the money as much do not need to return full-time; they may decide to return part-time." (Hofferth 1996:398). A similar result was found for women in Germany by Ondrich, Spiess, Yang, and Wagner (1999).

2.6 Parental leave and child care

A number of country-specific and comparative studies have covered women's employment transitions around childbearing. The comparative studies, in particular, focus on differences in policy regimes, showing the importance of family and labour policies in explaining cross-country variation in employment patterns around childbearing. There is considerable evidence that the availability of parental leave or a home-care allowance is associated with different patterns of employment transitions (Hofferth 1996; McGovern *et al.* 2000; Ondrich *et al.* 1999; Pylkkanen and Smith 2003; Rønsen and Sundström 2002; Waldfogel, Higuchi and Abe 1999). Also, the availability of affordable, quality substitute child care may be an important factor, where such care is not universally available. The 'affordability' aspect of non-parental care means that there is likely to be a relationship between family income (or parental age or education) and the ability to access such care (Desai and Waite 1991; Macran *et al.* 1996). The lack of information on use of leave or use of child care in these data means this issue cannot be explored in this paper.

3 The data

The data used are from Waves 1 and 2 (1996-97 and 2000) of the Negotiating the Life Course (NLC) Survey. This survey was conducted by telephone, the original sample having been randomly selected from the electronic white pages. Those in scope were

people aged 18 to 54, with only one person per household interviewed, although in the case of couples, the respondent provided extensive information about him/herself, his/her partner and the household. The first wave of this survey was conducted in 1996-97 and resulted in a total sample of 2,200 people (McDonald *et al.* 2000). These respondents were followed up in 2000, resulting in interviews with 1,768 respondents (Breusch 2003). Further interviews were also conducted in 2003, but these data have not been incorporated.

This analysis uses the NLC's retrospective work history: respondents were asked for their work status in every year between when they turned fifteen and the survey date. Alignment of these data to the comprehensive fertility and relationship histories collected in this survey enabled an examination of the workforce transitions around childbearing.

Data were extracted for all female respondents who had one child or more born between 1970 and 1999 – a total sample of 799. Work status was determined for each year from the year before their first birth, as full-time, part-time or not working. The change in an individual's work status from one year to the next was used to measure workforce transitions. The first transition captured is that from before the year of first birth, to the year of (or the year after) the first birth. Every transition is recorded up until the year for which complete fertility, relationship and work history is available.

The greatest difficulty in using these data to analyse workforce transitions lies in the collection of data in annual blocks. In these data, short breaks from work go unrecorded, and for those working about half a year, it is left to the respondent to decide whether to record this as mostly working or mostly not working. This has obvious implications for an analysis of breaks from work following childbearing. Therefore, while the data are useful for looking at broad patterns of exits from and returns to employment, they cannot help in an analysis of maternity leave. Not only are short breaks hidden in the data, but also there is no information on whether a year away from work was taken using formal maternity leave, or taken as a break from a job using a less formal arrangement, or whether it involved resigning from one job and starting another. Also, no information is available on whether a break from work was paid or unpaid. With these constraints on the analysis, the expected results are unclear. Those that did leave work on commencement of childbearing included those

who had access paid maternity leave as well as those who left work with no financial assistance from their past employer and no guarantee to return.

The main purpose of this analysis was to investigate the relationship between certain individual and family characteristics and the likelihood of leaving work at the time of the first birth, or on the hazard of returning to work after this. To do this, the individual-level data were converted to person-year data, with one record for each person for every year from when they had their first birth to the survey date. That record contains indicators of work status and transitions in that year, as well as other time-varying characteristics, such as information on ages and numbers of children, and the relationship status at the end of the year. Also attached to each record are fixed covariates including age at first birth, country of birth, occupation and sector (or whether ever worked) before the first birth.

4 Transitions around the first birth

4.1 Methodology

The first section of this analysis focuses on transitions around the first birth, looking at work status before and after the first birth. The focus is on whether the mother worked continuously, whether she did not work at all around the birth, or whether she left work after childbearing. To do this, the full-time/part-time split was collapsed.

Table 1 Transitions at first birth, all first births occurring from 1970

From year before first birth	Transitions in birth year		Transitions in or one year after birth year	
	Count	Percent	Count	Percent
Not working before and after birth	136	17.0	136	17.0
Not working before, working after	25	3.1	25	3.1
Working before, not working after	314	39.3	397	49.7
Working before and after birth	324	40.6	241	30.2
Total	**799**	**100.0**	**799**	**100.0**

Source: 1996/97 and 2000 NLC.

To see the effect of childbearing, I take into account work status in the year before childbearing. I look for any moves out of work in the birth year or the following year, as, depending on when in the year the birth was, the effect of a birth may not be evident until the following year. The above table shows that it is important to consider transitions in the year after the birth as well as the year of the birth — while the majority of what appear to be birth-related transitions (that is, movement out of work)

occur in the birth year, the number of transitions is boosted a great deal by the inclusion of the following year[i].

As Table 1 shows, the three main transitions were to stay not working, to continue to work or to leave work. In analysing these data, the other transition, starting work after the birth, was excluded (that is, persons that experienced this transition were excluded) because of the relatively small numbers. The transition was treated as a three-way choice and modelled using multinomial logistic regression[ii], where P_{iSW} is the probability of person *i* staying at work after the birth, P_{iNW} is the probability of not working before and after the birth and P_{iLW} is the probability of leaving work after the birth. The multinomial logistic regression solves for values of coefficients, β_j, in the following equations, where *j* is not working before and after the birth (NW), leave work after the birth (LW) or stay at work after the birth (SW). The x_i values are values in a vector of explanatory variables for person *i*.

$$\log \frac{p_{iSW}}{p_{iNW}} = \alpha_{SW} + \beta'_{SW} x_i$$

$$\log \frac{p_{iLW}}{p_{iNW}} = \alpha_{LW} + \beta'_{LW} x_i$$

and,

$$\log \frac{p_{iSW}}{p_{iLW}} = \log \frac{p_{iSW}}{p_{iNW}} - \log \frac{p_{iLW}}{p_{iNW}}$$

4.2 Results

The majority of women (80%) were working up to their first birth. Of these, most left work for at least a year on the birth of their first child (50% of all women went from working to not working) while a considerable number did not leave work for a year or more (30% worked before and after the first child was born). Of those who were not working before the birth, most remained not working after (17% of women were not working before the birth and after the birth; 3% were not working before the birth but were working after) (Table 2).

A summary of how the work status before and on/after the first birth varies according to selected characteristics is given in Table 2. This table also presents these data in terms of the main transitions occurring before and on/after the birth.

Looking across time periods, just over three-quarters of those commencing childbearing in the 1970s and 1980s were working in the year before the birth. This proportion was higher in the 1990s at 86 per cent. Comparing the 1970s and 1980s, of those that were working before the birth, many more stayed working in the 1980s. In the 1990s, the proportion staying working was higher again, although the proportion leaving work remained high.

Those with a higher education were more likely to be working before the first birth and those with post-secondary education — vocational or degrees — were more likely to be working after the birth. Much of the difference by education was in the proportion not working before and after the birth, with less educated women more likely to be in this category. The proportion who stayed at work was much lower amongst these lower educated women.

Younger mothers were less likely to be working before and after the birth, with a very high representation in the 'stay not working category' (24% of mothers aged 15 to 19 and 21% of mothers aged 20 to 24 were in this category). Of those working before the first birth, the older mothers are more likely to stay at work.

Most mothers were married when they had their first child. The not partnered and cohabiting women were less likely than married women to be working before the birth (many not partnered/cohabiting women were younger, so this result is related to the age effect mentioned above). After the birth, not partnered women were more likely to be working, but the cohabiting women had the same percentage working as the married women. While many of the not partnered women were not working before and after the birth, of those that did work before the birth, more remained working, compared to married and cohabiting women who were more likely to leave work for at least a year.

Table 2 Work status before and at/after first birth by selected characteristics

	% Work before	% Work after	Stay not working	Work to no work	Stay work	No work to work	Sample count
	Percentage (%)						
Period							
1970-79	77.1	25.1	19.8	55.1	22.0	3.1	227
1980-89	76.3	34.5	19.7	45.9	30.5	4.0	325
1990-99	87.1	39.3	10.9	49.8	37.3	2.0	247
Pre-birth education							
Bachelor or higher	89.5	38.1	7.6	54.3	35.2	2.9	105
Other post-secondary	86.0	39.4	12.2	48.4	37.6	1.8	221
Complete secondary	78.6	35.3	17.1	47.6	31.0	4.3	187
Incomplete secondary	72.6	25.9	23.7	50.4	22.3	3.7	274
Age at first birth							
15 to 19	70.4	23.5	23.5	53.1	17.3	6.2	81
20 to 24	73.6	33.6	21.1	45.3	28.3	5.3	265
25 to 29	85.4	32.1	13.6	54.3	31.1	1.1	280
30 or older	85.0	39.3	13.3	47.4	37.6	1.7	173
Relationship status at end of birth year							
Not Partnered	74.6	46.0	20.6	33.3	41.3	4.8	63
Married	81.2	32.2	15.9	51.9	29.3	2.9	653
Cohabiting	73.5	32.5	22.9	44.6	28.9	3.6	83
Country of birth							
Australian / English speaking	81.1	33.0	27.4	35.5	29.0	8.1	62
Non-English Speaking	64.5	37.1	20.6	33.3	41.3	4.8	63
Child born next year							
No	80.1	34.5	16.9	48.6	31.5	3.0	724
Yes	77.3	21.3	18.7	60.0	17.3	4.0	75
Pre-birth sector/occupation							
Has not worked	0.0	20.0	80.0	0.0	0.0	20.0	20
Manager, professional or para-prof., public sector	87.2	33.8	9.8	56.4	30.8	3.0	133
Manager, professional or para-prof., private sector	88.2	44.7	11.8	43.4	44.7	0.0	76
Other work, public sector	87.1	35.3	10.6	54.1	32.9	2.4	85
Other work, private sector	79.5	31.1	17.5	51.4	28.1	3.0	434
Worked, but occupation & sector unknown	70.6	35.3	25.5	39.2	31.4	3.9	51
Total	**79.9**	**33.3**	**17.0**	**49.7**	**30.2**	**3.1**	**799**

Source: 1996/97 and 2000 NLC.

Changes in work status at the first birth may have been made in view of future plans for more children. For some, the next child may have even be planned or expected in the following year. As expected, of those that had a child in the year immediately

after the first child a higher proportion were not working that year, while the proportion working before the first birth was very similar.

Women who had worked in higher status jobs (managers, professionals or para-professionals) at some time before their first birth had a high proportion working in the year before that birth (87% public sector, 88% private sector). Those in non-managerial/professional jobs in the public sector also were more likely to be working in the year before the birth (87%), compared to those in non-managerial/professional jobs in the private sector (80%). The work pattern after the birth also differed according to the sector and occupation of the pre-birth job. Private sector managers/professionals were more likely to stay at work after their first birth (45% stayed working compared to 31% of managers/professionals in the public sector). This may have been related to leave provisions for the public sector workers, which enabled women to take paid leave as well as unpaid leave after the birth of a child. However, these patterns were not the same for women employed in jobs of lower status. For women in the private sector in non-managerial/professional jobs, 28 per cent stayed working, and the equivalent figure in the public sector was 33 per cent.

As with any bivariate analysis, the relationships between the variables make it difficult to isolate the effect of one variable over another, especially considering these data span a thirty-year period, and over this time there have been vast changes in education and fertility patterns. To explore the relationships more fully, a multinomial logistic regression was estimated on those women who made one of three main transitions around the birth of the first child (as explained earlier, those who did not work before the birth but did after were excluded). Persons with not stated education or who had never worked were excluded from this analysis, resulting in a sample size of 758.

Table 3 shows the results of this model. In this table ‘leave work’ refers to those who worked before the birth but not after, ‘stay at work’ is those that worked before and after and ‘not work’ is those who did not work before or after. The first two columns of coefficients compare those who did work before the birth with those who did not work before and after the birth. The final column compares staying at work to leaving work, for those who worked before the first birth. As this column shows, many of the explanatory variables did not have a significant effect on the difference between staying and leaving work. Those that did contribute significantly to the model were

primarily concerned with explaining the difference between those who were not working before or after the birth and those who worked before — whether or not they stayed working after the birth. In most cases the results confirm those of the descriptive statistics, although some results were not significant.

Mothers who had their first birth in the 1970s and 1980s were less likely to be working before their birth than those who had their first birth in the 1990s. There was, however, no significant change in the probability of staying at work versus leaving work.

Lower education was associated with a likelihood of not working before the birth, but did not significantly distinguish between those who stayed at work after the birth and those who left work, holding other variables constant.

Age of first birth did not have the expected effect, however, this was because of the inclusion of a variable that captured the number of years having worked full-time before the first birth (and a squared-term to capture non-linearities). This variable was highly significant in distinguishing between those who were not working before and after the birth from those who worked before the birth (whether or not they worked after the birth). Women with more full-time experience were more likely to be working before the first birth. Full-time experience was not significant in distinguishing between those who stayed at work and those who left work.

There were few variables that differentiated between those who stayed at work and those who left work. Not partnered women were more likely than married women to stay at work after the first birth, consistent with the argument that single women experienced a greater financial need to remain at work, not having the financial support of a partner to rely on. Also, those who had worked in the private sector as managers/professionals were more likely to stay at work than were non-managers/professionals in the private sector. This may be because these women had a stronger commitment to work, had a greater need to maintain continuity in their job/career, or because they faced a higher opportunity cost of not working. Not surprisingly, those women who had another child in the year following the first birth, were more likely to have left work after the first birth compared to those women who did not have a second child in this time.

Table 3 Regression results: Work status before/after first birth

Compare:	Leave work		Stay at work		Stay work	
To:	Not working both		Not working both		Leave work	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Period of first birth						
1970-79	Ref.					
1980-89	-0.010	(0.262)	0.387	(0.292)	0.397	(0.224)
1990-99	0.859*	(0.348)	1.187**	(0.373)	0.328	(0.251)
Pre-birth education						
Bachelor or higher	Ref.					
Voc./diploma/undergrad	-0.597	(0.500)	-0.368	(0.518)	0.228	(0.312)
Complete secondary	-0.745	(0.450)	-0.637	(0.468)	0.108	(0.283)
Incomplete secondary	-1.442**	(0.491)	-1.597**	(0.519)	-0.155	(0.335)
Age of first birth						
15 to 19	3.581***	(0.687)	3.166***	(0.764)	-0.415	(0.569)
20 to 24	1.850***	(0.499)	2.192***	(0.538)	0.342	(0.378)
25 to 29	1.056**	(0.388)	1.145**	(0.412)	0.089	(0.279)
30 and over	Ref.					
Relationship status						
Not Partnered	-0.695	(0.438)	0.117	(0.434)	0.812*	(0.324)
Married	Ref.					
Cohabiting	-0.282	(0.370)	-0.068	(0.397)	0.214	(0.295)
Born in NESB country	-0.567	(0.402)	-0.269	(0.424)	0.298	(0.344)
Child born next year	0.193	(0.359)	-0.478	(0.435)	-0.671*	(0.337)
Pre-birth occupation and sector						
Manager/profession, public	0.632	(0.415)	0.647	(0.440)	0.016	(0.284)
Manager/profession, private	0.147	(0.454)	0.760	(0.462)	0.613*	(0.307)
Other work, public sector	0.488	(0.413)	0.672	(0.440)	0.184	(0.278)
Other work, private sector	Ref.					
Unknown	-0.501	(0.449)	0.098	(0.473)	0.600	(0.401)
Total years FT	0.382***	(0.087)	0.350***	(0.091)	-0.032	(0.069)
Full-time years-squared	-0.011*	(0.005)	-0.007	(0.005)	0.004	(0.003)
Constant	-1.234	(0.739)	-2.399**	(0.803)	-1.165*	(0.591)
McFaddens R-square	0.077		-2LL model	-696.163		
Chi-square	116		IIA tests (Hausman and Hsaio-Small indicate outcome categories are independent of other alternatives).			
N	758					

Legend: * p<0.05; ** p<0.01; *** p<0.001.

4.3 Discussion

The lack of significance of some of these data items on the probability of staying at work over leaving work is interesting. This suggests that the practice of leaving work for at least a year after commencement of childbearing is widespread, and has been so throughout this period, and across all family types.

This result is not surprising given that the 'not working' women are highly heterogeneous, including those on paid leave, unpaid leave, and also those who resigned from their job. In this 'not working' group there are those who, because of their higher education and better status jobs, were able to access paid maternity leave and therefore had no immediate financial need to work in the year after the birth. There are also those women who could not work because they could not find or afford suitable child care. There are others, of course, who left work because of a preference to be at home when their children were young.

The 'working' group are also varied, including those who returned to work out of financial necessity but who would have preferred to stay home, and those who returned to work because of a strong identification with their role as worker. Having no variable to capture financial need is unfortunate, as this has been shown to be important in understanding women's transitions to work and might have been used to differentiate those who have stayed at work out of financial need from those who stayed at work for other reasons.

In the multivariate analysis, education was associated with the likelihood of being in the category of not working before and after the first birth, but did not significantly distinguish between those who stayed at work or left work. This lack of significance is probably in part because of the heterogeneous 'not working' and 'working' groups, which both include a mix of higher and lower-educated women.

5 Transitions to work after childbearing

5.1 Methodology

This section focuses on transitions to work after the first birth, for those persons who were not working on or after that birth. This analysis differs from earlier analysis, in that not only is the occurrence of the event (a return to work) of interest, but also the timing of that event. At each year we know whether or not the mother has returned to

work, and whether that return was to full-time or part-time work. The data are set up such that one record represents a person-year, one for each year following the birth of the first child until the mother moves into work or until they are censored. To analyse these data, discrete time event history analysis is appropriate, given that these data are in discrete periods of years (Allison 1984). This approach models whether or not a return to work has occurred on a set of explanatory variables including a time measure, which captures the timing of transition to work. Formally, this analysis is of the hazard of person *i* returning to work (h_{it}) at time *t*, conditional on not having done so before time *t*.

$$h_{it} = \Pr\left[T_i = t \,\middle|\, T_i \geq t,\, x_{it}\right]$$

T_i is the uncensored time of event occurrence.

First, the transition was measured as a return to work — the distinction between full-time and part-time was not made. The transition variable was a binary indicator, which was set to zero if the transition did not occur, and one if it did occur. Once a transition was observed, the subsequent records were not used. Those persons who did not make a transition at all by the time they were censored had a zero value on all records. The analysis was undertaken on those who were at risk of working, given that they were not working in the year of or the year after the first birth. Time dummies were included in the model, and the parameters on these terms were used to determine the hazard of returning to work at different times after the first birth.

Some authors suggest that these data can then be modelled using logistic regression (for example, Allison 1984; Singer and Willett 2003). In this case, the hazard model would look like this, where α_t are the time-dummies and β is the vector of coefficients associated with the explanatory variables, x_{it} for person *i*.

$$h_{it} = \frac{1}{1 + \exp\left(-\alpha_t - \beta' x_{it}\right)}$$

This can be estimated with a logistic regression, which was done in this analysis using the Stata procedure *logistic*. Robust standard errors were calculated to allow for the clustering of person-records[iii]. This does not affect the parameters.

To further investigate whether there were different factors influencing the return to full-time or part-time work, these alternatives were estimated as a competing risk

model. The same principle applied in analysing the hazard of return to work, but because in this case there were three outcomes possible (stay not working, move to full-time or move to part-time work), a multinomial logistic regression was required. The formula for multinomial logistic regression has been presented earlier. As with the logistic regression, robust standard errors were calculated to allow for the variation within person-level records.

An important aspect of this analysis was in deciding how to specify the time dummies. In looking at return to work it is more informative to measure time relative to the ages of the children than it is to the number of years until the return to work. This becomes complicated, however, as women can have more children before their return to work, so the age of youngest child would be reset to zero every time a new child was born. This on its own would not capture the full effect of time. Various alternatives were tested, aiming for a good fit of the model but also aiming to create a model with coefficients that were most easily interpreted. The final model uses age of youngest child, but expands the classification to look separately at those who have only one child from those with two or more children.

5.2 Results

As seen in the previous section in Table 2, about two-thirds of women were not working on or after the first birth. In the sample, there were 533 women who were not working in the year of their first birth, or the year after, who had their first child in or after 1970. As the following table shows, the majority of women did not work in the year of the first birth, and their transitions were evaluated from when the first child was aged one.

Table 4 Women who did not work around the first birth

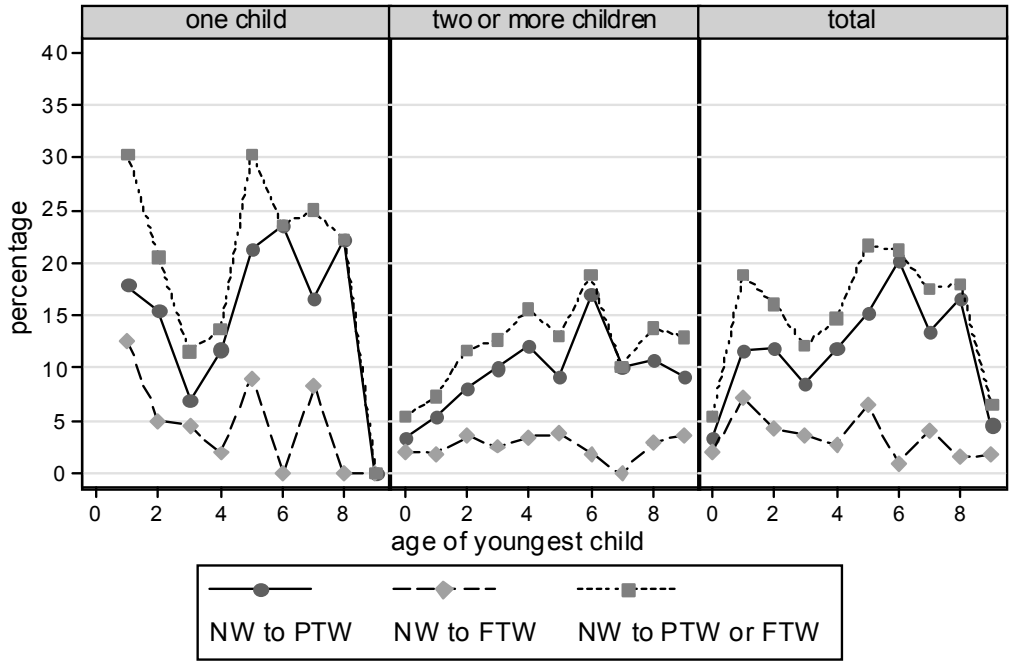
		Sample count
Not working in year first child born	Transitions monitored from the year in which first child is aged one	450
	Of these, some women had a second child when the first child was aged one	*59*
Working in year first child born, but not working in year after first child born	Transitions monitored from the year in which first child is aged two	83
Total mothers having first birth in or after 1970 who did not work around the first birth		533

Source: 1996-97 and 2000 NLC.

This section focuses on these women who did not work on or after the first birth, and follows them year-by-year to ascertain whether or not they returned[iv] to work at some stage. In each year, women could make a transition from no work to full-time work or to part-time work, or remain not working. Once they returned to work (or reached the end of the survey period) they were censored. Also, women are only 'followed' until the youngest child is aged nine years old.

Figure 1 shows the distribution of transitions by age of youngest child and total number of children.

Figure 1 Women not working in the year of or year after their first birth, transitions to work by number of children born and age of youngest child



NW=not working, PTW=part-time work, FTW=full-time work
source: NLC 1996/97 and 2000

The transitions to work were very different for first-time mothers with very young children than for mothers who had not returned before having their other children. There was a relatively high risk of returning to work amongst one-child mothers when their child was aged one. Overall, 30 per cent of these women went to work at this time (18% to part-time work and 13% to full-time work). Similarly the risk was high when the child was aged two — 21 per cent of those who had not yet returned went to work at this time (16% to part-time work and 5% to full-time work). After this, the risk dropped off while the child is aged three or four. It then increased again, but for

these transitions the sample sizes were small, since so many women had gone on to have a second child by the time their first child was aged five.

Once a second (or later) child was born, if the mother had not yet returned to work, the risk of returning was lower. For example, for a mother who had just had her second child and had not yet returned to work, in the year her youngest child turns one she had a risk of entering work of just 7 per cent (5% return to part-time, 2% full-time). The risk gradually increased as the youngest child got older, with the risk of returning to part-time work always higher than the risk of returning to full-time work. In fact, it was the risk of entering part-time work that increased as the child ages — the risk of entering full-time work remained low.

Determinants of return to work

This pattern was first analysed by considering the return-to-work decision, ignoring the distinction between full-time and part-time work. The multivariate analysis was conducted to determine whether certain characteristics were associated with a faster return to work. The model parameters are presented in Table 5.

The age/number of child variables were the strongest predictors of the hazard of returning to work. The coefficients on these variables confirmed the descriptive results shown in Table 2. The risk of returning to work was high for one-child mothers with a child aged one or two. For mothers of two or more children the risk was lower when their youngest children were this age or when they were newborn (the reference category). There was a gradual increase in the risk as the youngest child got older, with relatively high risks of returning to work when the youngest (or only) child was school-aged. Education had some effect on the risk of returning to work, as those with the lowest levels of education had the smallest risk of returning. Those with a bachelor degree or higher had the highest risk of returning, although the difference between this and other levels of education was non-significant, except for the comparison with the lowest level of education.

Table 5 Return to work after childbearing, all women whose first birth was in or after 1970 and who left work for at least one year at their first birth

	Coefficient	Robust S.E.
First child , Youngest aged 1	1.989***	(0.232)
Youngest aged 2	1.473***	(0.277)
Youngest aged 3	0.987*	(0.397)
Youngest aged 4	1.178*	(0.473)
Later child, Youngest aged 0	Ref.	
Youngest aged 1	0.330	(0.280)
Youngest aged 2	0.816**	(0.273)
Youngest aged 3	0.952**	(0.291)
Youngest aged 4	1.219***	(0.300)
Any child, Youngest aged 5	1.402***	(0.304)
Youngest aged 6	1.588***	(0.313)
Youngest aged 7	1.070**	(0.386)
Youngest aged 8	1.357***	(0.395)
Youngest aged 9	1.087*	(0.467)
Bachelor degree or higher	Ref.	
Other post-school qualifications	-0.105	(0.213)
Complete secondary	-0.308	(0.219)
Incomplete secondary	-0.621**	(0.220)
Didn't work in year before birth	-0.925***	(0.147)
Never had a job	0.358	(0.339)
Manager/professional public sector	0.511*	(0.199)
Manager/professional private sector	0.542**	(0.204)
Other job, public sector	0.044	(0.192)
Other job, private sector	Ref.	
Worked, occupation unknown	0.548**	(0.207)
Born in NESB country	-0.217	(0.286)
Single	0.034	(0.175)
Cohabiting	0.150	(0.242)
Married	Ref.	
1970-79	Ref.	
1980-89	0.269	(0.182)
1990-99	0.424*	(0.191)
Constant	-2.711***	(0.321)
Rho		
Mcfadden's R-square	0.106	
Chi-square	209	
Model log-likelihood	-1042	
Sample size (persons)	524	
Sample size (observations)	2848	

Legend: * p<0.05; ** p<0.01; *** p<0.001

One of the strong predictors of returning to work was whether or not the woman worked in the year before she had her first birth. Those women who were not working

at this time had a significantly lower risk of entering work while they had a youngest child aged under ten.

Of those who had worked at some time before their birth, the occupation of the job held before the birth was associated with the risk of returning. Compared to those who had worked in non-managerial/professional private sector jobs, women who had worked as managers, professionals or para-professionals had a high risk of returning to work, whether they had worked in the public sector or the private sector. Amongst those working in non-managerial/professional jobs there was also no significant difference in the hazard of returning when comparing the public and private sector.

There was another group of women who had a high risk of returning to work. These were women who had worked at some time (according to their work history), but who had said they had no occupation when asked about their main jobs. It may be that these women did not consider their work as an occupation — perhaps it was sporadic work, or low status work that they saw as something temporary and not worth identifying as a 'main job'. That these women had a high risk of returning to work might suggest the timing of their return to work was not because the job was a good one that they wanted to return to, but because they needed to return to work relatively quickly out of financial necessity.

Relationship status and country of birth did not have a significant impact on the hazard of returning to work.

There was evidence of an increase in the hazard of returning to work over the period, with the hazard of returning significantly higher in the 1990s compared to the 1970s. The hazard of returning in the 1980s was higher than the 1970s also, but was not significant. (Similarly the difference between the coefficient for the 1990s was not significantly higher than for the 1980s.)

Table 6 Return to work after childbearing, all women whose first birth was in or after 1970 and who left work for at least one year at their first birth, return to full-time or part-time work

Compare	Part-time		Full-time		Part-time	
To	Not working		Not working		Full-time	
	Coefficient	Robust S.E.	Coefficient	Robust S.E.	Coefficient	Robust S.E.
First child , Youngest aged 1	1.915***	(0.289)	2.098***	(0.359)	-0.183	(0.447)
Youngest aged 2	1.664***	(0.332)	1.030*	(0.463)	0.635	(0.547)
Youngest aged 3	0.957	(0.496)	1.019	(0.612)	-0.062	(0.763)
Youngest aged 4	1.526**	(0.524)	0.154	(1.090)	1.372	(1.172)
Later child, Youngest aged 0	Ref.					
Youngest aged 1	0.508	(0.339)	-0.052	(0.483)	0.560	(0.579)
Youngest aged 2	0.911**	(0.335)	0.641	(0.447)	0.270	(0.546)
Youngest aged 3	1.186***	(0.346)	0.369	(0.529)	0.817	(0.616)
Youngest aged 4	1.451***	(0.358)	0.670	(0.532)	0.781	(0.624)
Any child, Youngest aged 5	1.528***	(0.366)	1.155*	(0.499)	0.373	(0.597)
Youngest aged 6	1.978***	(0.362)	0.078	(0.787)	1.900*	(0.854)
Youngest aged 7	1.436***	(0.434)	-0.311	(1.070)	1.746	(1.149)
Youngest aged 8	1.612***	(0.450)	0.685	(0.803)	0.927	(0.894)
Youngest aged 9	1.210*	(0.548)	0.852	(0.805)	0.358	(0.939)
Bachelor degree or higher	Ref.					
Other post-school quals	0.093	(0.237)	-0.579	(0.334)	0.671	(0.361)
Complete secondary	-0.219	(0.252)	-0.489	(0.342)	0.270	(0.390)
Incomplete secondary	-0.575*	(0.256)	-0.690*	(0.337)	0.116	(0.389)
Didn't work in year before birth	-0.979***	(0.174)	-0.785**	(0.253)	-0.195	(0.300)
Never had a job	-0.016	(0.433)	0.805	(0.564)	-0.821	(0.748)
Manager/prof., public sector	0.396	(0.221)	0.769*	(0.312)	-0.373	(0.340)
Manager/prof., private sector	0.790***	(0.217)	-0.646	(0.621)	1.436*	(0.652)
Other job, public sector	-0.197	(0.229)	0.507	(0.297)	-0.704*	(0.356)
Other job, private sector	Ref.					
Worked, occupation	0.580*	(0.242)	0.466	(0.390)	0.114	(0.455)
Born in NESB country	-0.364	(0.350)	0.096	(0.391)	-0.460	(0.481)
Single	-0.015	(0.197)	0.149	(0.313)	-0.163	(0.351)
Cohabiting	0.097	(0.316)	0.241	(0.357)	-0.144	(0.476)
Married	Ref.					
1970-79	Ref.					
1980-89	0.397	(0.223)	0.040	(0.274)	0.357	(0.335)
1990-99	0.603**	(0.232)	0.088	(0.294)	0.514	(0.354)
Constant	-3.353***	(0.387)	-3.421***	(0.487)	0.068	(0.581)
Mcfadden's R-square		0.105				
Chi-square		256				
Model log-likelihood		-1264				
Sample size (observations)		2848				

Legend: * p<0.05; ** p<0.01; *** p<0.001

Full-time or part-time return

Of interest also, was whether women were returning to work full-time or part-time after their break from work. Table 6 presents the results of the model in which the return to work was treated as a choice between going into full-time work, part-time work, or remaining not working. This was run as a multinomial logistic regression, with standard errors adjusted to allow for the non-independence of person-records. These results show that much of the measured variation was in the return to part-time work, which varied across age of youngest child and other characteristics.

The hazard of returning to full-time work was significant when there was only one child and the child was aged one or two — there was a particularly large return to full-time work when the child was aged one. The hazard of returning to part-time work was also high at these times, such that there was no significant difference in the hazard of returning to full-time or part-time work. Similarly, the hazard of returning to work when the youngest or only child was aged five was significantly higher (compared to those who had a second or later child born that year) for full-time and part-time work, so the odds of returning to full-time work was not significantly different from the odds of returning to part-time work. The hazard of returning to part-time work was particularly high when the youngest or only child was aged six years, while the hazard of returning to full-time work at this time was relatively low, meaning there was a significant difference between the hazard of returning to full-time and part-time work at this time.

These results show that the effect of education was significant in explaining the return to full-time or part-time work when comparing those with incomplete secondary education to those with bachelor degrees or higher. Similarly, not working before the first birth affected the return to full-time and part-time work. In both cases these variables did not distinguish between those who returned full-time as opposed to those who returned to part-time work.

The pre-birth job had different effects on the return to full-time or part-time work. First looking at those who worked as managers/professionals or para-professionals, those who had worked in the public sector were more likely to return to work full-time (compared to non-managerial private sector workers) while those who had worked in the private sector were more likely to return to part-time work. The choice between full-time and part-time work was not significant for the public sector

manager/professional/para-professionals, but it was for those who had worked in the private sector. Also, those who had worked in non-managerial/professional public sector jobs were more likely to return to full-time work than to part-time work.

This result was not expected. A closer look at these data revealed that a high proportion of those who had worked in the private sector in these higher status jobs had been working part-time even before the first birth. The same applied for those who worked in other private sector jobs and especially those whose occupation was unknown. This is summarised in Table 7.

This may explain some of the increased tendency for persons in higher status occupations in the private sector to be more likely to be in part-time work, however, a re-specification of the model including a term to capture full-time / part-time status before the first birth did not result in different effects — even after controlling for part-time status before the first birth the occupation effects stand as they have been shown here.

Table 7 Women who took a break from work on the birth of their first child, pre-birth occupation and sector by whether worked in the year before the first birth and full-time part-time status if they did

Pre-birth occupation and sector[(a)]	Worked the year before the birth			Not working year before the birth	Total
	Full-time	Part-time	Total		
	Percentage(%)				
Manager, professional or para/professional, public sector	76.4	4.9	80.2	18.8	100.0
Manager, professional or para/professional, private or unknown sector	63.8	11.4	75.2	24.8	100.0
Other occupation, public sector	76.7	6.6	83.3	16.7	100.0
Other occupation, private sector	63.5	10.1	73.6	26.4	100.0
Unknown	29.4	30.1	59.6	40.4	100.0
Total	**63.1**	**10.1**	**73.2**	**26.8**	**100.0**

Source: 1996-97 and 2000 NLC.
(a) The occupation/sector worked in most recently up until the year the first child was born. Excludes persons who had never had a job.

Again, relationship status and country of birth were not significant. It was expected that single mothers would be more likely to return to full-time work, given they faced greater financial pressure to do so. There was very weak evidence of this — the coefficients were small and standard errors too high to pick up a significant relationship.

Looking at the period effects, the increased hazard of returning to work appears to be associated with the increased hazard of returning to part-time work. There was very little increase in full-time work over this period, while a significant increase in part-time work was detected. Nevertheless, the comparison of full-time to part-time work did not result in a significant effect — that is, by the 1990s the hazard of returning to part-time work instead of full-time work was not significantly higher than it was in the 1970s. The coefficients indicate there was some increase, but evidently the standard errors were too high to achieve significance.

5.3 Discussion

This section presented an analysis of the transitions to work for those women who took a break from work around commencement of childbearing. This analysis was firstly done on the transition to work using logistic regression. Further analysis broke this down to look for differences in returns to full-time work as opposed to part-time work using multinomial logistic regression.

Clearly, the age of the youngest child in conjunction with whether or not this is the first child, is an important predictor of transitions to work. This is no surprise. It is interesting to observe that much of the return to work occurs in the year or two after the first child is born, showing that many women do not take an extensive break for childbearing. No doubt some of these women would go on to have another break if they were to have more children. This analysis has not sought to analyse subsequent transitions once a return to work has occurred.

Changes over time in the hazard of returning to work were also evident in these data, with women more likely to return to work sooner in the 1990s.

The effect of education was consistent with expectations. Women with higher education are most likely to return to work faster. This may be to minimise financial losses; it may be that they are more able to afford substitute child care; or they may wish to return to a job relatively early to maintain continuity with their skills and/or career. The same arguments might apply to explain the higher hazard of returning to work amongst women who had worked in a higher status job prior to their first birth.

Also consistent with the international literature was the effect of not having worked before the first birth, with these women having a lower hazard of returning. As stated earlier, this effect may be in part a preference effect — that those who were not

working before the birth probably had a lower preference to be working. The opportunity cost effect also suggests that if these women were not working before the birth, then they are not forgoing income to stay at home with their child/ren, so financially they are no worse off to stay at home.

Part-time work is often used by mothers on returning to work after childbearing, as was seen in Figure 1. The analysis showed up some differences in the determinants of returning to full-time work over part-time work, but on the whole there was very little that was significant. A larger dataset would no doubt find more associations.

There were some differences by pre-birth occupation. Private sector managers, professionals or para-professionals were more likely to return to work part-time than were women employed in other occupations or in the same occupation group in the public sector. It was also shown that there were differences in full-time/part-time staus by occupation even before the birth of the first child, which may account for some of the difference after childbearing.

While it was expected that single mothers would have a faster rate of return, and a greater tendency to full-time work, neither of these results were found to be significant, although the parameter coefficients were in the expected direction. The lack of effect may be in part due to the inability to classify the partnered women according to their partner's income, which would enable some analysis of those women who might have returned to work out of financial necessity as opposed to others who might have had more freedom to choose when they returned. The partnered women, then, are likely to be quite heterogeneous, and this along with the small sample size could explain the lack of effect.

6 Summary

Of women having their first child between 1970 and 2000, about two-thirds of women were not working after that birth, although of this proportion 15 per cent were also not working before the birth. The multivariate analysis showed that lower education was associated with higher odds of not working both before and after the first birth. These data also showed that over time there has been an increase in the proportion working before the first birth.

Among those that worked before the birth there was, however, little to distinguish between those who stayed at work and those who left work. As found by Drobnic *et al.* (1999), not partnered women were more likely to stay at work, probably reflecting need for income, given the inability for these women to depend on the income of a partner. Those with a high status occupation in the private sector were also less likely to leave work. Joesch (1994) suggested that both preference effects and human capital effects were being captured by the effect of pre-birth employment. This is relevant to these results, as the effect of pre-birth job could be a reflection of preference, human capital or it could be that these women are under more pressure to resume work after childbearing to maintain their position at work. It may also reflect lack of access to leave arrangements that permit these women to take a long absence from work.

Overall, interpretation of these results was made difficult because of the heterogeneous nature of the not-working women, including those on paid and unpaid maternity leave, as well as those who resigned from work. Women who were found to exit work could have fallen into any one of these types (or more than one where a mix of arrangements were used). These data then, were not able to be used to analyse how the availability of maternity leave or child care affected decisions about whether or not to take a break from work on commencement of childbearing.

Further analysis showed that of those not working after the first birth, many returned when this child was aged one or two. For those that did not return before having more children, there was a gradual return to work as the youngest child grew older. There were some factors associated with a faster return, most notably related to whether the person worked before the first birth (as found by Joesch (1994) and Hofferth (1996)), and the occupation and sector of the pre-birth job. There was also evidence that women were returning to work faster in the 1990s than they were in the 1970s.

As noted above, because we do not know about the nature of the break from work — whether paid leave, unpaid leave or leaving the employer altogether — this analysis of returns to work cannot accurately determine how such arrangements affect the timing of return to work. It is likely that the pre-birth job characteristics are in some way related to the type of arrangement used, with public sector and higher status jobs likely to be associated with use of paid and unpaid leave. However, not only are these data insufficient in terms of the type of break taken, a more useful analysis would require data on transitions back to work in terms of weeks or months instead of years,

since so much of the transition back to work occurs in the first one or two years after the first child is born.

Mothers often use part-time work when their children are young, and this was clear from the higher proportions using part-time work in these data. These data were less useful in distinguishing those who worked part-time from those who worked full-time on return to work, although it appears that women working in certain types of jobs, as identified by the occupation and sector they work in, might be more likely than others to work part-time.

This analysis considers only the first transition to work after the first birth. More detailed analyses of these transitions data could look at later transitions, for example, looking at the extent, to which women move into and out of work as they have other children, or the extent to which they change between full-time and part-time work.

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[i] Some transitions in the year after the birth may be due to a second birth the next year, but this appears to not be the primary cause of transitions in the year after the birth.

[ii] A simpler solution would have been to restrict the analysis to those who worked before the birth, and to estimate the effects of the covariates on whether or not there was an exit from work. This, however, leads to selectivity problems, and ignores a considerable proportion of women. Using a multinomial logistic regression still enables an analysis of the exit from work amongst those who worked before the birth, but more correctly also compares these possibilities to that of not having worked before.

[iii] Using the 'cluster' option in Stata's logistic procedure. The method is documented in Wooldridge (2002). An alternate specification of this model, incorporating a random effects term to control for the non-independence of observations from the same person, has been presented in (Baxter).

[iv] Throughout this analysis the word 'return' is used to describe the transition to work. This word implies they have worked before, although this is not true of everyone.

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