Employment trajectories for mothers in low-skilled work: Evidence from the British Lone Parent Cohort

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Table 1 and Figure 1 (and associated text) were revised in February 2008. The numbers in the original paper did not adequately adjust for the oversampling of Family Credit recipients in the original BLPC sample. The revision has affected the shares of women classified into each trajectory, but has ***not*** had any bearing on the analysis of the characteristics of women in each trajectory group, nor on the analysis of wage progression.

Abstract

UK government policy encourages mothers of young children in low-income families to enter or return to work, via tax credit subsidies and support for childcare. Maternal employment is seen a central plank in the campaign against child poverty, both because it raises income immediately and because working now is seen as paving the way to better employment prospects in the future. But there is little evidence about medium- and long-term outcomes for mothers entering low skilled employment. We know little about how likely such women are to remain in work, let alone how likely they are to progress to higher skilled and better paid jobs.

This paper uses a dataset which tracked lone mothers from 1991 to 2001 to examine employment trajectories for 560 mothers with a youngest child under five at the start of the period. It creates a typology of trajectories over the decade, identifying the share of women broadly stable in work, those broadly stable at home and those following unstable pathways between the two. It goes on to explore the factors associated with different pathways, asking whether individual and household characteristics, job characteristics, or circumstantial factors such as re-partnering are most important. Finally, the paper examines differences in wage progression across groups of women following different pathways, and similarly tries to identify the main factors associated with faster progress.

JEL classification: J22 J24 J31
Keywords: maternal employment, employment trajectories, wage progression

1. Introduction

Labour Government policy since 1997 has encouraged the mothers of young children in low-income families to enter or return to work, through the tax credit system, through investment in the availability and affordability of childcare, and through labour market policies: even lone parents of children under five must now attend a compulsory work-focused interview. It is discussing taking this policy one stage further and withdrawing paid income support for those whose youngest child reaches the age of 12, with other measures to follow. (DWP 2007). Indeed, one Minister recently claimed that 'work is the only way out of poverty' (*Financial Times*, 27 March 2007). These policies, particularly as they affect lone parents, are part of a longer-term shift towards emphasizing work that began under the Conservative government in the late 1980s. Until then policy in the UK had been neutral between paid work and childcare; since then policy has increasingly promoted paid work (Kiernan et al. 1998).

While this shift began under the previous administration, Labour's motivation for its emphasis on work (and hence the exact nature of its policies) has arguably been different, following on from its commitment to eradicate poverty among children. Maternal employment is seen by the government as a central plank in the campaign against child poverty, both because it raises family income in the immediate term, and because employment now is seen as paving the way to better employment prospects in the future: "Getting a job, keeping a job and having the chance to progress up the earnings distribution out of low-paid work are the key to improving life chances" (HM Treasury 1999). This progression is crucial to the government's strategy for ending child poverty. Currently £15 billion a year is spent on tax credits, with a large share going to working families on low incomes. Recent work for the Joseph Rowntree Foundation put the cost of meeting the 2010 target of halving child poverty at an additional £4-5 billion pounds annually, plus a further £28 billion a year to eradicate child poverty by 2020 (Hirsch 2006b) – a level of spending which the Rowntree report considers 'inconceivable' (p.13). However, if current low-earning parents are able to move up the earnings distribution and reduce their reliance on tax credits, it will free up resources for those currently living below the poverty line. Hirsch 2006a estimates that the Treasury claws back at least 70 pence of a £1 pay rise for someone on tax credits and paying the basic rates of tax and National Insurance.

But is it true that those who get a low-paid job keep the job and progress up the earnings distribution? Extensive research has examined the impact of early maternal employment on children's development (see e.g. Waldfogel et al. 2002; Ermisch and Francesconi 2000; Gregg and Washbrook 2003), but what about the outcomes for mothers? On the one hand, a number of studies point to the importance of work experience for women's wages and life-term earnings, seeking to quantify how much women lose through interruptions to have and look after children (e.g. Joshi et al. 1998; Harkness and Waldfogel 1999; Walby and Olsen 2003). But few of these studies have focused specifically on the low skilled and low paid, for whom the pay-

offs to experience would be expected to be lower. On the other hand, recent research examining lone parent employment has pointed to the existence of a 'low pay – no pay' cycle: Evans et al. 2004 show that lone parents are now moving into paid work at a rate similar to that of other non-employed people, but remain twice as likely to leave again, with low pay one of the main factors associated with exit.

This paper uses a panel dataset which followed 988 lone parents through the 1990s to examine the medium and long-term importance for wage and career progression of an early return to low-skilled work. There are three elements to the analysis. First, the paper identifies a typology of employment trajectories, seeking to summarise the complicated pathways interviewees follow after the birth of their youngest child. Second, it explores the factors associated with different pathways: are individual and household characteristics, job characteristics or circumstantial factors most important in driving different trajectories, and is an early return to work important in itself? Finally, the paper examines differences in wage progression across groups of women following different pathways: how far do those who remain in work move on to better paid jobs as their children get older?

2. Review of the literature

A fairly extensive literature examines the factors driving a mother's initial decision to return to work after childbirth (McRae 1993; McRae 1996; Abe et al. 1998; Burgess et al. 2002; Brewer and Paull 2006). There has also been considerable and growing interest in the long-term impact on children of the timing of this decision: a series of studies explore the relationship between maternal employment and children's later social, academic and behavioural outcomes, and how this relationship is affected by childcare quality (e.g. Gregg et al. 2005; Waldfogel 2006). But fewer studies have considered the long-term impact for the mothers themselves and for their prospects in the labour market.

UK studies using the 1958 birth cohort (women aged 33 in 1991) have found that women who returned to work within eight or nine months of a birth are more likely to be working at a subsequent date (Joshi et al. 1996; Dex et al. 1998) and are more likely to stay in the same job for longer (Macran et al. 1996). But data constraints mean that each of these studies focus on the first few years after birth, rather than the longer term: over a quarter of respondents in the 1991 NCDS still had a child under 3, and only 5% had a youngest child aged 11 or more. Joshi et al sum up their results as meaning that return within nine months brings a 25% increase in the employment probability during the first five years, but the data do not cover what happens after that.

In the US, Shapiro and Mott (1994) find that early employment behaviour is a significant predictor of lifetime work experience 14-19 years on, especially for those who returned in the first six months. Their study uses National Longitudinal Surveys

of women who had a first birth between 1968 and 1973 and for whom early return was quite unusual; it is not clear that results are relevant for women in the UK today.

Using relatively recent British data (the Families and Children Study and the British Household Panel Survey), Brewer and Paull (2006) report that "there is no evidence that the length of absence following childbirth affects the likelihood of mothers working in the first decade after birth" (p.62). A mother who returned when her child was five, for example, was just as likely to be working when the child was ten as a similar mother who returned shortly after birth. The distinction their study highlights is not between mothers who return early and those who wait, but between mothers and men: of women who haven't had a subsequent birth and have returned to work, only 38% have remained permanently in work after ten years, compared to 61% of men.

Other studies from both the UK and the US testify to the fluidity of women's employment trajectories over time. In the US, Hynes and Clarkberg (2005) seek to establish how far women's employment experiences after birth can be characterized by continuity rather than change. They find about two-thirds of the sample correspond broadly to the three types of behaviour commonly considered – Continuously Employed, Exit at Birth and Continuously Out. But that leaves one-third of women following different trajectories which are typically not considered. Vandenheuvel (1997) argues that women follow substantially more diverse life paths than shows up in most of the literature. She follows women for 2-10 years after a first birth in the late 1970s/early 1980s and finds that, ten years on, three quarters of the sample have non-continuous sequences (they have been observed both in and out of the workforce). In the UK, McRae (2003) argues that the continuity of women's employment after childbirth has been overstated by previous researchers, including herself. Nine in ten mothers in her study (which follows mothers for eleven years after the birth of a first baby in 1988) mix spells of part- and full-time employment with no work, work exclusively part-time or remain outside the labour market altogether.

None of the studies cited so far focuses explicitly on the low-skilled. Human capital theory predicts that time spent in work makes later employment more likely by raising work-related skills and experience. It follows that low skilled jobs may not bring the same benefits: the value of experience will be lower in jobs that require few skills. We do know that in the low-skilled labour market churning or cycling in and out of jobs is much more common. White and Forth (1998) found that three-quarters of people leaving unemployment entered jobs that were part-time, temporary, self-employed or using lower skill levels than in previous work, and that they were more likely to remain in such work or become unemployed again than to move into more stable employment. Recent work by Evans, Harkness and Arigoni Ortiz find similar results for lone parents in particular: Evans et al. (2004) show that lone parents now move into paid work at a rate similar to that of other non-employed people, but that they remain twice as likely to leave again as non-lone parents. Some 29% of those finding work with the New Deal for Lone Parents return to Income Support within a year (Evans et al. 2003). One of the main factors associated with leaving work is low pay,

as are being aged under 30, not being a home owner, and having entered work in the last year (Evans et al. 2004).[1]

Extensive American research has also shown a high level of return to welfare among lone parents entering work, with job characteristics and earnings important factors. Bane and Ellwood (1994) found that 17% of women leaving welfare had returned to it within a year, and 32% had returned within six years. More staggeringly, Rangarajan et al. (1998) showed that three in four lone mothers starting work after receiving Aid to Families with Dependent Children (AFDC) had left employment again within a year. (See also Blank and Ruggles 1994; Bartik 1997).

What of the impact of more time at home on future wages? A number of studies examine the implications of having children for wages and life-time earnings (e.g. Joshi et al., 1998; Harkness and Waldfogel, 1999; Walby and Olsen, 2003). Several find that returning early/taking less time out softens this impact, although there are differing estimates as to how important the role of experience is, as opposed to the shift to part-time work or to less-well paid occupations. But few of these studies have focused specifically on less skilled women, for whom it is plausible that loss of experience has a different cost. Rake et al. (2000) do predict the impact of children on life-term earnings for women of different skill levels. They also disaggregate the results, so that we can see how much of the gap (roughly one third for a low-skilled woman) is due to the loss of experience rather than to lost hours or years of income. However, their calculations are based on simulations rather than actual data and rely on assumptions (e.g. about the effect on wages of each extra year's experience) which may or may not be justified.

Other studies which have looked at wage and employment progression among low-skilled workers in general have found mixed results. Gladden and Taber (2000) look at wage progression for low-skilled workers in the US: they suggest that there is a return to experience in the low-skilled labour market but that it is smaller than some might think. Also using US data, Connolly et al. (2003) find substantial upward mobility even from 'dead-end' jobs, but only for a small minority of workers. Similarly, Holzer and Martinson (2005) find that few workers who start in low-paid work manage to escape their low-paid status. In the UK, Stewart and Swaffield (1998) find limited mobility out of low pay using the British Household Panel Survey; the probability of moving out of low pay is considerably lower for women than for men. With respect to lone parents in particular, Harkness (2006) writes that around half of those who ever worked between 1999 and 2003 were permanently low paid (their earnings never rose beyond two-thirds of the male median wage), while the US study tracking former AFDC recipients cited above found that lone mothers who continued

[1] Interestingly, the same study also finds that the probability of entering work is not significantly associated with the length of time out of work, once other factors such as qualifications and number of children have been taken into account. More tentatively, it further suggests that length of time out of work has no association with the likelihood of quickly returning to benefit after starting a job.

in work steadily increased earnings, but primarily by increasing total hours worked; hourly wages only rose by 10% in five years. On the other hand, 70% of workers did move into 'better' jobs over time – either jobs offering better wages or benefits such as health insurance and paid holidays (Rangarajan et al. 1998).

3. The data

This paper examines employment trajectories for mothers after the birth of their final child using the British Lone Parent Cohort (BLPC), a panel dataset which began as a nationally representative sample of 988 lone parents in 1991. The dataset forms part of PRILIF – the Programme of Research into Low Income Families, collected by the Policy Studies Institute. Families were re-interviewed annually between 1993 and 1996 and again in 1998 and 2001. The dataset has several advantages for the purposes of this project:

- The data are relatively recent, with women's experiences reflecting recent labour market conditions, and with experiences having taken place at more or less the same time. (This is an advantage over, for example, the British Household Panel Survey, which would let us put together a larger sample of women, but with relevant experiences having taken place in different decades).
- As the dataset is a representative sample of lone parents in 1991, mothers with low skills are over-represented. In 1991, 40% of the sample have no qualifications and 30% have only lower school qualifications. National statistics for 2005 show that only 10% of 35-39 year olds had no qualifications, a further 22% had less than 5 good GCSEs (A*-C) and 22% had 5 good GCSEs (DfES 2006).
- Ten years of data plus a three year work history mean we can trace mothers for up to thirteen years after birth.
- Work histories are detailed with information on month-by-month transitions into and out of work.
- The dataset includes information on hourly wages.
- As respondents were re-interviewed relatively frequently, there is less concern about recall inaccuracies than in datasets collected at greater intervals (for instance, in the National Child Development Study, women were interviewed at 23, 33 and 41-42 years old, making it likely that some moves in and out of employment are forgotten).

The major disadvantage is a small sample size. The response rate was relatively high in 1998 (74%), but had fallen to 59% by 2001, and clearly not all respondents were suitable for the particular research undertaken here. In particular, in order to simplify the analysis of work trajectories, the paper focuses on women having their youngest child, as subsequent births would cause further breaks in employment. Initially, the sample was restricted to women whose employment status was observed within one year of the youngest child's birth (this might be anytime from April 1988, which is

when the work history begins), and for a minimum of six years from that point. This provided a sample of 280 women. To boost the sample size, we broadened the criteria to allow in women observed within three years of birth and for a minimum of six years from that point (meaning the child was under three in April 1988). This increased the sample to 334 women. For some of the analysis, we further broaden the sample to include women observed within five years of birth, giving us a sample of 560, but at the cost of missing information for many respondents in the first few years of the youngest child's life.

A second disadvantage of the BLPC is that the job histories had to be constructed from raw data files, raising some complications as information was not always consistent. Where there were discrepancies in the information given by a respondent, we always gave preference to information collected closest to the period being discussed.

In examining employment status, hours and wages, we use bi-annual snapshots for April and October of each year. This should mean we reflect more short-term job experiences than if we only included annual data, but it simplifies the analysis in comparison with looking at full monthly data. Other research has suggested that year on year observations provide as good a view of employment patterns as examining inter-year data, so we hope that not too much is lost in this way (Evans et al. 2004).

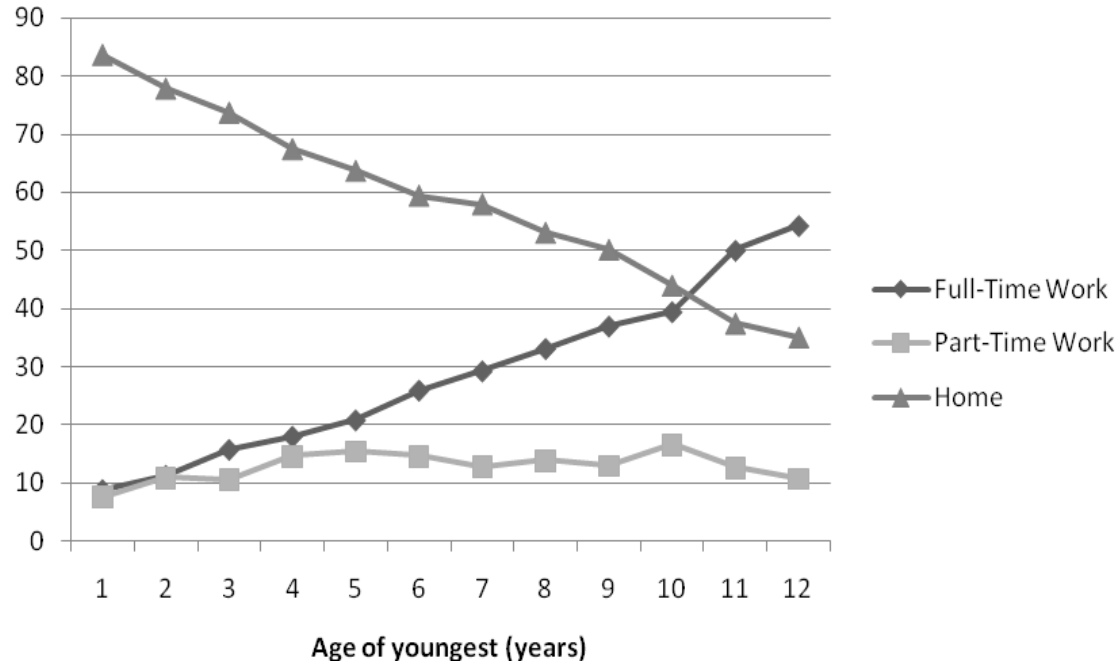
We use a three-way classification for employment status: full-time (working at least 16 hours per week), part-time (working between 1 and 16 hours per week) and at home (including those categorising themselves as unemployed, looking after home and family and in full-time education). The 16 hours cut-off is the one used in the dataset in most years (all but 1991) to distinguish between those working full- and part-time because it fits with the criteria for Family Credit (and later tax credit) eligibility. It could be changed using the data collected on number of hours worked but at the cost of losing some observations with missing data for this variable. On balance it was decided to stick with this definition as one offering a distinction between those making a firm commitment to paid work (at least two days a week) and those who might be seen as experimenting with paid work, or "keeping their hand in". (It was necessary to recode data for 1991 to fit this definition.) We considered treating unemployment and full-time education as different categories in themselves, but numbers in each of these groups were so low that this proved unworkable.

4. A typology of employment pathways

Figure 1 shows the share of women in the largest sample in each of the three different employment statuses after the birth of their youngest child. (Numbers are weighted to adjust for the over-sampling of Family Credit recipients.) One year after birth the vast majority are still at home, with under 10% in full-time work (at least 16 hours per week) and 8% working fewer hours than this. The share working full-time increases

gradually over time to reach 30% when the youngest child is seven and 50% at 11. The share at home falls correspondingly.

Figure 1: Employment Status by Age of Youngest Child: British Lone Parent Cohort



Source: Author's calculations. See Z:\Nuffield low-skilled mothers\PRILIF Data\
Files with derived variables\employment_persistence.xls.
Note: Data weighted to adjust for oversampling of Family Credit recipients in BLPC. Unweighted N varies between 248 and 487, depending on age of child (peaks at age 6). Includes all those observed for the first time when youngest child less than five years old.

Of course, Figure 1 gives us only the aggregate picture and could be very misleading. It suggests that most women gradually make the transition from home to full-time employment, and once there remain there, to be joined by others. What we do not know is how much turbulence in individual lives is hidden beneath the lines. Is movement really largely one-way, or is there a sizeable element of churning, with women moving into work and then out again? This section sets out to address this question. It aims to trace the different trajectories individual women follow after the birth of their last child, and to create a typology of these trajectories which allows us to summarize very different experiences and how rare or common they are.

To do this it draws on a methodology known as Optimal Matching Analysis (OMA), a form of sequence analysis originating in the biological sciences and introduced to social science by Andrew Abbott (Abbott and Hrycak 1990). As Hynes and Clarkberg (2005) note, while the concept of long-term trajectories has been very important in life course research for a long time, there have been very few statistical methodologies capable of analysing them. Early work relied on straightforward descriptive

techniques, using classification based on inspection (see Dex 1984) or on very simple rules (Vandenheuvel 1997). But a number of researchers have recently begun to use OMA for the analysis of employment or career trajectories. See for example Pollock et al. (2002), who use the BHPS to test the hypothesis that women are less likely than men to experience continuous full-time employment; also Stovel et al. (1996); Halpin and Chan (1998); Blair-Loy (1999) and Scherer (2001).

OMA is a two-step procedure. First, we measure the 'distance' between each pair of sequences in the dataset, by assigning 'costs' to substitution of one state for another (e.g. substituting one period at home for one at work) and for insertion or deletion of states into a sequence. Software designed for the purpose calculates how each sequence can be transformed into each other sequence at the lowest possible cost. This produces a matrix of distances, one for each pair of observations. In a second stage, cluster analysis is applied to the distances to group the sequences into types.

OMA has proved very effective at grouping complex data into categories resembling distinctive patterns. It has also been much criticised, largely because it is an exploratory technique, not a formal model capable of hypothesis-testing (see for example the August 2000 special issue of *Sociological Methods and Research*).[2] Clearly results rely on a number of decisions made by the researchers and can never give final and definitive groupings. One key question concerns the relative costs assigned to substitution between different pairs of states, and to insertions and deletions, which will drive the distance scores the method produces. Another issue arises where the length of sequences are different across observations (as is the case in the BLPC): should we compare sequences only across the length they have in common, or insist that insertions are used to convert a shorter sequence into the full length of a longer one? In the case of mother's employment pathways, a case can be made either way, as is explored in Appendix 1a. Finally, the dependence on cluster analysis has a number of drawbacks. Complete hierarchical clustering is commonly

[2] It is worth noting that more rigorous methodologies for analyzing trajectories are being developed, but these are still at early stages. One promising technique is employed by Hynes and Clarkberg (2005) in their study of "the diverse ways that mothers of infants and young children negotiate the continuing decision to be employed or not". This method, the group-based trajectory method, is designed explicitly to model trajectories. Like sequence analysis, it searches for clusters of behavioural patterns across time, but it then directly estimates the shape of each group's trajectory and allows the researcher to test hypotheses about the numbers of trajectories characterising the data and about their shapes. The method uses maximum likelihood estimation to jointly estimate the shape of each group's trajectory and the proportion of the sample in each group. A number of distinct trajectories can then be chosen to include in the final model, and the method calculates the probability of membership in each group for every observation in the dataset. However, this method can currently only be used with scale data, count data and binary data. It would be possible to use it in this paper if non-employment, part-time employment and full-time employment were treated as ordinal outcomes on a scale (for example) of 1 to 3. This does not seem ideal but may be worth further exploration in the future.

used, but once two sequences are joined under this technique they cannot be separated, even if this might be logical from the perspective of the final groupings (see Appendix 1b). Other clustering methods have other disadvantages.

The examples given in Appendix 1 illustrate just two of a myriad of problems in assigning messy data into neat groups. There will always be noise in the system, but OMA can be very useful as an exploratory technique, and this is how it is used here. Results should be seen as no more set in stone than had grouping been undertaken by hand. The following three steps were followed:

1. OMA was conducted using the two different decisions about sequence length (common or full), one substitution cost matrix and two options for insertion/deletion costs (see Appendix 1c).[3]
2. Sequences were then grouped on their distance scores using complete hierarchical clustering (see Appendix 1d). Forty clusters were formed, which were then grouped manually into eight categories. Exploring different levels of clusters illustrated that at a certain stage the more unstable employment sequences (indicating that a mother moved in and out of work, for example) were being grouped not with each other but with the more stable sequences they most resembled. For the purposes of this project, I wanted to have this type of sequence grouped together. Hence I resorted to manually grouping of clusters.
3. Results were compared across the different outputs (common and full sequence length; indels set to 1.0 or to 0.95). Roughly three quarters were put in the same groups, but one quarter were different. These were reallocated by hand. Appendix Table A2 lists a random selection of these and the decision that was taken in each case. This should also allow the reader to gain a feel for the nature of the different trajectory groupings discussed in the results below.

Results

Table 1 presents the eight trajectory groups as they emerge from this process, for both the under-three and under-five samples. Most immediately striking is that two in five mothers remain at home for as long as they are followed, with at most one blip into full-time work. At the other end of the spectrum, 14% of the smaller sample have returned to stable full-time employment (at least 16 hours a week) by the time the youngest is three and a half, with a further 10% going into stable work after age 3.5 but before age 6.5 – i.e. around the time at which the youngest child starts school – and 13% returning after that, which may be as late as twelve. Roughly 10% are classified as "part-timers": they return to work at some point and remain there, but never work more than 16 hours a week.

[3] OMA was conducted using freeware called TDA (Transition Data Analysis), written by Goetz Rohwer and Ulrich Poetter and available for download at http://www.stat.ruhr-uni-bochum.de/tda.html.

The remainder of the sample – around one in eight – can be classified as following unstable trajectories of various types. Ten percent are observed moving in and out of work, with an additional handful following perhaps the most surprising trajectory: they return to employment early, but then leave the labour market for good, often at around the time the youngest child starts school. As a share of the total this group seems small, but considered as a share of those entering full-time work before the child reaches five they are a much more significant share – roughly one in three.

Table 1: Eight employment trajectories following birth of youngest child (weighted results)

	Observed by age 3		**Observed by age 5**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Full-Time (stable employment by time child is 3.5)	56	14.4	62	9.8
Medium Returners (stable FT between 3.5 and 6.5)	42	10.9	92	14.5
Late Returners (stable FT after age 7)	52	13.4	80	12.6
Part-Timers (only ever works less than 16 hours)	39	10.1	58	9.2
Work-Oriented (broken history but mostly working)	7	1.9	13	2.1
In and Out (unstable employment history)	31	8.1	43	6.8
Leavers (FT early on, then leaves labour market)	13	3.3	14	2.2
Home (home throughout, perhaps one blip into work)	147	37.9	271	42.9
Total (weighted)	387	100	633	100
Unweighted N	360		560	

Notes: (1) Frequencies are weighted to adjust for over-sampling of mothers in-work in the 1991 survey.
(2) The larger sample by definition includes women whose employment status was not observed in the first three years after the child's birth, explaining why we see fewer women in the Full-Time category and in some of the unstable groupings.

5. Determinants of different trajectories

We have seen that women follow a number of different pathways following the birth of their final child. The aim of this section is to explore the factors associated with these different pathways. What marks out those who return to work early and remain there from those who return and then leave, or those who choose not to return at all? Section 5a examines differences in the characteristics of women who end up in the different trajectory groups developed above. Section 5b goes on to ask explicitly whether an early return to work is itself important in influencing later employment prospects.

(5a) What factors are associated with particular pathways?

We consider four types of characteristic: individual and household characteristics; characteristics of the first job itself (and we include here also the nature of childcare used); and circumstantial factors arising later on such as repartnering or the onset of illness. Individual and household characteristics are measured at the time of the birth of the youngest child, or at the time of the first interview (1991), where this is later. Unfortunately, one key individual variable which we cannot construct using this dataset is the mother's employment history and experience prior to the birth of the last child. Variables such as education, attitudes, housing tenure and 'first' job characteristics are all likely to be correlated with this omitted variable, and it is important that we bear in mind that coefficients on these variables in the models estimated may partly reflect the impact of past work experience.

Individual characteristics at time of last birth

- Mother's education
- Mother's attitudes (measured using two index variables constructed using factor analysis. The first variable contains weighted responses to four questions and is intended to reflect general commitment to the importance of paid employment. A positive score indicates a stronger attachment to paid work. The second also contains weighted responses to four questions, this time reflecting attitudes to a mother's role and responsibilities. A positive score indicates more egalitarian attitudes to the child-rearing responsibilities of men and women.[4])

[4] The four questions included in the first variable were (1) "A person must have a job to feel a full member of society"; (2) "Having almost any job is better than being unemployed"; (3) "[I disagree that] if I didn't like a job I'd pack it in, even if there was no other job to go to"; (4) "Once you've got a job it is important to hang onto it, even if you don't really like it". The four questions included in the second variable were (1) "If their child is ill, and both parents work, the mother should take time off work"; (2) "It is less important for a woman to go out to work than it is for a man"; (3) "Women with school-aged children should never work fulltime"; (4) "It is just wrong for women with children under five years old to go out to work". Respondents were required to answer using a five point scale: strongly agree, agree, uncertain, disagree, strongly disagree.

- Mother's health
- Mother's age

Household characteristics at time of last birth

- Number of children in the household
- Presence of a child with a long-term illness or disability (measured one year after the birth of the youngest)
- Housing tenure (specifically owner-occupation, including with a mortgage)
- Urban residence
- Receipt of maintenance from previous partner (this variable was originally included as a measure of alternative income, but is in fact more likely to reflect differing work incentives: mothers in work have more incentive to pursue maintenance than mothers living on non-work benefits, as for the latter state benefit payments are reduced if maintenance is paid).

Characteristics of the first job

- First hourly wage
- Nature of work (a series of categories: professional/managerial, clerical, retail, personal services, catering, cleaning, other manual work)
- Whether job is in the public sector
- Firm size
- Whether respondent is a union member in this job
- Childcare used (formal including nursery, childminder or after school club; informal including partner, parents and other relatives; no childcare used because of flexi-time or children considered old enough to look after themselves).

Circumstances arising after birth

- Partner arrives in household/stays in household
- Mother develops long-term illness or disability
- A child develops long-term illness or disability
- Measures of childcare reliability

Table 2 shows mean values by trajectory group for each characteristic. Shaded cells indicate that the mean value for the group in question is significantly different from that for the full-time group at the 10 percent level. We find that the group of medium returners appears similar to the full-timers on most variables, while those who remain at home look significantly different to the full-timers in almost every way. They are less likely to have educational qualifications, are less committed to the importance of paid work and hold less egalitarian attitudes to gender roles, work and childcare, and are more likely to have a long-standing health problem. They also have more children on average and are far less likely to be owner-occupiers, as well as less likely to be in receipt of maintenance payments from a previous partner. For those who did spend a short-time in work, this is likely to have been at a lower starting level of pay, and is significantly less likely to have been in a public sector job or a professional,

managerial or clerical job, and more likely to have been in retail and in a smaller organisation. For childcare, they are less likely to have relied on parents or on formal childcare options (nurseries and childminders), and more likely not to have needed childcare because children were older and/or mothers only worked school hours.

When we consider groups falling between the most stable workers and those staying largely at home (the late returners and the unstable categories), we find that they tend to fall between the two extremes. The shading in Table 2 indicates that these groups differ significantly from the full-time group on many characteristics, but not as many as the home group. An alternative table (not shown) which takes the home group as the base category finds a similar pattern level of difference between these intermediate groups and those staying at home.

The intention behind the inclusion of the circumstantial variables was to pick up the impact of events which arise after the birth of the youngest child which may shift household priorities or make it more or less difficult for mothers to work. We might expect in particular to see differences here between steady workers and those following unstable trajectories. But results in Table 2 suggest that we need to be careful about the direction of causation in certain cases. We find almost no difference in levels of repartnership between full-time workers and mothers following unstable employment pathways; but full-time workers are twice as likely to find a new partner as mothers who stay at home. It seems probable that this simply reflects the greater opportunities to meet a new partner enjoyed by working mothers. The measures of childcare reliability also give cause for concern: full-time workers are significantly more likely than those following unstable pathways to report having had difficulties with childcare arrangements, and the obvious conclusion is that mothers with longer years of work experience have had more time to come across problems than those who have worked less. In the regression analysis below we experiment with these variables, but include them only if they do not affect the significance of other variables.

Table 2:Mean values of independent variables by trajectory group (shading = significantly different from Full-Time group at 10% level)

	FT	MR	LR	PT	WO	UI	UD	HH
Personal characteristics								
No qualifications	0.22	0.32	0.42	0.33	0.19	0.48	0.42	0.56
Lower school quals	0.33	0.32	0.32	0.31	0.43	0.41	0.17	0.26
Vocational/advanced	0.26	0.22	0.17	0.25	0.33	0.05	0.21	0.14
Post-secondary quals	0.20	0.15	0.09	0.11	0.05	0.07	0.21	0.04
Attitudes to work	0.05	0.11	-0.35	0.17	-0.13	-0.05	0.15	-0.16
Attitudes gender & care	0.33	0.24	0.05	0.16	0.38	0.07	0.18	-0.32
Own health poor	0.06	0.11	0.07	0.11	0.05	0.09	0.08	0.13
Age at birth of youngest	27.9	30.1	28.6	27.5	28.4	27.8	31.2	27.4
Household characteristics								
Number of children	1.82	1.86	2.04	1.86	1.75	1.83	2.17	2.16
Child with ill health	0.17	0.19	0.21	0.21	0.20	0.14	0.26	0.24
Owner-occupiers	0.45	0.46	0.32	0.06	0.50	0.29	0.13	0.11
Urban residence	0.55	0.55	0.59	0.56	0.67	0.57	0.42	0.57
Receives maintenance	0.26	0.42	0.21	0.29	0.40	0.33	0.31	0.17
Characteristics of first job (where there is one)								
First pay as % male med	0.66	0.71	0.46	0.53	0.64	0.62	0.56	0.46
Public sector job	0.46	0.47	0.40	0.42	0.30	0.21	0.30	0.31
Prof/man	0.18	0.24	0.09	0.15	0.17	0.10	0.22	0.07
Clerical	0.22	0.19	0.25	0.06	0.06	0.07	0.09	0.10
Retail	0.11	0.12	0.14	0.15	0.17	0.10	0.17	0.28
Personal Services	0.21	0.14	0.14	0.12	0.17	0.20	0.13	0.14
Catering	0.11	0.09	0.16	0.21	0.22	0.22	0.09	0.07
Cleaning	0.07	0.03	0.16	0.21	0.00	0.10	0.09	0.21
Manual	0.10	0.18	0.07	0.09	0.22	0.22	0.22	0.14
Size of organisation	3.61	3.50	2.74	2.04	2.56	2.92	2.90	2.06
Trade union member	0.33	0.29	0.03	0.08	0.22	0.11	0.29	0.13
Childcare – parents	0.30	0.18	0.12	0.13	0.36	0.32	0.05	0.06
Childcare – other rels	0.26	0.28	0.21	0.30	0.07	0.29	0.36	0.39
Childcare – formal	0.33	0.25	0.14	0.13	0.36	0.08	0.36	0.11
Childcare – no need	0.11	0.29	0.53	0.43	0.21	0.32	0.23	0.44
Circumstances								
Partner arrives on scene	0.51	0.45	0.49	0.53	0.52	0.32	0.50	0.25
Partner stays	0.40	0.38	0.42	0.47	0.43	0.18	0.42	0.16
Childcare: ever unreliable	0.35	0.27	0.20	0.12	0.25	0.24	0.06	0.20
Childcare: no back-up	0.56	0.45	0.38	0.26	0.45	0.50	0.50	0.45
Long-term health problem arises	0.27	0.32	0.39	0.37	0.45	0.36	0.35	0.45
Child long-term health problem arises	0.10	0.18	0.15	0.19	0.14	0.23	0.13	0.16

Note: FT=Full Time (by 3.5); MR=Medium Returner (3.5-6.5); LR=Late Returner (7+); PT=Part Time throughout; WO=Work Oriented; UI=In and Out of Work; UD=FT then leaves labour market; HH = Home.

The two remaining circumstantial variables, both health measures, are more likely to reflect factors which themselves influence the pathways taken. No significant difference could be found across trajectory groups in the health status of mothers at birth (with the exception of mothers who would end up staying at home), but health problems arising later are much more prevalent among late returners and the work-oriented than among full-time workers, suggesting that health may be a causal factor here. Similarly, no significant differences in child health could be found one year after birth, but medium-returners, part-timers and those moving in and out of work are significantly more likely to have had a child develop a health problem after that. Again, it is likely that the health problem itself affected the trajectory.

We now turn to multivariate (logit) analysis of the factors associated with different trajectories. Given small sample sizes, trajectory groups were combined into three categories of roughly equal size, on the basis of Table 2 and similar analysis of differences and similarities in characteristics across the eight pathways. We create three broad groups:

- Stable Workers: Full-timers and medium returners (217 observations);
- Stable at Home: Home group (166 observations);
- Mixed Histories: All other groups – late returners, part-timers, work-oriented, in and out of work and leavers (178 observations).

The three groups were treated as distinct rather than ordinal outcomes, as the factors explaining why someone is in unstable as opposed to stable work may well be different to those explaining why someone is an unstable work rather than steady at home. Hence a multinomial logit model was estimated, and results are presented in three tables (Tables 3a, 3b and 3c) showing differences between each pair of outcomes.

Table 3a shows factors separating women who follow stable work and stable home trajectories. In the first model, where only individual characteristics are included, mother's education, attitudes and age at the time of birth of the youngest child all show up as important. When we introduce household variables, however, only the two attitudinal variables retain their significance. Owner-occupier status at the start of the period is the only household level variable which shows up as relevant, but it appears crucial in separating the two groups: owner occupiers are five times as likely to follow a stable work trajectory as to remain at home, and this status appears to soak up the impact of education. The inclusion of circumstantial variables barely affects the other results, but we find that those in stable work are less than half as likely to have suffered from a new long-term health problem, and are five times as likely to have found a new live-in partner who has stayed in the household.

Table 3a: Multinomial logit results: Odds ratios for Stable Work compared to Stable Home

	Model 1 **Personal**	Model 2 **+ Household**	Model 4 **+ Shocks**
Lower school quals (control=no quals)	2.0		
Vocational quals (control=no quals)	2.2		
Post-secondary quals (control=no quals)	5.0		
Attitudes to work	1.5	1.4	1.5
Attitudes gender/work/childcare	2.7	2.8	3.1
Mother's age at birth of last child	1.1		1.1
Owner occupier		5.2	5.6
Health problem arises			0.4
Partner who stays			5.1
N	443	443	443
Pseudo R squared	0.08	0.11	0.15

Note: All reported odds ratios are significant at 5% level except for those in italics which are significant at 10% level. Where variables are not discrete, the odds ratio shows the change in odds associated with a one standard deviation difference in the independent variable.

Table 3b: Multinomial logit results: Odds ratios for Mixed Histories compared to Stable Home

	Model 1 **Personal**	Model 2 **+ Household**	Model 4 **+ Shocks**
Lower school quals (control=no quals)	1.7		
Attitudes gender/work/childcare	2.2	2.2	2.5
Mother's age at birth of last child	1.1	*1.0*	1.1
Owner occupier		2.4	2.6
Health problem arises			0.6
Partner who stays			3.3
N	443	443	443
Pseudo R squared	0.08	0.11	0.15

Table 3c: Multinomial logit results: Odds ratios for Stable Work compared to Mixed Histories

	Model 1 **Personal**	Model 2 **+ Hhold**	Model 3 **+ Job Cs**	Model 4 **+ Shocks**
Post-secondary quals (control=no quals)	2.6			
Attitudes to work			1.4	1.4
Owner occupier		2.2		
First hourly wage			*2.9*	*2.7*
First job clerical (control=personal servs)			*3.07*	*3.1*
First job part-time			0.76	0.8
N	264	264	264	264
Pseudo R squared	0.03	0.06	0.20	0.23

Why is owner occupier status so important? The variable is likely to reflect at least two different influences. First, those who are owner occupiers at the start of this period have mostly been offered a mortgage in the past, meaning the status operates as a sort of 'good prospects' indicator, reflecting a bank or building society's past views of the respondent's education and earning power.[5] Indeed, there is a relatively high degree of correlation between owner occupier status and educational qualifications, particularly post-secondary qualifications, and this explains why education variables lose significance in the model when owner occupier status is introduced. Owner occupier status appears to be better at reflecting good prospects than education alone, perhaps because it is also able to reflect past labour market experience – something we are unable to include in the model in its own right because of missing data.

At the same time, there are incentive effects associated with being an owner-occupier as opposed to being in rented accommodation. Renters see a lower marginal return to paid work as they experience loss of Housing Benefit as well as losing Income Support when they start earning. Owner occupiers will have been similarly affected at the start but less so at the end of the period. Those on Income Support can claim support for paying mortgage interest and numbers peaked in 1993/4. Since then the rules have been tightened and numbers doing so have fallen (Hills 2007, pp.123-4). Even so, the fact that there is a long-term mortgage to repay may encourage a return to work. These incentive effects are likely to have had some impact on the pathway

[5] Of course, for some respondents the mortgage may have been offered on the basis of a former partner's prospects rather than the respondent's own, but literature in any case points to a correlation between the two (e.g. Brynin and Francesconi 2002).

followed over the period, but it is impossible to separate out the scale of this effect relative to that of the good prospects effect discussed.

Table 3b shows us a very similar picture with respect to the differences in starting characteristics between those following mixed histories and those remaining at home. The women following mixed pathways differ from those staying at home in similar ways, but to a lesser degree, than do those in stable work. Women following mixed pathways are much more likely than home-stayers to have lower school qualifications as opposed to no qualifications at all, but as above, this effect disappears when owner occupier status is introduced. Attitudes again remain important across all models, although here the two groups of women differ only in terms of attitudes to gender roles and childcare (home stayers hold more traditional, less egalitarian views), not in terms of attitudes to the importance of work itself. Home-stayers are very slightly younger at the time of birth of their last child, are more likely to see a new health problem arise during the period of analysis, and are three times less likely to find a new long-term partner.

Finally, Table 3c shows significant factors separating women following stable work trajectories from those with mixed histories (part-timers, late returners and those with unstable work patterns). Here we find just one of the individual variables is significant – post-secondary educational qualifications – and, as above, this ceases to be significant once owner-occupier status is included. Owner occupiers are twice as likely to be in stable work as following one of the mixed work histories, probably for similar reasons to those discussed above.

When first job characteristics are introduced, however, we get somewhat different results. Owner occupier status loses significance, and we find that the important variables are attitudes to the importance of paid employment, the first hourly wage, and whether or not the first job is part time. There is also evidence that, controlling for these factors, those going into clerical jobs do better than those going into jobs in personal services. What is likely to be going on here is that the wage variable is taking over the role of good prospects indicator, reflecting both educational qualifications and past work history in the way that owner occupier status did when job characteristics were not included. None of the other job characteristics were found to be important, even when experimenting with grouping the various job types in different ways. Nor were the circumstantial variables found to have an impact.

What are the key messages from these results? First, individual factors, and in particular a ‘good prospect’ effect which is best proxied by owner-occupier status or by the starting wage, appear to be decisive. There are clearly significant differences at the outset in the characteristics of women who end up following the various pathways. One aspect of these differences which calls for further investigation is attitudes. These show up as important across models, which is interesting in its suggestion that the pathway taken may genuinely reflect differences in women’s preferences. On the other hand, as attitudes are measured in 1991, not at the very start of women’s post-school careers, it is possible that there is a degree of post-hoc self-justification taking

place here. And clearly attitudes do not explain all of the differences between pathways: good prospects are at least as important.

Job characteristics seem to have less relevance: there was only slight evidence that the type of work women first went into after the birth of the last child itself made a difference to long-term prospects. However, it should be remembered that the sample size is small, and this may have affected results.

Finally, some circumstantial factors do show up as significant; in particular, the onset of ill-health seems to be one driver of differences in long-term trajectories. There are also very considerable differences across groups in the extent of repartnering, but this latter is very likely to reflect reverse causation – those in work have more opportunities to meet potential new partners.

How do these findings fits with the existing literature? Several of the factors which appear important in driving longer term trajectories reflect those identified by Evans et al. (2004) as associated with exits from work for lone parents – low pay, being aged under 30 and not being a home owner. In the US, Holzer and Martinson (2005) find that poor education and skills and limited work experience make retention difficult, but they also argue that job and employer characteristics are at least as important. They find that large firms, unionised firms and those paying higher wages reduced job turnover. The review of the US literature conducted by Minoff et al. (2006) (pp.23-24) also emphasises job characteristics, suggesting that jobs last longer where they offer job autonomy, learning opportunities, flexible workplace options, supervisor support and involvement in management. None of this is surprising but this degree of detail about jobs is not available to us in the current dataset and the categories we have representing the nature of work are probably too blunt to reflect these factors.

Interestingly, in the UK, qualitative research for the DWP has suggested that in the early stages the factors that influence sustainability of work relate to personal and circumstantial characteristics more than to job characteristics, with the quality of the job becoming important once participants had been in work for longer (Graham et al. 2005). In terms of personal characteristics, participants cited financial gain, but also the psychological and emotional benefits of work and a motivation to be working (not wanting to claim benefits). They also highlighted the importance of childcare arrangements and the support of family and friends. Differences in childcare used were not significant in our regressions but this may be because of the difficulty of reflecting these differences in the longer term context of our study. Aspects of job quality which later became important included opportunities for progression, flexibility and relationships with colleagues and employer. Again, we are not able to pick up this level of detail about the nature of jobs in our own study.

(b) Is returning early important in itself?

What we have not considered so far is whether returning early (e.g. before a youngest child is three or five) in itself makes a long-term difference to employment prospects. The use of the trajectory groups above enabled us to examine the full variation in later

pathways, but made it difficult to focus on the age at first return. This sub-section aims to address this question specifically. Does spending longer at home after a birth mean a lower likelihood of participation later, perhaps because a longer gap weakens labour market attachment?

As a starting point, Figure 2 shows the share of mothers in full-time employment when their youngest child is six, eight, ten and twelve.[6] Within each age group, the differently shaded bars show how later employment rates vary depending on when the mother first entered or returned to full-time work after the birth of her youngest child.

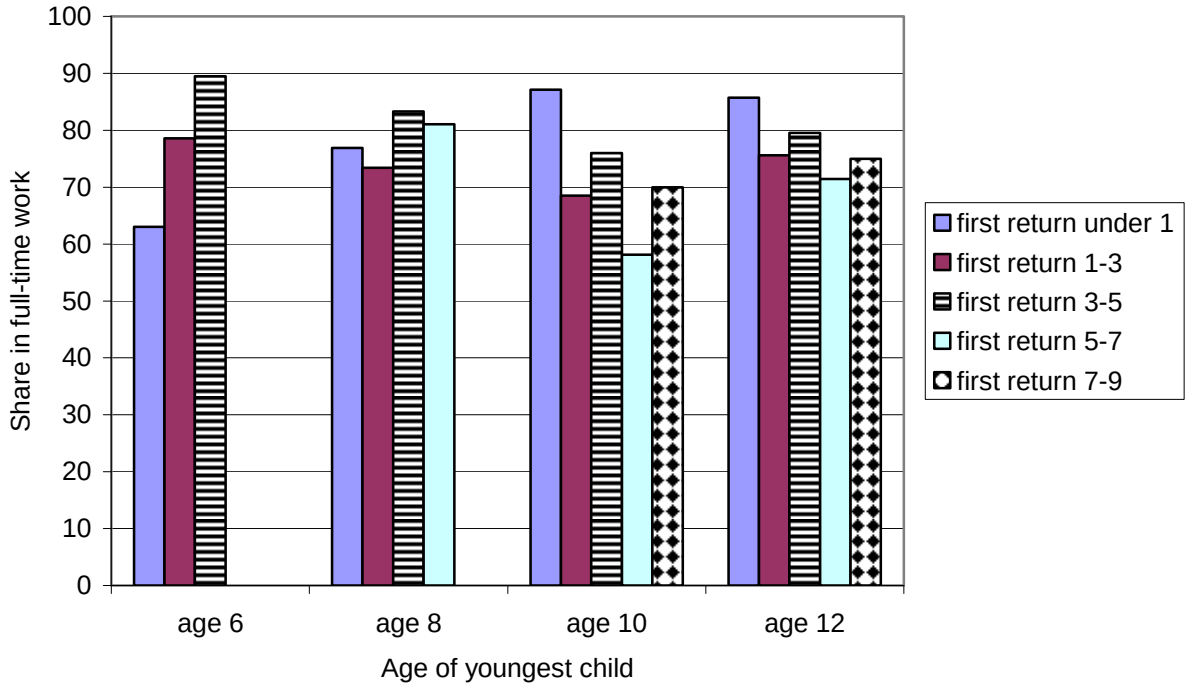
The first thing to note is that being in full-time work in a child's first year does not appear to be deterministic in the medium-term: only 63% of this group are still in full-time work when the child reaches six. A further 15% are working part-time (not shown), while the rest – one in five – are now found at home. This appears to reflect earlier findings from the trajectory analysis, where we found that a few years in work followed by exit from the labour market was a surprisingly common pattern. However, in the longer-term very early return is associated with much higher employment levels: by the age of 10 86% are back in full-time work, with a very slight fall by the age of twelve.

Setting aside those returning in the first year, Figure 2 does not provide much evidence for the hypothesis that returning sooner raises the likelihood of continued participation in the long run. Those returning between three and five are more likely to be employed at six, eight, ten and twelve than those returning between one and three. Probabilities for those returning after five are lower, but not much lower (with the exception of the very low share of those returning between five and seven who are still in work at age ten). When the youngest child reaches 12, the probability of full-time employment lies between 71% and 80% for all groups other than the under-one returners.

As well as taking note of differences across the shaded bars, we should not forget the significance of these figures in themselves. All of the women represented in Figure 2 have returned to full-time work at some point since the birth of their last child. Yet when that child is ten, nearly one in three of those who returned after the child was one were no longer still employed for more than 16 hours a week, with one in five now at home. When the child reached twelve, one in four still did not work full-time (with 18% at home). As indicated by the trajectory analysis, making the move into full-time work once does not appear to guarantee a future pathway.

[6] We take employment status as observed between 6 and 6.5 years old; 8 and 8.5; 10 and 10.5 and 12 and 12.5. To increase the sample size, households are also included where we have missing observations at the precise point of interest but are able to measure mother's employment within a year or eighteen months of this time (see Appendix Table A3).

Figure 2: Employment rates as youngest child grows, by age of first return to full-time work



Source: Author's calculations from BLPC. See Z:\Nuffield low-skilled mothers\PRILIF Data\Files with derived variables\employment_persistence.xls.
Note: N for each cell varies between 20 and 70. Three cells contain fewer than 30 observations: first return under 1, still in the sample at age 12; first return 5-7, still in the sample at age 12; first return 7-9, still in the sample at age 12. Includes only mothers observed for the first time when youngest child under three.

Figure 2 shows us the straight correlation between age at return and later employment, but we are really interested in how far one is a cause of the other. There are many independent variables which will drive both decisions: women who believe paid employment is important for self-fulfilment, for example, are more likely to work at all times than those who find raising children sufficiently satisfying in itself; women with access to more interesting and better paid jobs are similarly more likely to be in work at both points. We need to control for these variables to have a better idea of whether returning early *in itself* makes later employment more likely.

Logit regressions were run which controlled for four types of variable which might influence both an early return and the probability of employment later. We measure all these variables at the start of the observation period (as close as possible to the birth of the baby). We do not need a complete model of employment in the later period to isolate the impact of an early return; but we do need to control for any factors which might drive both the early decision and the likelihood of continuing in work.

Personal characteristics

- Attitudes
- Mother's health

Household circumstances

- Number of children
- Child health
- Mother in receipt of child maintenance (in principle, included as a measure of alternative income available to the household, although in practice it is positively correlated with working, probably because of the disincentive for those on income support to pursue maintenance payments).
- Owner occupier status.

Potential wage

- Qualifications. (Theory suggests that one of the main influences on a women's labour supply decision will be her potential wage and we include qualifications at the start of the period as a proxy for the wage commanded. As discovered in the previous sub-section, in practice owner occupier status is also a good indicator of potential wage in reflecting past impressions of good prospects.)

Nature of employment

- Public/private sector. (Ideally we want to know something about job tenure: a woman returning to work within the first year may do so because she has a job contract and needs to return within the fixed period of maternity leave to retain her employment rights. Women protected by formal employment rights are also more likely to continue in employment without further breaks than women entering jobs with short term contracts (or no contract at all). With no information on job tenure, we use public sector employment as a proxy. Many of the jobs in the public sector are within the NHS, with local councils or education authorities, or with the civil service. On balance these jobs seem more likely to come with longer term contracts than the private sector jobs, many of which are in retail or catering or in domestic homes as cleaners.)

Regression results are presented in Table 4. Two sets of results are included for each age, one including the control variables, and one showing the raw association between age at first return and later employment status. The idea in principle is to see how far the additional variables dampen the raw association. However, as the table makes clear the raw association itself is weak, with few of the differences reflected in Figure 2 above found to be significant. Even in the age 10 regression, age at first return explains only a tiny part of the variation in employment status, as shown by the very small R squared statistic. When additional variables are included, only one of the coefficients remains significant. In contrast, several of the new variables are found to be strongly associated with employment status at eight and 10, and the overall predictive power of the equations rises sharply when they are included. Number of

children, housing tenure at birth and having a first job in the public sector are all significantly associated with being in employment at age eight and age 10, although it is surprising given results in the previous sub-section that no association could be found between work status and either of the attitudinal variables. By age 12, on the other hand, none of the factors measured at the time of birth continue to have explanatory power.

Table 4: Logistic regression for employment status: Does age at first return to full-time work make a difference later on?

	Raw association (predicted probabilities)			**Plus personal and household circumstances**		
	Age 8	**Age 10**	**Age 12**	**Age 8**	**Age 10**	**Age 12**
First return child under 1	0.77	0.87	0.84	0.86	0.88	0.88
First return child 1-3	0.73	0.69*	0.76	0.80	0.71*	0.73
First return child 3-5	0.83	0.76	0.80	0.93	0.77	0.80
First return child 5-7	0.81	0.58**	0.71	0.86	0.55	0.81
First return child 7-9		0.70	0.75		0.77	0.87
Number of children at birth					**	
Mother receiving maintenance at birth					*	
Owner occupier at birth				*	*	
First job public sector				**	*	
N	194	196	171	140	140	123
Pseudo R squared	0.01	0.03	0.01	0.20	0.16	0.07

* Significant at 10% level (for first return variables, indicates significantly different from under 1 group)
** Significant at 5% level (for first return variables, indicates significantly different from under 1 group)
Note: none of the other control variables were significant in any of the regressions run (education, attitudes, maternal and child health at birth).

The low sample sizes in these regressions are clearly of concern here. A number of attempts were made to assess the likelihood that it is the sample size which is preventing us from identifying a significant association. In particular, different formulations of the age-at-first-return variables were tried, in order to reduce the number of variables in the model. We tested under-one returners against all the older age groups together (as suggested by the evidence in Figure 2 for age 10 and age 12); and tried grouping under-five returners against later groups (which allowed us to increase sample size by including women only observed for the first time when the

youngest child was between 3 and 5). A continuous variable for age-at-first-return was also tested. These options had no effect on the significance of the associations.

However, while larger sample sizes would clearly be preferable, it seems reasonable to conclude that if there is an association between age at return and later employment persistence, it is not a strong one. It is reassuring in addition to note that these findings support those of Brewer and Paull 2006, whose work using BHPS and FACS also finds no evidence that the length of absence following birth affects the likelihood of working in the medium and longer-run.

One last important difference between this analysis and other studies cited is that our study only includes final births; Brewer and Paull include all births and other studies referred to in the literature review (e.g. Joshi et al, 1996 and Dex et al., 1998) focus on behaviour after the first birth. For many women in our study this will mean that employment pathways have been set long before the birth. The data do not allow us to control directly for these past histories, although we believe owner occupier status is acting in part as a proxy for them. However, we would expect women returning to work quickly after birth to be those with more complete work histories. Hence a women returning in the first year may have not just five years more experience than someone returning when their youngest child is six, but far more – perhaps ten or fifteen years more. Thus early return is likely to stand for more than it appears to on the surface. This arguably makes our inability to identify a significant relationship between length at home and employment persistence even more interesting.

6. Wage progression

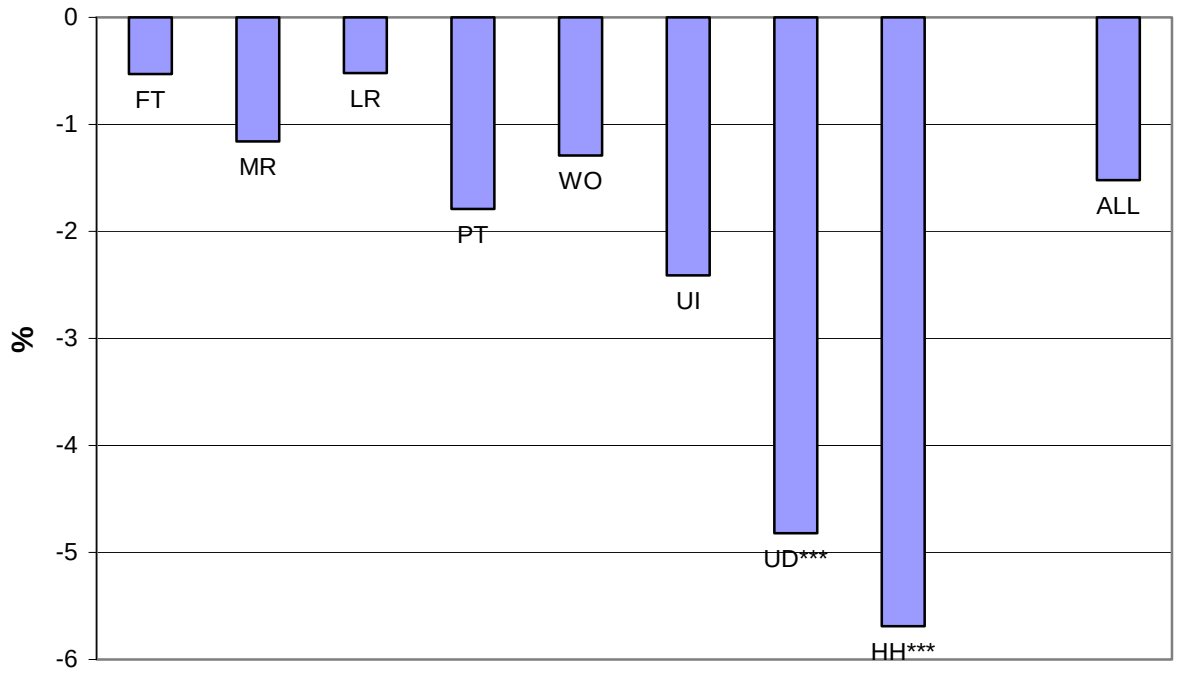
We saw in the previous section that there is little evidence that an early return to work is associated with greater stability in the labour market. This is not to say, however, that early return does not bring benefits. Those with longer in employment have more time to build up skills and experience, and we would expect early returners to be earning more and doing more interesting work further down the line than mothers who returned later. It is difficult to assess the type of work respondents are doing very accurately using the BLPC, but this section examines changes over time in the hourly wage and seeks to quantify the impact on wages of each extra year in work.

As a way of getting a first handle on what different pathways may mean for long-term employment progression, Table 5 presents information about median wage change over the period for each of the eight trajectory groups identified earlier. The first column of the table shows the median annual increase in the hourly wage across the period from when we first observe a respondent in employment after the birth of the baby to when we last observe them in work. The average is calculated across the full number of years between the first and last observations, regardless of whether or not the respondent was in work for all of those years. As might be expected, we find higher annual returns for those who have had longer in stable full-time employment, with an annual average increase of 4.4% in the hourly wage of those returning full-

time before a child is 3.5, compared to 4.0% for those returning between 3.5 and 6, and 3.8% for those who work fewer than 16 hours per week throughout. There is no change in wage at the median for those who start in full-time work and then leave, or for those who only blip into employment but stay largely at home.

However, these figures show nominal wage change. How far can they be said to represent returns to experience rather than merely reflecting annual wage inflation? The second column shows the annual average change if wages are calculated as a percentage of the male median in the relevant year. The pattern of the story is similar to that in the first column, but the overall picture is much less positive, as can be seen more clearly in Figure 3. For every group we find that average change is not fast enough to keep up with the rising male median. There are significant differences across the graph: those who end up leaving work see wages fall behind the male median by 5% for each year between the first and last wage observation; while for full-timers wages fall behind by only half of a percent each year. But it is a little discouraging that even those returning early and building up on average more than eight years of experience are only able to prevent worse deterioration against rising median wages, rather than to close some of the gap. As background, it is worth noting that female wages at the 10th percentile remained steady at around half the male median throughout this period, while female wages at the 25th percentile gained slightly, rising from 59% in 1987 to 63% in 2001. So the performance of our sample cannot be explained by wider change in female relative to male wages, or by a widening gap between earnings at the bottom and those at the median.

Figure 3: Median annual "catch-up" with the male median wage, by trajectory group (large sample; first observed under five) (%)



*** Different from Full-Time median at the 1% significance level.

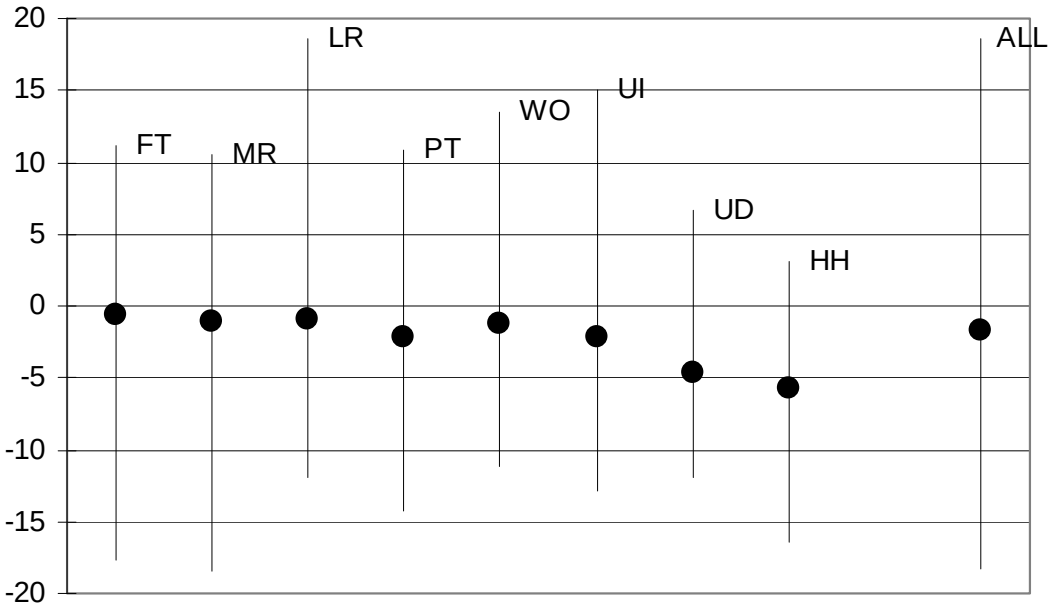
Table 5: Median annual hourly wage change by trajectory group (observed by age 5)

	Median annual increase (%)	Median annual increase as "catch-up" with male median (%)	Percentage on 'low pay' (<0.66 male median)		Average years between	N
			When first observed	When last observed		
Full-Time (stable in work by time child is 3.5)	4.4	-0.53	61	61	8.5	93
Medium Returners (stable FT by 3.5-6.5)	4.0	-1.16	48	65	10	119
Late Returners (stable FT after age 7)	3.8	-0.52	90	82	5	50
Part Timers (only ever works below 16 hours)	3.1	-1.79	91	88	3.5	32
Work Oriented (broken history, mostly working)	4.2	-1.29	65	70	9	20
In and Out (unstable work history)	2.4	-2.41	81	86	5.5	43
Leavers (FT early on, then leaves labour market)	0	-4.82	74	87	3.5	23
Home (with perhaps one blip into work)	0	-5.69	76	73	0.5	21
Total	3.6	-1.52	67	73	7	401

Note: Number of observations in each category is lower than in Table 1 because of missing data for wage or hours worked, and because the 'Home' category only includes respondents who are observed in work for at least two periods in total.

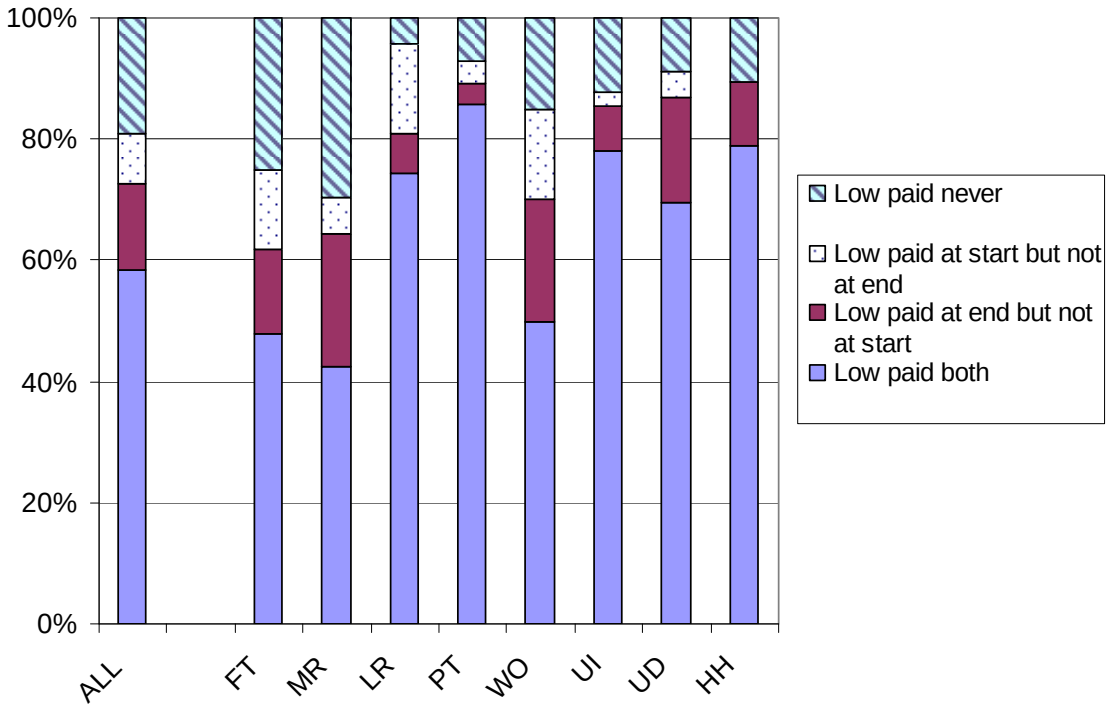
Of course, these averages disguise large variation in individual experiences. Figure 4 shows the median wage change for each group alongside the minimum and maximum change in each case (outliers with average change of more than 20% a year in either direction are excluded). Variation within each trajectory group is considerable; indeed, the trajectory groups do not appear to tell us very much at all about an individual's likely wage change.

Figure 4: Median, maximum and minimum values for annual average catch-up with male median (excluding values above 20% and below -20%)



So far we have discussed only wage change, not the actual level of wages at any point. Figure 5 shows the share of each trajectory group who are 'low paid' at the time of their first and/or last wage observation, using the standard definition of pay below two-thirds of the male median. There are clear differences here across groups, with a much higher share (25-30%) of full-timers and medium-returners never low paid than of any of the other groups (the top bar), and a correspondingly lower share low paid at both observations (the bottom bar). However, the share of respondents who are low paid on both occasions is quite striking, including more than 70% of late-returners, part-timers and those moving in and out of work. Even among full-timers, medium-returners and the work-oriented more than 40% of the sample are low paid at both points. On top of this, we find that right across groups it is more common for women to move into than out of low pay over the period. Even among steady full-time workers, more women are low paid at the end but not at the start (the dark bars) than low paid at the start but not the end (spotted bars). When calculated as percentages of those starting off in and out of low pay, the gaps widen. Among full-time workers, 21% of those starting off in low pay climb out of low pay by the end, but 36% of those who are not low paid at the start are low paid at the time of the last observation. Overall, 12% of those starting in low pay will climb out, while 43% of those not low-paid will be low-paid by the end.

Figure 5: Share paid less than two-thirds male median at first and/or last observation



The story so far does not provide strong indication that returning early to a low paid job is likely to lead to rapid progression to higher wages. Full-timers, medium returners and the work-oriented do better in general than other groups, but we know from earlier analysis that these groups differ from others on a number of key characteristics which may themselves explain these differences. For the remainder of this section we use regression analysis to examine the individual factors associated with positive wage change. The ultimate aim is to identify the particular impact of an early return to employment.

Regression analysis

We use a very similar set of characteristics to those already used above, with a few additional variables, given here in italics:

- Personal characteristics on entering first job (mother's education, attitudes, health and age and also *age of youngest at first return* – under 1, 1-3, 3-5, as well as experimentation with a continuous variable)
- Household characteristics when mother enters first job (number of children, presence of children with long-term illness or disability, owner-occupier status, urban residence, receipt of maintenance)
- Characteristics of first job (first wage as share male median, nature of work, public/private sector, firm size, union membership, *number of hours per week*)

- Circumstances arising after birth (partner arrives/stays on scene, mother or child develops long-term illness, *new educational qualifications attained*).
- Additional controls (*years in employment, decade of entry* – as women's trajectories take place against a background of different labour market conditions but we have insufficient observations for year dummies.)

Results are presented in Table 6. The middle column shows the factors significantly associated with average annual wage change (as a share of the median) for the sample as a whole. More positive wage change is achieved by those who have post-secondary qualifications at the start or who gain vocational qualifications along route. Having a low hourly wage in one's first job is also associated with better progress, presumably because there is more scope for rapid improvement. Having a first job in the private sector appears more promising than the public sector, while a job in manual labour seems to offer fewer prospects than the control category (personal services). But while spending more years in employment between the first and last wage observation means faster wage growth (the wage increases by an extra half a percent of the median for each additional year spent in work), the age of the youngest child when the mother enters or re-enters work does not appear relevant. Age at first return is not significant even if we exclude total years worked.

Given the very different pathways followed by some of the women in the dataset, one wonders how far these results are driven by differences in the characteristics of stable and less stable workers, rather than by differences among steady workers themselves. The third column of Table 6 shows the results of identical regressions run for the most stable workers only – those in the Full Time and Medium Returner categories. In practice the results are very similar. The only differences are that taking a first job in catering now appears negative and significant, while the coefficient on total years worked halves in size, indicating that part of the effect of this variable was indeed picking up differences between stable (with much longer work histories on average) and less stable categories. However, age at first return continues not to show up as significant, and again (and surprisingly) this is true even if total years in work is excluded. Note that the constant term is larger and positive in this equation, reflecting the fact that overall this group see better outcomes than the sample as a whole.

Hence while spending a higher number of years in employment does have a positive effect on wage growth, we can find no evidence that there is any such gain from a mother returning to work when her last child is younger, and this holds true even if we look only at mothers who we know stay in stable employment after starting work. This seems contradictory. Surely if clocking up more years in work has a positive impact on wage growth, then returning early is a good idea from this perspective. The problem may lie with the construction of our sample (given the constraints of the available data): those observed when children are very young may not be being observed for any more years in total than those observed for the first time later on. Thus we pick up the positive effect of spending more years in work altogether, but cannot identify what must be the corresponding fact – that returning early (assuming a worker stays in the labour market) allows more years in work and therefore must in

the long run carry the same positive effect. (Indeed, there is a substantial positive correlation – 0.37 – between the age of the youngest child when the mother is first observed and the number of years spent in employment.)

Table 6: Factors associated with positive wage change (regression results): Dependent variable is annual average change in wage where wage is measured as a percentage of the male median

	All observations	Full Time and Medium Returners only
Personal characteristics		
Post-secondary qualifications at start (control=no qualifications)	1.9	1.8
Job characteristics		
First hourly wage	-4.2	-4.4
First job public sector	*-1.0*	-1.7
First job manual labour (control=personal services)	*-1.6*	-2.9
First job catering		*-2.0*
Changed circumstances after entering first job		
Gained vocational/advanced qualifications (control=gained none)	1.9	1.8
Other controls		
Years in employment	0.52	0.28
Entered work in 1980s	-3.20	-2.89
Constant	-0.73	2.47
N	374	198

Note: Coefficients were obtained using robust regression (Huber maximum likelihood type regression) which is less sensitive to outliers in the dependent variable than standard OLS. All reported variables significant at 5% level except those in italics which are significant at 10% level.

Having said this, however, it should be remembered that the effect on the wage of additional years in employment is fairly small – far smaller, especially among stable workers, than the effect of having post-secondary qualifications or gaining vocational or advanced qualifications en route. We know from examining average wage change and movement into and out of low pay above that the likelihood of positive wage progression relative to the median is not very good. While it may be a little less bad

for women returning to work early than for those who spend longer at home, the gains do not appear large enough to make it obvious that returning early is the right decision for all.

7. Conclusions

This paper began by investigating the pathways followed by women in the British Lone Parent Cohort after the birth of their youngest child. It identified a number of distinct pathways. One in nine women had returned to work (at least sixteen hours a week) by the time their youngest child reached three and a half and would remain there for the rest of their time in the dataset. A further 25% returned at a later date – roughly half before the youngest reached six and a half, and half later than this. Two in five respondents were observed at home throughout the entire period of observation, with perhaps one brief foray into work. But one fifth followed alternative, less conventional pathways, including mothers who entered parttime work (less than sixteen hours a week) and never increased their hours, those who entered full-time work early in a child's life and then left the labour market altogether, and those who moved in and out of employment more than once, and often several times. The experience of these last groups suggests that a paid job is not always a stepping stone to further opportunities, and that a simple focus on age of return after childbirth will not always tell the full story.

The paper went on to investigate the factors associated with returning to employment and remaining there in the medium to long-term. We found that individual factors are decisive; in particular, we identified a 'good prospect' effect which is best proxied by owner-occupier status or by the starting wage. Where health problems arise this clearly affects women's likelihood of remaining in work or of rejoining the labour market, but characteristics of jobs themselves (other than the starting wage) were surprisingly unimportant. This last finding conflicts with the findings of other studies, and may be due to the rather blunt indicators we have of the nature of work women are doing.

Attitudinal variables also showed up as significant in determining pathways taken. This is interesting in its suggestion that the pathway taken may genuinely reflect differences in women's preferences (as proposed in Hakim's Preference Theory; see Hakim 2000). On the other hand, as attitudes are measured of necessity in 1991, not at the very start of women's post-school careers, it is possible that there is a degree of post-hoc self-justification taking place here. At the same time, attitudes clearly do not explain all of the differences between pathways: good prospects are at least as important.

The paper found very little evidence that an early return to work makes stability in employment more likely: women returning before a child was one, three or five did not appear to be significantly more likely to be in work at a future date than those returning later, even before controlling for confounding factors. This is despite the fact

that our focus here is on last children, meaning that an early return is also likely to represent previous employment persistence.

Finally, with respect to wage progression, the picture was very discouraging overall: we observed deterioration in average wages as a share of the male median even for workers in the most stable employment categories. Movement into low pay appeared far more common than movement out: even among steady full-time workers, 21% of those starting off in low pay climbed out of low pay over the period, but 36% of those who were not low paid at the start were low paid at the end. Qualifications showed up as most important in driving wage success, while public sector employment (surprisingly) and some types of job (manual labour and catering) appeared to offer fewer opportunities to progress. Spending longer in employment increased the annual average change in wage, and although we could not find an effect for returning early, this indicates that an early return will have a positive effect if a mother subsequently stays in the labour market. However, the effect is small in comparison with that associated with qualifications, and given generally poor progress in wages it is not clear that it is enough to suggest that returning early to a low-skilled job is necessarily the right thing to do.

What relevance do these findings have for government policy? Until recently, the government's strategy for increasing employment rates has been very much one of 'work first': the aim is to get lone parents into work and worry about retention and advancement later. Thus Personal Advisers working in Jobcentre Plus work on a points system, with points for entry but not retention (indeed they can clock up more points if a client returns to get help for a second job entry) (Bell 2006). In Employment Zones, where private providers have been contracted to deliver welfare-to-work services, rewards are given where clients stay in work for 13 weeks, but problems often arise after this (Minoff et al. 2006).

Government is now starting to consider ways to improve retention, rather than focusing wholly on job entry. The Employment Retention and Advancement Project (ERA), currently being piloted, breaks new ground by giving lone parents an Advancement Support Adviser intended to help them into work and then to remain there and move on to greater security and better pay and conditions. Under this scheme, personal advisers have more incentive to make sure clients are prepared for work, and may discourage them from taking the first job that comes along if it is likely to lead to a dead end.

This must be a good thing. But ERA will not report until 2010, and in the meantime the general strategy is still largely work first. The green paper on welfare reform suggested additional Work Focused Interviews as the main mechanism for getting 300,000 lone parents back to work (Hirsch 2006a). the Freud Report (DWP 2007) takes a similar line. At the same time, policies do very little to encourage serious training, either before or after the move into work: the lack of childcare support during apprentices, for example, effectively rules them out for single parents.

Evidence in this paper suggests that qualifications are very important both to employment persistence and, among those who stay in work, to wage progression. Simply entering a low paid job does not appear – by any means – to guarantee a route out of low pay, even among those who manage to stay employed. But if mothers entering low paid jobs are likely to remain low paid, it is not clear that encouraging them into these jobs – particularly when they still have pre-school age children – is a strategy which makes sense, either for mothers themselves (unless they wish to be working), or for the Treasury, which is left paying childcare subsidies at the start and tax credits to top up low wages indefinitely.

Appendix 1: Issues arising from Optimal Matching Analysis

(1a) Common or complete sequences?

Consider the following hypothetical annual sequences of states after the birth of a child (H signifies a mother at home, W a mother in work):

1. H H H H H H H
2. H H H H H H H W W W W W W W
3. H H H H H W W W W W W W W W

The first mother is observed at home for seven years after the birth, and then drops out of the survey and we have no more information. The second mother is observed at home for seven years, after which she returns to work and is observed in stable employment for the following seven. The third mother also returns to stable employment, this time after five years. If we compare only on common sequence length, 1 and 2 will rank as more similar than 2 and 3, with a distance score of zero. There is a good argument for approaching the data in this way as the information from mother 1 is effectively censored: as far as we know the mother did continue to behave in exactly the same way as mother 2, whereas we know that mothers 2 and 3 behaved slightly differently. But on the other hand, if we want to fully exploit the data we have available, we probably want to rank 2 and 3 together as mothers with a stable employment history after several years at home; and put mother 1 together with other mothers who are only observed at home, for whatever length of time.

(1b) Undesirable links

This issue can be illustrated by the following real sequences from the BLPC dataset (H signifies a mother at home, F full-time work and P part-time work). At a certain stage, sequences 1 and 2 get grouped together and 3 and 4 get grouped together. Once linked, the cases cannot be separated again. However, as we want to separate more stable trajectories from less stable ones, we would probably rather our final grouping placed 2 and 3 together (both cases show movement in and out of work), while 1 is more similar to 4 (both show a shift from home to steady full-time work, though for case 4 this is broken by a single blip late on).

1. H H F F F F F F F F
2. H H P F F F H H
3. H H H H P P H F H F H
4. H H H H F F F F F F H F F

(1c) Setting substitution costs

"The assignment of transformation costs haunts all optimal matching analyses" (Stovel et al. 1996, p.394). A common method is to calculate cost based on the likelihood of transition from one status or position to another (e.g. Pollock et al. 2002 and Stovel et al. 1996). Others (e.g. Chan 1999; Halpin and Chan 1998) recommend setting costs which reflect the similarity or difference between the states – e.g. the

distance between part-time and full-time employment would probably be considered smaller than that between non-employment and full-time employment (see e.g. McVicar and Anyadike-Danes 2002 on employment types for young people).

With respect to insertion and deletion cost (commonly known as indels), it is standard practice to set a cost equal to half the greatest substitution cost (e.g. McVicar and Anyadike-Danes 2002). Blair-Loy 1999 chooses a slightly lower indel cost of just under half the largest substitution cost, in part to avoid varying length being the determinant of overall distance, although this problem can also be avoided by standardisation – dividing the final distance score by the length of the longest sequence (Abbott 1995 and Pollock et al. 2002). Halpin and Chan (1998) set a relatively high indel of 3 where highest substitution cost is 4, but no reason is given. Not all articles report the indel cost used.

Table A1 presents the substitution matrix used to examine employment pathways in the BLPC. The method used is the second of the two noted above – costs are based on the similarity or difference between different states. The largest cost (2.0) is between full-time employment (at least sixteen hours) and being at home looking after family or in another non-work state (which includes education, unemployment, sick or retired). At 1.25, the distance between home (or other) and part-time employment is set at over half this cost, reflecting the idea that the move from being at home into any sort of paid work is a bigger step than the move up from part-time (less than 16 hours) to full time. Correspondingly, the distance between part-time and full-time is set at 0.75.

Table A1: Substitution Matrix for BLPC analysis

	Full Time	Part Time	Home
Full Time		0.75	2.0
Part Time			1.25

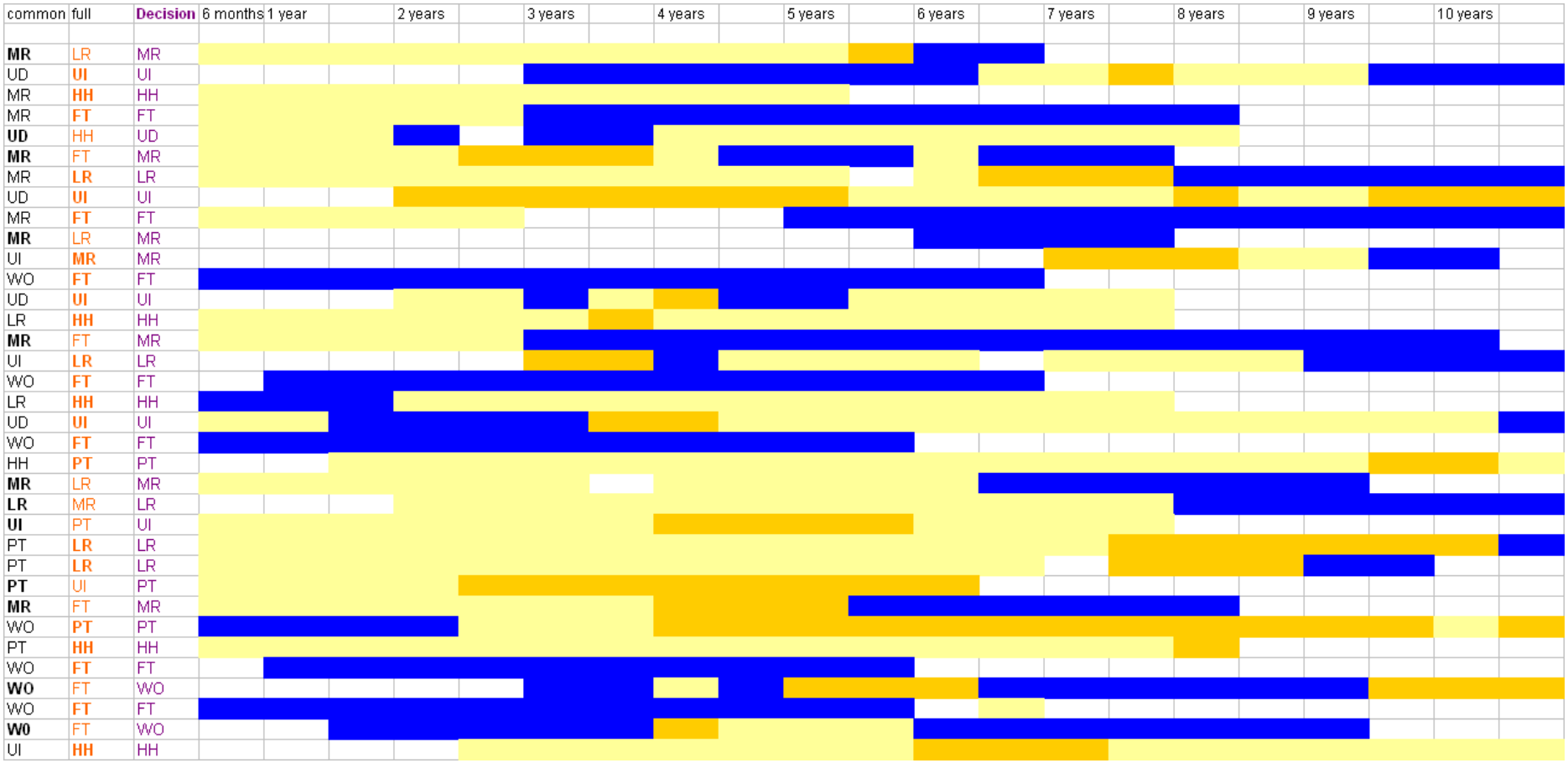
Two different indel costs were applied. Initially indels were set low, at 0.95, to avoid varying sequence length being the determinant of overall distance (following Blair-Loy 1999), but as after experimentation it was decided to try comparing sequences only on the length they had in common, and to subsequently divide distance by that common length (following Abbott and Hrycak 1990), this no longer seemed necessary. Hence the indel cost was replaced with one equal to half the largest substitution cost (1.0). This had little impact on results.

(1d) Clustering technique

Existing studies make a range of choices about the clustering technique. Scherer (2001) uses Ward's method. Pollock et al. (2002) tried three different clustering methods – single linkage, complete linkage and Ward's method – and decided that complete linkage offered clusters that were conceptually easier to describe than those produced by Ward (they note that the Ward method tends to find clusters of similar size, which is not necessarily what one would expect to find in the case of career

paths). This paper uses complete hierarchical clustering into forty clusters, and then continues clustering by hand in order to ensure that unstable sequences are grouped together and not with the most similar stable sequence.

Appendix Table A2: Different rankings of trajectories using common and full sequence length, and decision taken (only first ten years shown) (pale=Home; medium shade=PT; dark shade=FT)



Appendix Table A3: Actual age of youngest child in Section 5 regressions

	N	%
Sample for age 8: within 6 months of turning…		
7.5	9	5
8	184	94
8.5	1	1
Sample for age 10: within 6 months of turning…		
9	11	6
9.5	24	12
10	159	81
10.5	2	1
Sample for age 12: within 6 months of turning…		
10.5	15	9
11	16	9
11.5	21	12
12	118	69
12.5	1	1

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