

Pathways and penalties: Mothers' employment trajectories and wage growth in the Families and Children Study

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Abstract

This paper uses panel data from the British Families and Children Study to analyse the employment patterns of women with children and the ways in which part-time work and interruptions in paid employment influence the wages of working mothers. It pays particular attention to how the relationship between employment trajectory and wage progression compares for higher-skilled and lower-skilled mothers and for mothers of younger and older children. We find that mothers follow a wide variety of employment pathways, the majority working part-time, moving between full-time and part-time employment or moving in and out of work as they combine motherhood with paid employment. In support of results from existing research on the “part-time” wage penalty and the “motherhood gap”, we find that there are wage penalties associated with unstable work trajectories. Our analysis also shows that such wage penalties are significantly smaller for lower-skilled than higher-skilled women and are experienced by mothers of children of all ages, although the impact appears larger for mothers of younger children. In the final sections, the paper discusses the policy implications that arise from these findings with reference to recent debates on maternal employment, wage progression and poverty reduction.

Keywords: maternal employment, wages, mothers, employment trajectories
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1. Introduction

UK government policy over the past decade and a half has placed considerable emphasis on increasing maternal employment as a strategy for tackling child poverty. Initially, the approach relied on providing advice, support and financial incentives rather than on coercion, but since 2008 levels of conditionality have steadily increased, affecting both lone parents and joint claimants.

Throughout, the approach has remained broadly “work-first”, with any job considered better than none, and very little support through tax credits or childcare subsidies for those wanting to train or gain qualifications first. Initially, there was also little focus on in-work training or progression in work, with an underlying assumption that the biggest barrier to stable employment was the initial move over the threshold into a job, and that once there the rest would follow. The later Labour years saw issues of retention and progression rise up the agenda, with initiatives such as the Employment Retention and Advancement pilots and the introduction of In-Work Advisory Support. Under the Conservative-Liberal Democrat Coalition the focus appears to have shifted back to the initial priority of moving people off benefit and into work: the 2011 Welfare Reform Bill contains no mention of retention, progression or sustainability.

However, there is little existing evidence that a low-skilled job is an easy stepping stone to better things. Progression out of low-paid work to more highly paid employment in fact appears to be the exception rather than the norm. For one thing, we know that churning in and out of low paid jobs is common in the low-skilled labour market (see e.g. White and Forth, 1998; Dickens, 2000; McKnight, 2000). Research on lone parents in particular has found rates of exit from employment twice as high as those for other recent entrants (Evans et al, 2004), while Stewart (2009) and Stewart (2011) find considerable heterogeneity in the employment pathways of both lone and partnered mothers over a six to twelve year period.

For another thing, even among those who do remain in work, substantial improvement in wages appears to be unusual. Stewart and Swaffield (1998), McKnight (2000) and Lawton (2009) find limited upward mobility for low paid workers in the UK, with mobility considerably lower for women. Stewart (2009) finds very slow progression in average wages among lone parents observed in steady employment for several years. If women’s employment is part-time, there is evidence that prospects are particularly limited: Manning and Petrongolo (2008) point to a growing gap in pay between women working part-time and those working full-time, which appears largely explained by occupational segregation between women working part-time and those working full-time.

This literature sheds some doubt on the effectiveness of a child poverty strategy which encourages – or coerces – mothers into the first available job, and then leaves them to get on with it. At the same time, however, there is also an extensive literature which

points to a large negative impact of motherhood on long-term earnings, and identifies lost years of experience as a key contributing factor (see e.g. Waldfogel, 1995 and Joshi et al, 1998 on the UK; Waldfogel, 1997 and Budig and England, 2001 on the US; and comparative studies by Harkness and Waldfogel 2003 and Sigle-Rushton and Waldfogel 2007). While the literature on wage progression suggests that gains to working are often limited, meaning losses associated with less experience are likely to be small, the motherhood literature finds that maintaining a steady work history and minimising time out of the labour market is indeed in mothers' long-term financial interest. To some extent these literatures are less far apart than this summary suggests, as both point to the existence of a significant part-time penalty; it is stable *full-time* employment that the motherhood research indicates is the way to maximise long-term earnings, not employment of any kind. But a second key factor may be that few studies on maternal employment distinguish between women by skill level, although the value of experience may be expected to be lower in jobs that require fewer skills.

In this paper we use data from the British Families and Children Study (FACS) to track employment pathways and wage progression for 4,192 women over five years. While this is a shorter time-frame than that covered in similar work elsewhere (see e.g. Stewart, 2009 using the British Lone Parent Cohort and Stewart, 2011 using the British Household Panel Study), the advantage the FACS offers is a much larger relevant sample size. This allows us to explore differences in outcomes between groups of mothers in greater detail and to obtain more robust results.

The paper addresses the following questions:

- (a) Do working mothers, once in paid employment, remain stably employed or is there movement into and out of work, and between part-time and full-time work?
- (b) What happens to the wages of working mothers over this five year period? Compared with mothers in full-time, continuous employment, how do the wages of mothers on part-time and interrupted work trajectories change?
- (c) Do variations in employment patterns matter to the wages of low-skilled mothers? Compared with similar mothers in full-time stable employment over the period, does following interrupted or part-time and mixed employment pathways affect the wage progression of mothers with low qualifications? How do these linkages compare with those of skilled working mothers?
- (d) How do the employment trajectory-wage linkages compare for mothers of younger and older children? Do interrupted or part-time and mixed employment pathways influence the wage progression of mothers of both older and young children, relative to similar mothers in full-time stable employment?

One original contribution of the paper is its exploration of a variety of employment trajectories, capturing interrupted work histories and mixed full-time/part-time work, in addition to stable full-time and part-time pathways, as women combine motherhood with paid work.

At the same time, we maintain a focus on two central issues. First and foremost, we are particularly interested in how the relationship between employment pathway and wage growth compares between mothers with few qualifications and more highly educated mothers. Do the same penalties for part-time work and interruptions apply to both groups?

In addition, we are interested in how the trajectories and wage changes of mothers of younger children differ from those of mothers of older children. This is an issue that has received little research attention but is of considerable policy importance in the light of the steady decrease in recent years in the age point at which mothers are expected to work rather than claim benefits. For instance, if the data show that mothers of older children are able to sustain employment more consistently, and see faster wage increases than mothers of younger children, there may be a case for focusing more effort on facilitating employment a little later, once children have started school, while also thinking again about what measures might help mothers of young children to remain employed and to progress in work.

2. Policy Background and Literature Review

Increasing maternal employment was a central plank in the last Labour Government's strategy to reduce child poverty. Initially, the approach relied on providing advice and support alongside financial incentives aimed at "making work pay", for lower-paid workers in general and for parents in particular. The introduction of the National Minimum Wage in 1998, changes to income tax, tax credits, and much greater state subsidy for childcare increased the pay-offs to taking low-skilled work and made working more favourable for the low-skilled. The New Deal for Lone Parents provided tailored support and advice on accessing work and finding childcare on a voluntary basis. Employment rates rose: 57% of lone parents worked in 2010 compared to 45% in 1997.

Much of the growth in employment was achieved by 2004; progress stalled as the economy slowed down and as those closest to the labour market moved into work. In response to slowing success rates, more compulsion was introduced in Labour's third term. Compulsory work-focused interviews were introduced and extended: as of 2008 all lone parents must take part twice a year. From November 2008 lone parents on Income Support whose youngest child was twelve or over were transferred to (income-based) Jobseekers' Allowance, making benefit conditional on job-search activity. This was extended to include those with a youngest child aged ten or over in October 2009, and seven or over in October 2010, with a planned extension to partners of Income Support or income-related Employment Support Allowance claimants. Labour also intended to make benefit receipt conditional on "work-related activity" for both groups of parents when their youngest child reached three, with four "Progression to Work pathfinders" planned to begin from October 2010 (Kennedy, 2010).

Throughout, the approach remained broadly “work-first”, with any job considered better than none, and very little support through tax credits or childcare subsidies for those wanting to train or gain qualifications first. However, in the later Labour years, issues of sustainability and progression in employment began to rise up the agenda, with initiatives such as the Employment Retention and Advancement project from 2003, which aimed to encourage in-work training through financial incentives and personal advisors, and from 2008 the roll-out of In-Work Advisory Support and the In-Work Emergency Discretion Fund, providing advice and emergency financial support to lone and couple parents in their first six months in work.

Under the Coalition Government, both the emphasis on work as the best response to poverty and the trend to greater conditionality have continued. Lone parents and joint claimants with a child over five face “full conditionality” under the 2011 Welfare Reform Bill, which means removal of benefits “for three months after a first failure, six months after a second, and three years after a third” (Iain Duncan Smith, HC Deb 9 March 2011 c923, cited in Kennedy et al, 2011). For parents of younger children there is more flexibility than there would have been under Labour: lone parents with a child between one and five will continue to be required to attend regular work-focused interviews, but do not need to take further steps to find work.¹ However, sustainability and progression appear to have been side-lined, with no reference to either in the Welfare Reform Bill. Policy documents under Labour frequently emphasised the role of a low-paid job as a stepping-stone to better things: “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). Under the Coalition, low-paid work is promoted as an end in itself, because it prevents individuals from relying wholly on the state: “a life on benefits will no longer be an option” (Iain Duncan Smith, 17 February 2011).²

This paper is interested in what happens to mothers, and in particular to low-skilled mothers, in the labour market: do they remain in work after entering, and if they do stay in work how important is this stability to their wage progression? At least the second part of this question is perhaps of less interest to policy makers today than it was in the previous administration, now that the stepping-stone metaphor is no longer part of government rhetoric. However, while low wages continue to be supported by in-work benefits, wage progression has important implications for the overall benefit bill. The question is also clearly of interest to mothers themselves (and those advising them), who may wish to understand not just the immediate financial payoff but also the longer term implications of entering and holding onto a low-paid job.

¹ In opposition, Conservative politicians explicitly ruled out Labour’s progression-to-work proposals for this group (HL Deb 12 November 2009 c908; cited in Kennedy, 2010).

² Iain Duncan Smith launching the Welfare Reform Bill; reported in *The Telegraph*, 17 February 2011.

Two existing bodies of literature set the context for the paper. The first is the literature which examines the impact of motherhood on wages and employment status. This body of research points to a large negative impact of motherhood on long-term earnings, with the comparative studies identifying a particularly large “family gap” in the UK (see e.g. Waldfogel, 1995 and Joshi et al, 1998 on the UK; Waldfogel, 1997 and Budig and England, 2001 on the US; and comparative studies by Harkness and Waldfogel 2003 and Sigle-Rushton and Waldfogel 2007). Lost years of experience are identified as a key explanation for the family gap in these studies, pointing to the importance of minimising employment breaks and getting mothers back into the labour market quickly. However, few of the studies cited attempt to distinguish between women by skill level, assuming a uniform relationship between experience and pay when in fact the value of experience is likely to be lower in jobs that require fewer skills. Human capital theory predicts that wage growth will be faster for more highly skilled women, and research on wage growth for workers in general – not just mothers – supports this (see e.g. Card and DiNardo 2002 and Connolly and Gottschalk, 2006 using US data; also Dustman and Meghir 2005 for Germany). Consequently, the impact of time spent outside the labour market is likely to have a smaller effect on wages for low skilled women than averages for all women would imply.

At the same time, the motherhood literature makes it clear that the type of job matters – the switch to lower status but more family friendly jobs or to part-time work is also implicated in the family gap. Hence it will be interesting not just to compare progression for those in stable work with those with interrupted histories, but also to look separately at wage growth for those following full-time, part-time and combined part-time/full-time pathways. The penalties attached to these last trajectories may or may not be the same for women with different levels of qualifications.

The second body of literature is that which tracks employment trajectories and wage progression with a focus on low-skilled workers. This literature indicates that progression out of low-paid work is the exception rather than the norm. For one thing, we know that churning in and out of jobs is common in the low-skilled labour market (see e.g. White and Forth, 1998; Dickens, 2000; McKnight, 2000; National Audit Office, 2007). Research on lone parents in particular has found rates of exit from employment twice as high as those for other recent entrants (Evans et al, 2004). Yeo (2007) examines job exits to benefits among lone parents between 2004 and 2005 and finds that just over a third of the jobs had lasted less than four months, with half lasting less than a year. Looking at a longer period, Stewart (2009) and Stewart (2011) find considerable heterogeneity in the employment trajectories of both lone and partnered mothers over six to twelve years, including a large minority following unstable pathways. Examining retention rates in employment for both mothers and fathers, Browne and Paull (2010) find that the proportion of parents remaining in work for the first three years after job entry between 2001 and 2006 is greater for high-income than low-income parents, and that within the low-income group employment

is sustained for significantly longer for fathers than for lone mothers. Exit rates for lone parents are particularly high in the second half of the first year.

Even among those who do remain in work, substantial improvement in wages appears to be unusual. Stewart and Swaffield (1998) and McKnight (2000) find limited upward mobility for low paid workers in the UK, with mobility considerably lower for women. Examining low-paid employees in the British Household Panel Survey between 2002 and 2005, Lawton (2009) finds that two fifths of workers who start in low pay (defined as 60% of median full-time hourly earnings) remain there, 14% exit to unemployment or inactivity, while two fifths leave low pay but remain below median earnings. Focusing on lone mothers in the British Lone Parent Cohort, Stewart (2009) finds much lower rates of exit than this alongside high entry rates.³ Almost 80% of those with an unstable work trajectory were observed to remain in low pay for the six to twelve years after their youngest child was born, compared to just under half of stable workers. Overall, more people were observed moving into than out of low pay.

Browne and Paull (2010) find that moving into work is an important factor in lifting families out of poverty, but that the likelihood of exit is higher for fathers than for mothers in couples or lone mothers. It is also higher for those with higher qualifications, and for those entering full-time work. Manning and Petrongolo (2008) and Connolly and Gregory (2008) have also pointed to a significant pay penalty for women working part-time.

This paper seeks to contribute to the literature with an examination of the British Families and Children Study which explores employment trajectories and wage progression for lone and partnered mothers, paying particular attention to differences by skill level and by the age of the youngest child in the family. The paper extends work carried out by Stewart (2009) and Stewart (2011) by using a dataset with a much larger relevant sample size, allowing us to conduct more detailed analysis of wage growth, albeit over a shorter time period (five years). This is the same dataset used by Browne and Paull (2010) to explore some closely related questions but our paper has a different focus. First, our analysis of trajectories looks at patterns over five years, where Browne and Paull are most interested in retention rates and in median time employed. More importantly, our central focus is on wage growth (and its interaction with skill level and trajectory), as a measure of women's progression towards greater self-sufficiency. In contrast, Browne and Paull concentrate on the broader relationship between employment and poverty. They explore the effect of work entry, exit and retention on family poverty in rich detail, but they consider household income overall (including labour market and other sources of income such as tax credits), and do not look at changes in any particular income source.

³ Low pay in this study is defined as two-thirds of the male hourly median.

The rest of the paper is structured as follows. In the next section we introduce the dataset and discuss the methods used in the paper. Section 4 presents results on employment trajectories, including analysis of the characteristics of women following different pathways. In Section 5 we turn to examine wage growth. Section 6 summarises and reflects on the results and Section 7 concludes.

3. Data and Empirical Strategy

This paper uses data for a panel of women with children drawn from the Families and Children Study (FACS) to answer four sets of questions. First, it examines the employment patterns of British mothers to uncover the variety of work trajectories followed by women as they combine motherhood with paid employment. We identify eight employment trajectories and employ multinomial logistic regression analysis to explore the personal, household and job characteristics associated with a woman's likelihood of following a particular work trajectory. Second, the paper asks what happens to the wages of working mothers over time. Using both descriptive statistics and multivariate analysis, we study the association between employment trajectories and wage progression for the representative sample of mothers. Third, the paper examines the links between employment trajectory and wage progression for mothers of different skill levels. The multivariate regressions are run separately for skilled and low-skilled mothers. Fourth, we explore whether the relationship between mothers' employment trajectory and wage progression change depending on the age of the children in the household. The following paragraphs provide additional detail on the data and the empirical strategy adopted.

3.1 Data

The British Families and Children Study (FACS)

The longitudinal FACS data provide a powerful tool for examining women's patterns of paid work and the links between employment trajectories and wages. The FACS is an annual panel survey first implemented in 1999 with a survey of lone parent households and low-income couples drawn from Child Benefit records (Hoxhallari et al, 2007). From the third wave, in 2001, the sample was enlarged to be representative of all British families with dependent children. In this paper we use the data collected from 2001 to ensure a larger and nationally representative sample. Data for 2006 onwards were only released in the summer of 2011, when the analysis for this paper was already complete, so the paper makes use of five waves of data, 2001 to 2005.⁴

Because the survey collects data from the Child Benefit recipient, in most cases a woman, the majority of FACS respondents are mothers rather than fathers. For the

⁴ As a robustness check, some of the analysis was also conducted over the longer period, 1999-2005, using the smaller sample of lone parent and low-skilled couple households. Results were very similar to those for the shorter sample and are not reported in the paper.

purposes of this study, we restrict the sample to female respondents. All women in the sample have at least one dependent child below the age of 18 in 2001.⁵ The sample size is 4,192 women. Parts of the employment trajectories and wages analysis are further restricted to particular sub-groups of this sample, typically those mothers that have at least two work episodes over the period.

Employment trajectories

We define employment trajectories using the annual observations in the FACS interviews. The trajectories are therefore based on an annual snapshot and do not fully capture women's continuous work histories: any movement into *and* out of work (or vice versa) which takes place during the year will not be included. This approach is taken to simplify the analysis, but other studies have suggested that annual observations provide as good a view of employment patterns as examining intra-year data (Evans et al, 2004). For women in employment, part-time work is defined as up to 30 hours a week.

Wages

We derive hourly wages as declared weekly earnings divided by the number of recorded hours worked per week. We generate a wage growth variable for mothers with at least two declared wages over the five year period, defining annual wage growth as the difference between the last observed wage and the first observed wage divided by the number of waves between the two observations. To ensure comparability, the analysis of wage growth presented in this paper is in practice restricted to mothers who are working and declare a wage in both 2001 and 2005, so in effect we are always dividing by four. Wages are left in nominal terms throughout.

Individual, household and job characteristics

The FACS collects information on the characteristics of families with children including health, education, employment and job characteristics. Table 1 summarises the sample statistics for the personal, household level and job variables used in this study to examine the association between employment trajectory and mothers' wages. All numbers are for the first wave, 2001.

In exploring the link between employment trajectory and wages, two characteristics are of particular interest to us: women's skill level and the age of their youngest child. We define skill level based on responses to the question regarding "Highest academic qualification". Skilled women are defined as those who hold at least an A-level qualification or equivalent, and low-skilled as those who do not.⁶ In our regression

⁵ In the FACS, parents are defined as anyone over the age of 15 years who has parental custody of either a child aged 16 years or less, or 18 years or less and in full-time education.

⁶ We group responses to the question on "Highest academic qualification" as follows: "None or GCSE D-G and equivalent" and "GCSE grade A-C and equivalent" are grouped as low-skilled; "GCE A-level/SCE higher grades", "First Degree and Higher Degree" and "Other academic qualifications" define the skilled.

analysis by skill level we further differentiate between those among the low-skilled who do/do not hold GCSEs at grade A-C (or equivalent), and those among the skilled who do/do not have a higher degree.

Table 1: FACS sample statistics: mean value or per cent in 2001

Variable	Mean value or % in 2001
Sample statistics for full sample (N=4192)	
<i>Individual characteristics</i>	
Age (years)	36.6
Long standing illness, disability or infirmity (own)	20.7%
Low skill (no A-level)	70.5%
▪ No qualifications	45.8%
▪ O-level	54.2%
<i>Household characteristics</i>	
New birth in 2001	8.1%
Child below 4 years of age	27.8%
Number of children	1.8
Lone parent	27.1%
<i>Tenure</i>	
▪ Owner-occupier	68.6%
▪ Social tenant	24.0%
▪ Other (private tenant and other arrangement)	7.4%
<i>New circumstances</i>	
New birth after 2001	16.1%
Sample statistics for mothers working in 2001 (N=2647)	
<i>Job characteristics</i>	
<i>Occupation</i>	
▪ managers and senior officials	7.3%
▪ professional	10.4%
▪ associate professional / technical	15.1%
▪ administrative / secretarial	22.7%
▪ skilled trades	1.7%
▪ personal services	15.0%
▪ sales/customer services	11.9%
▪ process, plant, machine operatives	2.6%
▪ elementary	13.2%
Permanent position	91.0%
Small firm (<25 employees)	39.0%
Maternity leave –at least once over the period	6.4%
<i>New circumstances</i>	
Occupational change over the period	49.3%

Source: FACS 2001-2005.

All the women in the sample have children who are under eighteen at the time of the first interview. In examining the association between a mother's employment trajectory and wages, the analysis considers women with a new born in 2001, with a youngest child aged between one and four years in 2001, between five and ten years in

2001 and between eleven and fifteen years in 2001. Furthermore, all the analyses presented here also take into account whether a mother gives birth over the period.

While mothers' skill level and children's age are the main variables of interest, the study controls for a range of other characteristics that may be expected to influence both employment pathways and wages. The analysis takes into account a woman's age and health status, the number of children in the household and whether a mother is a lone parent or part of a couple. It also considers tenure status – whether the household is owner occupier, social tenant or other (largely private renter) in the first wave. Tenure may be expected to be important for three distinct reasons. First, there are clearly work incentive effects associated with being a home-owner with a mortgage. Second, there is some empirical evidence that suggests that asset-holding may affect health and psychological well-being, and this may in turn affect employment stability (see e.g. McKnight, 2011). Third, owner-occupier status will almost certainly operate as a proxy for past labour market experience and motivation: it is an indicator that a bank or building society has made a positive assessment of the household's income in the past. In the case of a couple, the assessment may in some cases have been based more on the partner's prospects than on those of the mother, but literature points to a correlation between the two (see Brynin and Francesconi, 2002).

The ability of the housing tenure variable to act as a rough proxy for past labour market experience is particularly important because of the absence of information on work history prior to the first interview. We do however have some information about the jobs mothers have during the period of the panel. In addition to work status, hours and earnings, we have information on occupation (standard occupational classification), on whether a worker has managerial responsibilities, on whether the position is permanent and on the size of the workplace.

The literature points to an association between wages and occupational change. In their analysis of the pay penalty associated with part-time work for example, Connolly and Gregory (2008) show that women may experience downgrading from higher-skilled full-time into lower-skilled occupations with more opportunity for part-time employment as they reorganise their working lives after having children.⁷ For this reason, we take into account whether a mother changes occupation over the period and find that in the FACS sample, almost half of the mothers working in 2001 experience a change from one major occupational group to another between 2001 and 2005.⁸ This percentage is roughly the same for skilled and low-skilled working mothers (forty-eight per cent and fifty per cent respectively).

⁷ One-quarter of British women moving from full-time to part-time work are found to experience downgrading (Connolly and Gregory, 2008).

⁸ The variable only captures a change from one major occupational group to another, not changes within a group, which are likely to be even more common.

Finally, we identify whether mothers receive paid maternity leave at any point during the period examined. The FACS questionnaire asks women who declare they are in work whether they are on maternity leave at the moment of the interview. We may expect the impact of a new baby on wage change over the period to be softened for those eligible for paid maternity leave, so this variable is included as an additional control. Among mothers working in 2001, six per cent declare that they received paid maternity leave at some stage over the five year period.

3.2 *Empirical Strategy and Limitations*

After identifying eight employment trajectories followed by mothers, the initial part of the analysis explores the ways in which personal, household and job characteristics are associated with the likelihood for a mother to follow a particular trajectory. We run two multinomial logistic regression models on employment trajectory, one including individual and household characteristics as regressors, the second adding in job characteristics.⁹ These models report how different characteristics affect the odds for a mother to be following an employment trajectory relative to the base trajectory of full-time stable employment (Long and Freese, 2006). For example, we examine which characteristics increase the likelihood for a mother to be working part-time stable relative to full-time stable between 2001 and 2005.

In the next part of the analysis, for an indication of the association between employment trajectories and wage progression, we estimate an OLS regression on final (log) wage for mothers working in 2001 and 2005, including employment trajectories as regressors and controlling for initial wage and other personal and household characteristics. We are particularly interested in the coefficients of the employment trajectories: these report the percentage change (reduction or increase) in final wage associated with following a particular trajectory relative to the final wage recorded by mothers in full-time stable employment over the period. To further test the association between employment trajectories and wage progression, we also estimate the probability for mothers to experience wage change at specific cut-off values (the sample median and negative change) and compare the marginal effects obtained for mothers on different employment trajectories relative to the base category of those in full-time stable employment over the period.¹⁰

⁹ The independent variables in the full model are: age, own health, child below four years of age in 2001, number of children, partnership status, tenancy status, occupation, new birth over the period and occupational change.

¹⁰ We run probit regressions on the probability of experiencing wage growth above 4% (the sample median) and below 0% (a reduction in wages over the period). The reported coefficients are the marginal effects and can be interpreted as the change in the probability of experiencing wage growth above 4% (or below 0%) from the base or reference category when one changes the relevant characteristic. In all probit regressions, the reference category is a mother in stable full-time employment over the period, in a couple, reports no long-term ill health, is an owner-occupier and does not experience a change in occupational group over the period.

In the final stages of the analysis, these regressions are also run separately for higher-skilled and lower-skilled mothers and for mothers of children of different ages for an indication of whether and in what way the employment trajectory-wages linkages vary for these different groups of mothers.

The use of longitudinal micro-data and multiple regression techniques allow us to compare mothers that are similar on average in terms of the observable characteristics included in the regression; that is, we provide an estimate of coefficients of interest while “holding other factors fixed” (Wooldridge, 2003). This eliminates some forms of selection bias. In looking for an association between employment pathway and wage progression, for example, we can control for some of the independent factors (such as qualifications) which are likely to influence both.

However, two substantial problems remain. First, selection bias will also arise from factors that are not recorded in the dataset and thus cannot be controlled for, such as intrinsic work motivation or past employment experience.¹¹ Second, in seeking to explain wage growth with reference to employment trajectory we face a problem of endogeneity: workers in jobs which have fewer prospects of wage growth are less likely to stick with them, so it could be that the wage growth is explaining the pathway, as well as (or even instead of) the other way round.

Both these problems mean that in our regressions for final wages and wage growth the coefficients on our pathway variables are likely to be biased upwards. We cannot be confident that all apparently similar mothers would have experienced the same levels of wage growth as those in stable employment had they only followed the same pathway. Instead, mothers following unstable trajectories may be different from those following stable trajectories in ways we don’t observe, and the jobs open to them may also be different.

While we cannot effectively deal with either problem, we keep them at the forefront of both analysis and discussion, with the intention of avoiding reaching unjustified conclusions. The most interesting aspect of the results lies in differences in the coefficients associated with different groups of women (such as high- and low-skilled), rather than in the actual level of the coefficients themselves. Some of these differences are arguably less affected by selection bias than others; this is discussed further below.

¹¹ As explained earlier, we address this issue by including in the analysis variables that may act as proxies for unobservables such as past labour market experience and motivation. Tenure status is an example.

4. Do Working Mothers Remain In Stable Employment?

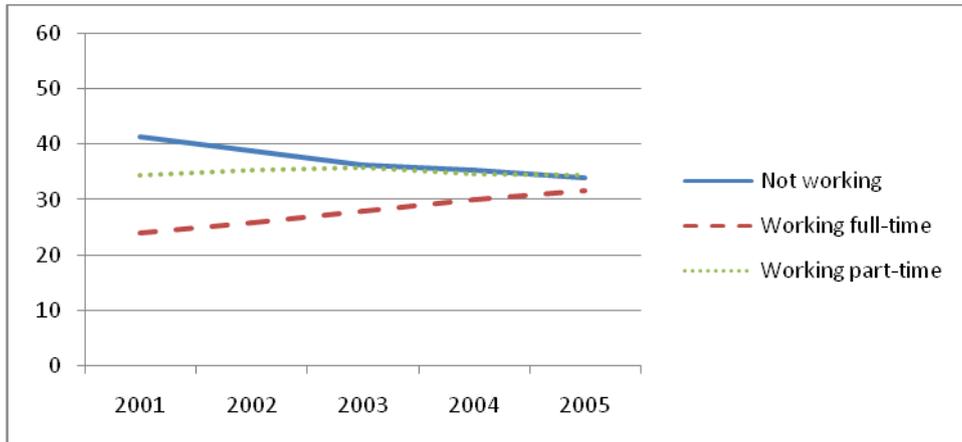
We begin our analysis by examining the employment trajectories followed by the women in our sample. Figure 1a shows the employment status of all women in the sample between 2001 and 2005, reflecting a substantial shift towards work as children grow. In 2001 the majority of women are at home, with part-time employment more common than full-time, but by 2005 roughly a third of women fall into each category. Figures 1b and 1c show employment status for sub-samples of women with a very young child in 2001 and with older children (a youngest between eleven and fifteen), further illustrating the movement over time from home to part-time and then full-time work.

These figures show the aggregate changes in women's employment status that we would expect as children get older, but they do not reveal the range of employment patterns followed by individuals over time. In Table 2 we reproduce the twenty most common employment patterns over the five FACS waves to illustrate the variety of pathways followed. The three most common patterns are stable ones – women observed at home throughout, in part-time work throughout and full-time throughout. These are followed by a number of pathways in which women are observed increasing their participation over time – moving from home to part-time work, from part-time to full-time work or (somewhat less common) from home directly to full-time. But there are also a number of pathways towards the bottom of the table in which women are seen moving in and out of work or stepping down from full-time to part-time hours.

Grouping patterns together, we identify eight broad employment trajectories which are summarised in Table 3. In addition to the three stable groups highlighted above, we group together women observed in work in each of the five annual observations, but with a mix of part-time and full-time employment; those observed moving in and out of work or vice versa; those moving from home to work during the five year period (entrants); and those moving the other way, from work to home (exiters). Lastly we separate those with a single observation in work from those at home throughout. One observation in work marks these women out from those only seen at home, but with just one work observation to go on (sometimes at the beginning or end of the period) it is not clear whether they should best be categorised as entrants/exiters or “in and out”. Analysis of wage growth is in any case ruled out for this group.

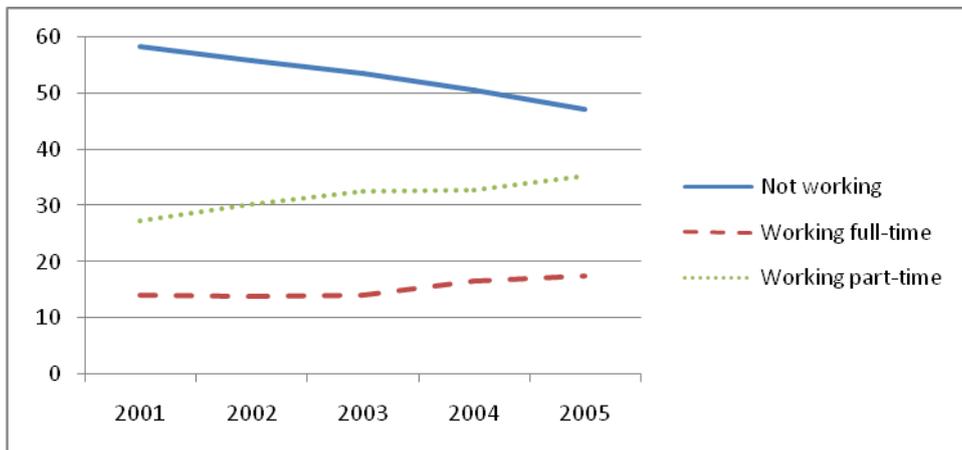
Figure 1: Employment status of women in the FACS sample

Figure 1a All women (children of different ages in 2001) (%)



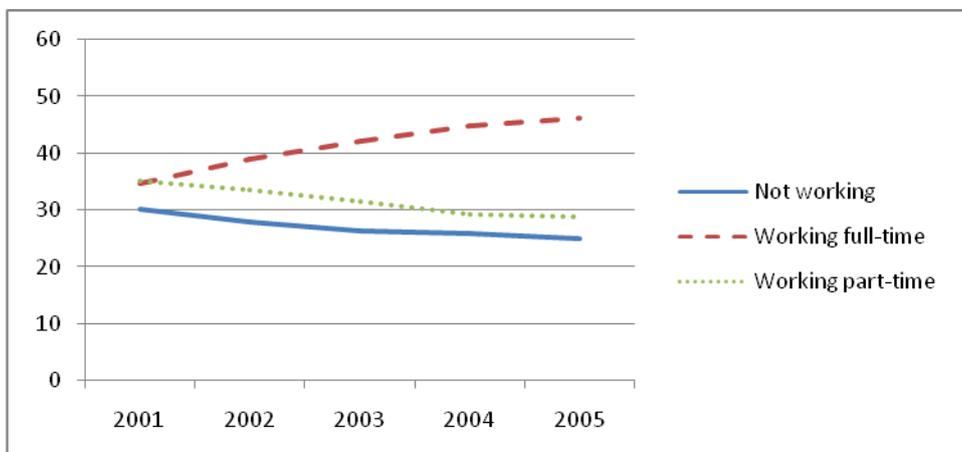
Source: FACS 2001-2005 (N=4192).

Figure 1b Women with a child below 1 year old in 2001 (%)



Source: FACS 2001-2005 (N=775).

Figure 1c Women with a youngest child between 11 and 15 years old in 2001 (%)



Source: FACS 2001-2005 (N=894).

Table 2: Employment trajectories: Capturing variations in number of hours worked and interruptions in paid employment

2001	2002	2003	2004	2005	Frequency of pattern (N. of mothers)	Percentage of total sample of mothers
0	0	0	0	0	937	22.4%
1	1	1	1	1	664	15.8%
2	2	2	2	2	653	15.6%
0	1	1	1	1	108	2.6%
0	0	0	0	1	82	2.0%
0	0	0	1	1	81	1.9%
0	0	1	1	1	76	1.8%
1	2	2	2	2	72	1.7%
1	0	0	0	0	71	1.7%
1	1	2	2	2	71	1.7%
1	1	1	2	2	66	1.6%
1	1	1	1	2	62	1.5%
0	2	2	2	2	60	1.3%
1	1	1	0	0	49	1.2%
1	0	1	1	1	47	1.1%
1	1	1	1	0	38	0.9%
0	1	0	0	0	37	0.9%
1	1	0	0	0	35	0.8%
2	2	2	2	1	34	0.8%
2	1	1	1	1	34	0.8%

Source: FACS 2001-2005.

Key: 0 (white)= At home; 1 (light grey)= Working part-time; 2 (dark grey)=Working full-time

Note: The figure reports the top 20 most frequent employment patterns in the sample as an example of the variety of employment trajectories women with children follow. Part-time work is defined as working 30 hours or less each week.

As Table 3 shows, between 2001 and 2005 sixteen per cent of the FACS sample of mothers is consistently observed working in full-time employment. The same percentage of mothers is observed working part-time throughout the period, while thirteen per cent are observed combining full-time and part-time work. Ten per cent of the FACS sample follow an interrupted or “in and out” work trajectory. Twenty-two per cent of mothers in the sample stay at home and were not observed once in paid employment in any of the five annual observations, along with seven per cent observed in work on one occasion. Eleven per cent move from home to work, and five per cent the other way, from work to home. On the one hand, the numbers in Table 3 arguably point to a relatively strong degree of stability: some forty-five per cent of the panel are observed in work in every observation, compared to a total of twenty-two per cent observed exiting employment or moving in and out of work. On the other

hand, twenty-two per cent may be seen as high given the short duration of the panel, and is more than the share of women in steady full-time employment.

Table 3: Employment trajectory sample sizes 2001-2005

Employment trajectories	Frequency	Percent
Working full-time stable	653	15.6
Working part-time stable	664	15.8
Working stable mixed part-time and full-time	555	13.2
In and out	418	9.9
Exiters	212	5.1
Entrants	449	10.7
At home with one work episode	304	7.3
No work stable throughout	937	22.4
Total	4192	100

Source: FACS 2001-2005.

The analysis of wage progression in the next section of this paper focuses on the four trajectory groups listed top in Table 3. There are two main reasons for this: it keeps the analysis to a manageable size and it means we can examine wage change for all groups of women over an identical five year period, avoiding problems arising from different economic conditions from year to year. Including exiters and entrants would make these comparisons a little more difficult. Before we go on to examine wages, we take a look at the characteristics of women following these four different pathways as background to the wage analysis.

Tables 4 and 5 present the results of multinomial logistic regressions which let us identify the personal, household and job characteristics associated with the likelihood for women to follow a particular employment trajectory relative to the base category of mothers in full-time stable employment.¹² Table 4 reports the coefficients from the regressions including only personal and household characteristics. Mothers who are low-skilled, have a young child or a newborn baby, or who have a higher number of children are all significantly more likely to be observed working part-time or following interrupted pathways than to be working full-time throughout. Being low-skilled increases the odds of working part-time by 2.2. Low-skilled mothers are also around one and a half times as likely to be following mixed or interrupted pathways. Tenure does not appear significantly different between stable part-time and full-time workers, but private renting and social tenancy are associated with a much increased likelihood of moving in and out of work. Interestingly, lone parents appear to be *more*

¹²

The estimates reported in Tables 4 and 5 are the exponential of the coefficients obtained from the multinomial logistic regressions. These are relative risks ratios, also sometimes referred to as odds. Here, we follow the practice adopted by Long and Freese (2006) and refer to these coefficients as the odds relative to the base category of mothers working full-time stable. All results presented in the tables are statistically significant at the 10 per cent level at least.

likely to be observed in stable full-time work than in either part-time or interrupted employment.

We also include in the table the odds ratios for mothers staying at home throughout the period. All the characteristics in the table are associated with a much heightened likelihood of staying home rather than working full-time throughout – lone parenthood, non-owner occupier status, more and younger children and a new birth – and the odds in each case are considerably higher for home than for other pathways, suggesting that mothers who stay home are different from those following mixed and part-time pathways, as well as different from those who work full-time. The exception is the odds-ratio associated with being low-skilled, which is similar across pathways, and highest for stable part-time work. Lone parents are nearly twice as likely to be at home throughout rather than at work throughout; although, as noted, if they are in work a stable full-time pathway is more likely than a part-time or mixed trajectory.

Table 4: Odds ratios for mothers following different trajectories, compared with mothers working stable full-time

	Part-time stable	Mixed part-time and full-time	In and out	At home throughout
Age (standard deviation change)	0.9	n.s.	0.7	n.s.
Low skill	2.2	1.5	1.6	1.8
Child<4 years in 2001	1.5	1.6	2.4	2.9
N. of children	1.3	1.2	1.6	4.2
Lone parent	0.6	n.s.	0.7	1.8
New born after 2001	1.5	n.s.	2.9	3.8
<i>Tenure (omitted: Owner occupier)</i>				
Social tenant	n.s.	2.0	3.2	9.4
Other (incl. Private tenant)	n.s.	n.s.	2.1	3.3
N observations =4175				
LR chi2(54)=601.99; Prob> chi2=0; Pseudo R2=0.050				

Source: FACS 2001-2005.

Note: N.S.: not significant. Results reported are from a single multinomial logistic regression in which full-time stable paid employment is the comparison category. All reported results are significant at least at the 10 per cent level.

Table 5: Odds ratios for mothers following different trajectories compared to mothers working stable full-time, controlling for job characteristics

	Part-time stable	Mixed part- time and full- time	In and out
Age (standard deviation change)	0.8	n.s.	0.7
Child<4 years in 2001	1.6	1.8	3.0
N. of children	1.3	1.2	1.5
Lone parent	0.6	n.s.	0.7
New born after 2001	1.7	n.s.	3.5
<i>Tenure (omitted: Owner occupier)</i>			
Social tenant	n.s.	1.6	1.9
Other (incl. Private tenant)	0.5	n.s.	n.s.
<i>Occupation (omitted: Managers and senior officials)</i>			
Professional	2.1	n.s.	n.s.
Associate professional/technical	3.3	1.6	
Administrative/secretarial	9.2	2.3	2.0
Skilled trades	11.1	1.1	6.8
Personal services	9.4	3.0	9.4
Sales/customer services	24.6	5.7	24.6
Process, plant, machine operatives	3.0	n.s.	3.0
Elementary	24.5	4.8	9.1
Permanent position	0.6	n.s.	0.2
Small firm	1.7	1.5	2.3
Occupational change between 2001-2005	0.6	n.s.	1.6
N. of observations=3223			
LR chi2(120)=1240.70; Prob> chi2=0; PseudoR2=0.102			

Source: FACS 2001-2005.

Note: N.S.: not significant. Results are from a single multinomial logistic regression in which full-time stable work is the comparison category. All reported results are significant at least at the 10 per cent level.

Table 5 presents the odds ratios for a second model which includes job characteristics alongside personal and household characteristics. As a result of the strong correlation between skill level and occupational classification we drop the low-skilled dummy in this model. The coefficients of the other individual and household characteristics are largely unaffected by the inclusion of job characteristics, although we see some reductions in the size of odds ratios on tenure variables. Different types of occupation are clearly strongly associated with the likelihood of a mother working part-time.

Elementary and sales/customer services jobs for example are associated with higher odds of a woman working part-time, or of moving in and out of work, when compared with similar women in managerial and senior officials positions. These occupations are also associated with increased odds of moving between part-time and full-time work, although the odds ratios attached to different occupations are substantially lower for the mixed pathway than for the part-time and in-and-out trajectories.

In sum, it is clear that women observed in full-time employment across the study period differ in significant ways from those following part-time or less stable pathways, and are also more likely to be found in certain occupations, such as managerial and professional positions. There appear to be fewer differences among women following the other three pathways – part-time, mixed part-time and full-time, and movement in and out of employment – than between any of these and the full-time group, although the mixed part-time/full-timers appear to differ less in occupation from the full-time group than do the other two. In the following section, we examine differences in wage progression over the five years for women in each group, keeping these different characteristics in mind.

5. What Happens To The Wages Of Working Mothers Over Time?

Tables 6 to 9 report median hourly wages in 2001 and wage growth rates between 2001 and 2005 for all the women in the FACS sample, disaggregated by women's skill level and by the age of their youngest child.

Table 6 shows that the 2001 median hourly wage of mothers on interrupted, part-time or mixed employment trajectories is, as expected, lower than the median wage of mothers in full-time stable employment: the median is £6.90 an hour for full-time stable mothers compared to £5.70 for mothers moving in and out of work, £5.80 for mothers in stable part-time work and £6.00 for mothers combining part-time and full-time work over the period. Much of this difference is of course likely to be explained by the characteristics of women following the different pathways. As Table 6 also shows, wages varied between £5.20 and £5.90 an hour for the low skilled women, and between £7.60 and £8.40 for the higher-skilled. Within each category we see similar wage "penalties" associated with part-time, mixed and interrupted employment patterns. The shortfall between these trajectories and the full-time stable group ranges between seven per cent and twelve per cent, with the gap on the whole slightly higher for the low-skilled mothers.

Table 6: Median hourly wages: By skill level (2001)

Employment trajectory	Median hourly wage in 2001 (£)	Median hourly wage (£)		Percentage difference from FT stable wage (%)	
		Low-skilled	Skilled	Low-skilled	Skilled
Working FT stable	6.9	5.9	8.4	--	--
Working PT stable	5.8	5.4	7.6	8.4%	9.5%
Working stable mixed PT-FT	6.0	5.3	7.8	10.2%	7.1%
In and out	5.7	5.2	7.7	11.9%	8.3%
Total	6.1	5.5	8.0	--	--

Source: FACS 2001-2005.

Note: "Low-skilled" mothers have at most GCSE-level qualifications; "skilled" mothers have A-level or equivalent, vocational or higher education.

Table 7 reports on median wage growth for each trajectory over the 2001-2005 period. As explained earlier, this "annual" measure of wage growth is calculated as the difference between the 2001 wage and the 2005 wage divided by four; only mothers with a declared wage in both 2001 and 2005 are included. Taking women of all skill levels together, we see that wages for women following an "in and out" trajectory and those combining part-time and full-time work grew by 3.4 per cent annually over the five year period, compared with a growth rate of 4.1 per cent for mothers in part-time employment and with a rate of 4.7 per cent for mothers in full-time continuous employment over the period.

Table 7: Wage growth (annual median hourly): By skill level (2001-2005)

Employment trajectory	Wage growth (%)	Wage growth (%)		Percentage difference from FT stable growth rate (%)	
		Low-skilled	Skilled	Low-skilled	Skilled
Working FT stable	4.7	4.4	5.3	--	--
Working PT stable	4.1	3.9	4.4	11.4%	17.0%
Working stable mixed PT-FT	3.4	3.5	2.3	20.0%	56.6%
In and out	3.4	3.3	4.1	25.0%	22.3%
Total	4.1	3.9	4.4	--	--

Source: FACS 2001-2005.

A very similar pattern holds for the low-skilled group of mothers: the lowest wage growth rate is recorded for women moving in and out of work, followed by women combining part-time and full-time work over the period. Women in stable part-time work see the second highest growth rates after full-time women. For the skilled mothers, growth rates are more similar for part-time and in-and-out mothers, with the biggest shortfall experienced by those moving between part-time and full-time work. Comparing the skilled and low-skilled columns, the “penalty” for mixed part-time/full-time work is considerably higher for the skilled than the low-skilled, and the part-time “penalty” is also somewhat higher for the skilled.

Tables 8 and 9 report the same information as Tables 6 and 7 – median wage and median annual wage growth – by age of the mother’s youngest child. Table 8 shows that mothers of younger children in all trajectory groups have higher average wages than mothers of older children. This is as expected, as mothers who are working when their children are pre-school age are likely to be somewhat different (and to work in different jobs) than those who are not. Within each age category, wages are higher for mothers in full-time stable work than for those following other trajectories, with the biggest shortfalls experienced by mothers of older children working part-time or moving in and out of work.

Table 8: Median hourly wage: By age of youngest child in 2001

Employment trajectory	Median hourly wage (£)				Percentage difference from FT stable wage (%)			
	Newborn in 2001	Child 1-4 (incl) in 2001	Child 5-10 (incl) in 2001	Child 11-15 (incl) in 2001	Newborn in 2001	Child 1-4 (incl) in 2001	Child 5-10 (incl) in 2001	Child 11-15 (incl) in 2001
Working FT stable	x	7.4	6.9	6.7	--	--	--	--
Working PT stable	x	6.5	5.5	5.3	--	12.2%	20.3%	20.9%
Working stable mixed PT-FT	7.0	6.3	6.1	5.6	--	14.9%	11.6%	16.4%
In and out	x	6.2	5.3	5.2	--	16.2%	23.2%	22.4%
Total sample	7.0	6.6	6.0	5.9	--	--	--	--

Source: FACS 2001-2005.

Note: X: Number of observations below 30, result not reported.

Finally, Table 9 compares the median wage growth rates for women on different trajectories by the age of their children. The largest negative differences in wage growth by trajectory are recorded by mothers with a youngest child aged between one and four years in 2001. Working mothers in this group following mixed and interrupted employment patterns experience the largest difference in wage growth compared with mothers with children in the same age group working full-time over the period. Mothers of older children in 2001 and on mixed and interrupted

trajectories also have wage growth rates well below those of mothers of older children in full-time employment. Although differences are lower than those experienced by mothers of young children, they appear to persist over time. Perhaps surprisingly, however, the difference in wage growth between stable part-time and full-time workers with older children is much smaller in scale.

**Table 9: Median hourly annual wage growth 2001-2005:
By age of youngest child in 2001**

Employment trajectory	Wage growth (%)				Percentage difference from FT stable growth rate (%)			
	Newborn in 2001	Child 1-4 in 2001	Child 5-10 in 2001	Child 11-15 in 2001	Newborn in 2001	Child 1-4 in 2001	Child 5-10 in 2001	Child 11-15 in 2001
Working FT stable	x	6.2	4.1	4.8	--	--	--	--
Working PT stable	x	3.9	3.8	4.5	--	37.1%	7.3%	6.3%
Working stable mixed PT-FT	5.6	2.6	2.9	4.3	--	58.1%	29.3%	10.4%
In and out	x	2.6	3.4	3.0	--	58.1%	17.1%	37.5%
Total sample	5.3	4.1	3.8	4.4	--	--	--	--

Source: FACS 2001-2005.

Note: X: Number of observations below 30, result not reported.

In sum, Tables 6 to 9 indicate that mothers in part-time, mixed or interrupted employment experience both lower median wages and lower wage growth over time than mothers in stable full-time employment. These differences exist for mothers with both higher and lower levels of qualifications, although the wage growth shortfall appears somewhat higher for skilled than for low-skilled women. They also exist across mothers with different age children, although for all trajectories gaps in wage growth are highest among mothers with a pre-school child.

While these results point to a potential wage penalty associated with part-time, mixed and interrupted pathways, much of the difference may simply reflect the characteristics of women who follow alternative pathways, rather than the impact of the pathways themselves: we know from Section 4 above that significant differences exist between women in full-time stable work and women in the other three trajectories we examine. In the next section we conduct multivariate analysis to control as best we can for these characteristics, to explore whether an association between trajectory and wage growth persists, and whether it varies depending on a woman's skill level and on the age of her children.

5.1 *Employment Trajectories, Wages and Women's Skill Level*

We first examine the association between trajectories and wages and whether this varies by skill level. In the following sub-section the emphasis shifts onto variation by the age of the youngest child. In each case, we look at wages in 2005 (controlling for initial wages), and then at the probability of experiencing wage growth above the sample median and the probability of experiencing a reduction in wages.

Table 10 reports results from an OLS regression on final observed log wages, controlling for the initial wage. All mothers with a reported wage in 2001 and 2005 are included. Models are first run including only initial wage and trajectory dummies, then also including individual and household characteristics as controls. The coefficients reported in the first column from model 1, indicate that, controlling for initial wages, mothers on a part-time trajectory have lower final wages at the end of the period (-10%) compared with mothers in full-time continuous employment over the period, as do mothers that are continuously employed and combine part-time and full-time work (-9%). Following an “in and out” work trajectory is associated with an even lower final wage (-12%) compared with the reference group of full-time working mothers. These results are all statistically significant at the 1 per cent level.

The inclusion of individual and household level characteristics confirms the negative association between part-time, mixed and interrupted employment patterns and final wages. Controlling for a number of characteristics – age, qualifications, health, number of children, new births over the period, marital status and tenure status – mothers working part-time or following mixed or interrupted trajectories have lower final wages than mothers working full-time throughout (-9%, -8% and -12% respectively).

How do these results compare for mothers with different skill levels? The same regressions were run for higher and lower skilled mothers separately, and the results are reported in Table 11. We find that among both groups of mothers wages are lower for those not in stable full-time employment, but the “penalty” is greater for higher-skilled than for lower-skilled mothers. Among skilled mothers (and controlling for individual and household characteristics), wages are 14% lower for those on part-time as opposed to full-time trajectories, compared to 5% lower for the lower skilled. Similarly, the “penalty” associated with a mixed trajectory is 13% for skilled mothers and 5% for lower skilled; while that linked to moving in and out of work is 13% for the higher skilled and 10% for the lower skilled.

Table 10: OLS regression on final log wage in 2005

	Model 1	Model 2
2001 wage (log)	0.456*** (26.48)	0.361*** (20.39)
<i>Omitted trajectory: Full-time continuously employed</i>		
Trajectory: Part-time continuously employed	-0.098*** (5.05)	-0.085*** (4.51)
Trajectory: Mixed PT-FT continuously employed	-0.093*** (4.55)	-0.081*** (4.20)
Trajectory: In and Out	-0.120*** (4.56)	-0.118*** (4.47)
Age of respondent in years		0.009 (1.00)
Age2		-0.000 (0.79)
Low skill (Omitted: Skilled)		-0.210*** (12.43)
Ill health long-term		0.002 (0.24)
Child<4 years old		0.097*** (4.50)
Number of dependent children		0.008 (0.83)
Lone parent (Omitted: Couple)		-0.049** (2.32)
<i>Omitted tenure: Owner-occupier</i>		
Social tenant		-0.090*** (3.64)
Other (private tenant)		-0.001 (0.04)
New born after wave 1		0.025 (0.78)
Maternity leave over the period		0.040 (1.07)
Occupational change over the period		-0.010 (0.66)
Constant	1.206*** (33.54)	1.283*** (6.85)
Observations	2118	2118
R-squared	0.273	0.360

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of t statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level;

*** indicates significance at the 1% level.

Table 11: OLS regression on final log wage in 2001: By skill level

	Low-skilled mothers		Skilled mothers	
	Model 1	Model 2	Model 1	Model 2
Initial wage (log)	0.306*** (14.15)	0.288*** (13.19)	0.479*** (16.08)	0.456*** (14.89)
<i>Omitted trajectory: Full-time continuously employed</i>				
Trajectory: Part-time continuously employed	-0.046** (2.05)	-0.054** (2.39)	-0.117*** (3.50)	-0.144*** (4.30)
Trajectory: Mixed PT-FT continuously employed	-0.052** (2.16)	-0.049** (2.04)	-0.122*** (3.73)	-0.128*** (3.93)
Trajectory: In and Out	-0.099*** (3.06)	-0.099*** (3.21)	-0.102** (2.28)	-0.133*** (2.91)
Age of respondent in years		-0.002 (0.18)		0.038** (2.06)
Age2		0.000 (0.33)		-0.000* (1.90)
Ill health long-term		0.013 (0.53)		-0.019 (0.55)
Child<4 years old		0.121*** (4.48)		0.056 (1.55)
Number of dependent children		0.002 (0.15)		0.024 (1.32)
Lone parent (Omitted: Couple)		-0.018 (0.76)		-0.108*** (2.80)
<i>Omitted tenure: Owner-occupier</i>				
Social tenant		-0.094*** (3.53)		-0.057 (0.76)
Other (private tenant)		-0.005 (0.14)		0.020 (0.31)
New born after wave 1		-0.000 (0.00)		0.088 (1.58)
GCSE a-c/Higher degree		0.055*** (2.98)		0.076** (2.11)
Maternity leave over the period		-0.012 (0.26)		0.077 (1.28)
Occupational change over the period		-0.010 (0.57)		0.000 (0.01)
Constant	1.366*** (32.27)	1.371*** (6.28)	1.305*** (19.64)	0.509 (1.40)
Observations	1418	1418	700	700
R-squared	0.135	0.173	0.296	0.339

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of t statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level;

*** indicates significance at the 1% level.

These regressions are one way of exploring the average change in wages over the five year period across the full distribution. To give us a fuller picture we also conduct regressions which focus on the top and bottom of the distribution, aiming to explain the likelihood of experiencing particularly rapid or particularly slow wage growth. Table 12 reports the results of probit regressions for the likelihood of experiencing annual wage growth above the sample median of 4%. We find that for all mothers in the sample, working part-time or following a mixed or interrupted trajectory over the period lowers the probability of having a wage growth rate above 4 per cent, compared to the base scenario of full-time continuous employment. Coefficients for the part-time, “mixed stable” employed and “in and out” trajectories are negative, although they vary in magnitude, with larger apparent penalties attached to an interrupted pathway (a 12% reduction in the probability of experiencing wage growth above the sample mean) and a mixed part-time/full-time pathway (a 10% reduction) than to steady part-time work (a 6% reduction).

The disaggregated analysis by skill-level suggests that trajectories have a much weaker or absent influence on mothers’ wage growth for low-skilled than for skilled women. For skilled mothers, those combining part-time and full-time work have a significantly reduced probability of recording a 4% wage growth (-18%), while an interrupted work pathway is associated with a 14 per cent reduction in this probability compared to similar skilled women in full-time employment. For the low-skilled, the regression results on trajectory coefficients are of a lower magnitude and generally statistically insignificant, with the exception of a 10% reduction for those moving in and out of work.

Table 13 reports the results of probit regressions for the likelihood of experiencing *negative* wage growth, or a reduction in hourly wage, over the period. Here we find that mothers in continuous part-time employment or following interrupted work pathways over this period are significantly more likely to record a loss in wages compared with similar women in full-time continuous employment. Women in part-time work are 11 per cent more likely to experience a reduction in wages than similar women in full-time employment and this risk increases to 14 for mothers that combine part-time and full-time work and to 15 per cent for women on “in and out” trajectories.

The regressions run separately by skill-level highlight, once again, that the “penalty” associated with part-time, mixed and interrupted employment trajectories is considerably higher for skilled women. In this case, skilled women in part-time employment have a 15 per cent higher probability of reporting a fall in wages and this probability increases to 23 per cent for skilled women on “in and out” pathways and to 24 per cent for skilled women that combine part-time with full-time work. All these results are statistically significant at the 1 per cent level. For low-skilled women, part-time, “mixed” and interrupted employment trajectories are associated with an 8 to 10 per cent higher probability of experiencing negative wage growth.

Table 12: Probability of experiencing wage growth above sample median (WGR>4%) (dprobit)

	All mothers	Low-skilled	Skilled
<i>Omitted trajectory: Full-time continuously employed</i>			
Trajectory: Part-time continuously employed	-0.059** (2.08)	-0.043 (1.22)	-0.077 (1.51)
Trajectory: Mixed PT-FT continuously employed	-0.097*** (3.30)	-0.054 (1.46)	-0.177*** (3.59)
Trajectory: In and Out	-0.115*** (2.94)	-0.097** (2.01)	-0.139** (2.02)
Age of respondent in years	-0.025* (1.69)	-0.026 (1.46)	-0.030 (1.06)
Age2	0.000 (1.64)	0.000 (1.33)	0.000 (1.08)
Ill health long-term	0.032 (1.08)	0.051 (1.40)	0.004 (0.07)
Child<4 years old	0.004 (0.13)	-0.014 (0.34)	0.017 (0.32)
Number of dependent children	0.012 (0.78)	0.006 (0.31)	0.035 (1.28)
Lone parent (Omitted: Couple)	-0.112*** (3.67)	-0.119*** (3.30)	-0.096* (1.65)
<i>Omitted tenure: Owner-occupier</i>			
Social tenant	-0.025 (0.67)	-0.034 (0.82)	0.000 (0.00)
Other (private tenant)	0.130** (2.54)	0.094 (1.54)	0.218** (2.30)
Newbornafter wave 1	0.043 (0.88)	0.019 (0.32)	0.094 (1.13)
GCSE a-c/Higher degree		-0.030 (0.80)	0.009 (0.17)
Maternity leave over the period	0.066 (1.15)	0.044 (0.59)	0.072 (0.79)
Occupational change over the period	0.031 (1.39)	0.020 (0.73)	0.056 (1.44)
Observations	2118	1418	700

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of z statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level;

*** indicates significance at the 1% level.

**Table 13: Probability of experiencing a reduction in hourly wages (WGR<0%)
(dprobit)**

	All mothers	Low-Skilled	Skilled
<i>Omitted trajectory: Full-time continuously employed</i>			
Trajectory: Part-time continuously employed	0.108*** (4.04)	0.078** (2.33)	0.148*** (3.13)
Trajectory: Mixed PT-FT continuously employed	0.142*** (5.06)	0.084** (2.38)	0.239*** (5.19)
Trajectory: In and Out	0.154*** (4.07)	0.109** (2.34)	0.228*** (3.42)
Age of respondent in years	0.018 (1.40)	0.018 (1.12)	0.022 (0.91)
Age2	-0.000 (1.53)	-0.000 (1.19)	-0.000 (1.02)
Ill health long-term	0.000 (0.02)	-0.024 (0.73)	0.044 (0.99)
Child<4 years old	-0.017 (0.57)	-0.009 (0.22)	-0.021 (0.47)
Number of dependent children	0.006 (0.45)	0.009 (0.56)	-0.008 (0.35)
Lone parent (omitted: Couple)	0.186*** (6.62)	0.204*** (6.05)	0.140*** (2.72)
<i>Omitted tenure: Owner-occupier</i>			
Social tenant	0.055* (1.67)	0.052 (1.39)	0.087 (0.91)
Other (private tenant)	-0.025 (0.57)	-0.009 (0.16)	-0.071 (0.94)
Newborn	-0.014 (0.32)	0.015 (0.28)	-0.064 (0.95)
GCSE a-c/Higher degree		0.018 (0.69)	0.067 (1.44)
Maternity leave over the period	0.000 (0.01)	-0.013 (0.19)	0.038 (0.47)
Occupational change over the period	-0.022 (1.12)	-0.019 (0.77)	-0.033 (1.00)
Observations	2118	1418	700

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of z statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level;

*** indicates significance at the 1% level.

5.2 *Employment Trajectories, Wages and Children's Age*

Table 14 reports the regression results on mothers' log wage at the end of the five-year period, controlling for initial wage and women's individual and household characteristics. Here we run regressions separately for women who have a new born in the first wave (2001); a youngest child aged between 1 and 4 years; a youngest aged between 5 and 10 years; and a youngest aged between 11 and 15 years.

No employment trajectory dummies are significant for mothers with a newborn in 2001, which may be due to the small sample size of this group. But for the three groups of mothers with children aged between one and fifteen years old, the trajectory coefficients are negative and significant, pointing to a negative association between part-time, mixed and interrupted employment trajectories and wages at the end of the period for women with children of different ages. Results vary somewhat in terms of magnitude and statistical significance. In particular, the apparent penalties are larger and most significant for mothers with a youngest child aged between 1 and 4 years: wages are 15-16% lower for women following interrupted or mixed employment patterns than for women in continuous full-time work, and 11% lower for those working consistently part-time. For mothers of older children penalties appear somewhat lower – between 7% and 10% for part-time work, 5% to 6% for mixed part-time/full-time, and 10% to 11% for movement in and out of work.

Tables 15 and 16, which show probit results for the probability of rapid and negative growth, present a similar picture. In both cases, the coefficients on the trajectory dummies are much larger and more significant for the 1-4 age group than for older groups. Combining part-time with full-time work or following an interrupted work trajectory results in a 25 per cent lower probability of recording a wage growth above the sample median for this group; for mothers in part-time work the reduction is 14 per cent. No results are significant for the 5-10 age group, but the in and out trajectory is associated with a 19% reduction in the probability of rapid wage growth for the mothers of the oldest group of children.

The likelihood of experiencing a reduction in wages also seems to be most strongly associated with trajectory for the mothers of the youngest children, with apparent penalties of 20-22%. Among mothers of older children, there is an increased likelihood of negative growth associated with mixed part-time/full-time pathways (11-12%) and with an interrupted work trajectory (12-18%). Interestingly, the risk of negative wage growth appears no higher for steady part-time workers than for steady full-time workers among mothers of children over five.

Table 14: OLS regression on final log wage: By age of youngest child in 2001

	Newborn in 2001	Youngest child 1-4 (incl) years old in 2001	Youngest child 5- 10 (incl) years old in 2001	Youngest child 11- 15 (incl) years old in 2001
Initial wage	0.377*** (4.96)	0.385*** (10.64)	0.363*** (11.65)	0.305*** (9.48)
<i>Omitted trajectory: Full-time continuously employed</i>				
Trajectory: Part-time continuously employed	-0.093 (0.84)	-0.118*** (2.92)	-0.102*** (3.15)	-0.068** (2.09)
Trajectory: Mixed PT-FT continuously employed	0.050 (0.46)	-0.157*** (3.47)	-0.062* (1.85)	-0.054* (1.77)
Trajectory: In and out	0.089 (0.91)	-0.153*** (3.01)	-0.099** (2.13)	-0.108** (2.21)
Age of respondent in years	-0.058 (0.95)	-0.005 (0.19)	-0.033 (1.22)	-0.039 (1.25)
Age2	0.001 (1.07)	0.000 (0.39)	0.000 (1.34)	0.000 (1.37)
Ill health long-term	-0.150 (1.43)	0.014 (0.33)	0.005 (0.15)	-0.046 (1.46)
Number of dependent children	0.059 (1.31)	-0.007 (0.34)	-0.003 (0.16)	0.012 (0.64)
Lone parent (omitted: Couple)	-0.039 (0.16)	-0.056 (1.19)	-0.027 (0.78)	-0.034 (1.09)
<i>Omitted tenure: Owner-occupier</i>				
Social tenant	0.207 (1.12)	-0.161*** (3.01)	-0.141*** (3.41)	-0.054 (1.31)
Other (private tenant)	-0.388 (2.12)	0.027 (0.46)	-0.063 (0.95)	0.088 (1.47)
Low-skill (omitted: skilled)	-0.234*** (2.91)	-0.221*** (6.61)	-0.177*** (5.81)	-0.237*** (8.11)
Maternity leave (over period)	-0.123 (1.37)	0.105* (1.88)	-0.015 (0.14)	0.094 (0.31)
Occupational change over the period	-0.057 (0.77)	0.021 (0.71)	-0.023 (0.88)	-0.021 (0.82)
Additional new born over the period (after wave 1)	0.170* (1.74)	-0.028 (0.60)	0.093 (1.13)	0.003 (0.03)
Constant	2.281** (2.31)	1.560*** (3.81)	2.069** (4.07)	2.341*** (3.46)
Observations	110	588	742	558
R-squared	0.397	0.392	0.344	0.365

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of t statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level;

*** indicates significance at the 1% level.

Table 15: Probability of experiencing wage growth above sample median (WGR>4%) (dprobit): By age of youngest child

	Newborn in 2001	Youngest child 1-4 (incl) years old in 2001	Youngest child 5- 10 (incl) years old in 2001	Youngest child 11-15 (incl) years old in 2001
<i>Omitted trajectory: Full-time continuously employed</i>				
Trajectory: Part-time continuously employed	0.127 (0.86)	-0.143** (2.41)	-0.033 (0.70)	-0.009 (0.17)
Trajectory: Mixed PT-FT continuously employed	0.200 (1.39)	-0.246*** (3.75)	-0.079 (1.61)	-0.037 (0.70)
Trajectory: In and out	0.084 (0.55)	-0.249*** (3.41)	-0.034 (0.50)	-0.191** (2.24)
Age of respondent in years	-0.304** (2.31)	-0.071* (1.91)	-0.023 (0.58)	-0.077 (1.40)
Age2	0.005** (2.34)	0.001 (1.63)	0.000 (0.48)	0.001 (1.35)
Ill health long-term	0.012 (0.09)	0.078 (1.21)	-0.070 (1.40)	-0.013 (0.23)
Number of dependent children	0.080 (1.16)	0.021 (0.68)	0.013 (0.48)	0.015 (0.44)
Lone parent (omitted: Couple)	Dropped	-0.241*** (3.61)	-0.090* (1.82)	-0.084 (1.56)
<i>Omitted tenure: Owner-occupier</i>				
Social tenant	0.132 (0.45)	-0.076 (1.64)	-0.061 (0.99)	-0.042 (0.58)
Other (private tenant)	0.179 (0.71)	0.181** (2.11)	0.041 (0.42)	0.145 (1.42)
Low-skill (omitted: Skilled)	-0.035 (0.33)	-0.076 (1.64)	0.051 (1.21)	-0.019 (0.39)
Additional new born over the period (after wave 1)	0.223* (1.69)	-0.012 (0.18)	0.144 (1.18)	0.063 (0.38)
Maternity leave over the period	-0.000 (0.00)	0.108 (1.33)	-0.008 (0.05)	Dropped
Occupational change over the period	-0.119 (1.20)	0.073* (1.65)	0.013 (0.35)	0.051 (1.16)
Observations	110	588	742	558

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of z statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level; *** indicates significance at the 1% level.

Table 16: Probability of experiencing a reduction in hourly wages (WGR<0%) (dprobit): By age of youngest child

	Newborn in 2001	Youngest child 1-4 (incl) years old in 2001	Youngest child 5- 10 (incl) years old in 2001	Youngest child 11-15 (incl) years old in 2001
<i>Omitted trajectory: Full-time continuously employed</i>				
Trajectory: Part-time continuously employed	-0.044 (0.35)	0.206*** (3.48)	0.059 (1.32)	0.023 (0.45)
Trajectory: Mixed PT-FT continuously employed	0.103 (0.78)	0.203*** (2.93)	0.119** (2.57)	0.111** (2.31)
Trajectory: In and out	0.187 (1.29)	0.219*** (2.84)	0.113* (1.73)	0.176** (2.21)
Age of respondent in years	0.324** (2.09)	0.049 (1.46)	0.053 (1.48)	0.102* (1.95)
Age2	-0.005** (2.08)	-0.001 (1.32)	-0.001 (1.58)	-0.001** (2.00)
Ill health long-term	0.155 (1.26)	-0.024 (0.42)	-0.047 (1.05)	0.018 (0.38)
Number of dependent children	-0.053 (0.95)	0.014 (0.52)	0.010 (0.43)	-0.003 (0.11)
Lone parent (omitted: Couple)	Dropped	0.247*** (3.86)	0.194*** (4.21)	0.154*** (3.21)
<i>Omitted tenure: owner-occupier</i>				
Social tenant	Dropped	0.141* (1.95)	0.069 (1.25)	0.043 (0.69)
Other (private tenant)	-0.012 (0.06)	-0.082 (1.11)	-0.016 (0.19)	0.011 (0.13)
Low-skill (omitted: Skilled)	-0.020 (0.23)	0.083** (1.99)	-0.065* (1.49)	0.066 (1.56)
Additional new born over the period (after wave 1)	-0.125 (1.20)	0.056 (0.92)	-0.118 (1.14)	-0.164 (1.25)
Maternity leave over the period	-0.016 (0.17)	-0.043 (0.61)	0.173 (1.07)	Dropped
Occupational change over the period	0.169** (2.08)	-0.002 (0.06)	-0.050 (1.45)	-0.050 (1.31)
Observations	110	588	742	558

Source: FACS 2001-2005.

Note: The sample is restricted to mothers with a reported wage in 2001 and 2005.

Absolute value of z statistics in parentheses.

* indicates significance at the 10% level; ** indicates significance at the 5% level;

*** indicates significance at the 1% level.

6. Summary and Discussion

The first main finding of this paper is that mothers are following a wide variety of employment pathways. Over the 2001-2005 period we found that only 16% were in full time employment (more than 30 hours a week) in every wave. At the other extreme, only 22% were at home in every wave. In between lie the majority – working part-time, moving from part-time to full-time work or the reverse, moving in and out of employment altogether. At one level, this is scarcely surprising and confirms findings from other studies, but it is also worth emphasising as it belies the assumptions and rhetoric that continue to underpin policy in this area – that the biggest challenge to increasing maternal employment is to get mothers who are outside the labour market through the door into a job.

A second finding is that mothers in the survey were more likely to follow the part-time, mixed and interrupted trajectories rather than to work steadily full-time if they had fewer qualifications, more or younger children, or were social tenants rather than owner-occupiers. These pathways were also more likely for those in skilled trades, sales or elementary occupations rather than in managerial or professional positions. Again, little here is unexpected but it reminds us that mothers in these categories may require particular support to sustain employment over time. *Especially* for women with these characteristics, the initial move into work is just a start. (Interestingly, however, being a lone parent lowered the likelihood of following one of the irregular work trajectories among those who did work at all: controlling for other characteristics lone mothers were more likely than coupled mothers to work full-time than to follow part-time, mixed or interrupted pathways.)

The importance of a policy focus on employment sustainability is underlined by the paper's third main finding, which is that the work trajectory appears to make a significant difference to women's wages in the medium term. Overall, mothers in stable full-time work between 2001 and 2005 recorded median wage growth of 4.7% a year compared to inflation of 2.6% on average over this period. Wages grew faster for higher skilled mothers – 5.3% a year for those with at least A-level equivalent compared to 4.4% for those with GCSEs at most – but this is nevertheless a respectable and real rate of growth in both cases. But mothers working part-time or following mixed or interrupted trajectories experienced significantly lower wage growth. Controlling for the 2001 wage as well as individual and household characteristics, 2005 wages were 9% lower for women who had been in continuous part-time work, 8% lower for women who had mixed full-time and part-time, and 12% lower for women who had moved in and out of work. Women following these trajectories were also significantly less likely to experience wage growth above the sample median – 6% less likely for part-timers, 10% for those combining full and part-time, and 12% for those moving in and out of work – and were more likely to experience negative wage growth (11%, 14% and 15% respectively).¹³

¹³

All results referred to in this section are significant at the 5 per cent level at least.

The differences are however less stark for mothers with fewer qualifications. Among mothers with at least A-level qualifications, all three non full-time work trajectories are associated with a reduction in the 2005 wage of between 13-14%. In contrast, for lower skilled mothers, moving in and out of work appears to carry a penalty of 10%, but the penalty associated with working part-time or mixing part-time and full-time work is much smaller at 5%. This suggests that continuous work is important all round, but that for the low-skilled part-time is not so much worse than full-time; sustained part-time work is more financially rewarding than an interrupted pathway.

This story is supported by the results for particularly rapid wage growth, which for the low-skilled is affected by an in-and-out trajectory (-10%) but not by the other two pathways. However, all three pathways appear to increase the likelihood of experiencing a loss in wages for the low-skilled, although the coefficients in each case are considerably smaller than for the higher-skilled women (8% compared to 15% for part-time; 8% compared to 24% for mixed pathway; 11% compared to 23% for movement in and out of work).

The paper's final set of findings regard the way in which children's age affects the association between pathway and wage growth. The wage "penalty" associated with all three non-full time trajectories was found to be highest for mothers of younger children (aged 1-4 in 2001), although smaller impacts of all three pathways on wages in 2001 remain in the older age groups. In explaining particularly rapid wage growth, *all* pathways were significant for mothers with a young child but *none* were significant for mothers of 5-10s and just one, the in-and-out trajectory, for the 11-15 group. Finally, while mothers of children of all ages appear to be more likely to experience wage reductions if they follow mixed or interrupted pathways, the impact is larger for mothers of the youngest children, and there is apparently no negative effect associated with part time work other than for this group. Looking at the results overall, consistent part-time work appears to carry a smaller penalty than more disrupted pathways, as identified in the earlier regressions.

What might be behind the larger apparent penalties experienced by mothers of younger children? A plausible explanation is that this is simply due to a selection effect. Mothers who work full-time and continuously in the pre-school years are a smaller and more select group than mothers who work full-time later on, and it is very likely that they do so because they are in jobs that offer particularly good wage prospects. As Table 9 showed, wage growth is much higher for mothers working full-time with a young child than for mothers of older children working full-time. This higher standard could explain the larger differences being picked up for this group of mothers, pointing to the need for particular caution in interpreting these results. The differences highlighted earlier in the size of the various penalties by skill level seem less vulnerable to this concern.

7. Conclusions

Two main implications for policy emerge from the analysis in this paper. First, the paper points to the existence of a “part-time” wage growth penalty, supporting the findings of researchers looking at immediate wage gaps (e.g. Manning and Petrongolo, 2008; Connolly and Gregory, 2008) as well as researchers examining the “motherhood gap”, who identify the switch to part-time work as an important factor behind lower long-term earnings for mothers. We found that mothers continuously employed part-time over the period and mothers who combine part-time and full-time work experience on average lower wage progression than similar women in full-time employment; they are less likely to experience wage growth above the median, and are more likely to see wages fall.

On the one hand, this may be seen as indicating that mothers should be encouraged and enabled to increase their working hours, but other studies suggest that working part-time when children are young is often a positive and considered preference. For instance, British mothers working part-time in the European Social Survey were considerably more likely to say they would like to cut their hours than to increase them (Lewis and Huerta, 2008). So this finding could also be interpreted as further support for demands to improve the quality and pay of part-time jobs and the promotion prospects of part-time workers.

At the same time, the paper points to a difference between skilled and non-skilled workers in regard to the penalties attached to different forms of working. It is for skilled workers that the part-time penalty is most worrying: two to three times higher for final wage than the part-time penalty for less qualified workers. This may be because the penalty is in large part due to downgrading from more demanding into more flexible jobs which are less well-rewarded, and for the higher-skilled there is further to fall. Perhaps more surprisingly, for the skilled group of women the part-time penalty is as high as the penalty attached to movement in and out of employment.

For lower-skilled women, in contrast, moving in and out of work carries a higher penalty than working part-time or combining part-time and full-time work, pointing to job sustainability as the more important issue. This brings us to the second policy implication, which concerns the importance of keeping a policy focus on the ability of workers to maintain employment once through the door. While 45% of women in our sample are observed in some form of paid employment in every year, 22% are observed exiting or moving in and out of work – as high as the proportion who show up as at home throughout – while being low-skilled increases the odds of following an interrupted work trajectory.

The later years of the last Labour Government saw a growing emphasis on issues of sustainability and progression in work, but there is a danger that under the current Coalition this is slipping, with a renewed and dominant focus on short-term conditionality. Coalition rhetoric suggests less interest in progression out of low-pay

than Labour rhetoric did: low-paid work is promoted explicitly now not as a route to better prospects but as more acceptable to society than a life on benefits, at least once children reach five. However, wage progression must surely be in the long-term interests of the Treasury, as well as crucial to the living standards and well-being of the individuals involved.

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