Part-time Employment Can Be a Life-time Setback for Earnings:

A Study of British Women 1975-2001

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Abstract

Across the developed world women are entering the labour force in substantial numbers, led by, and reinforcing, their rising educational attainment. Their gains in human capital, through education and increased labour market attachment, are narrowing the gender pay gap.

The situation in the UK is unusual in two respects. Firstly, women's employment is heavily concentrated in part-time work; 45 percent of working women in Britain now work part-time, particularly in their 30s, to combine family responsibilities with paid employment. Secondly, labour market outcomes for women working part-time are exceptionally poor; part-time jobs are concentrated in low-wage, low-status occupations, with limited opportunities for career advancement. The narrowing of the gender pay gap applies only to full-time work, with the gender pay gap increasingly characterised in terms of 'the part-time pay penalty', and women working part-time 'the new underclass'.

In the spirit of the 'scarring' literature on the effect of an unemployment spell on subsequent earnings we focus on the implications of the switch to part-time work and time spent working part-time for women's future earnings. We use a 25-year unbalanced panel with around 60,000 women each year. We identify several channels. The accumulation of work experience is attenuated during part-time employment; more significantly, we find that the wage return to part-time experience is substantially lower than for full-time work, even on a full-time equivalent basis. Moreover it takes a convex profile instead of the standard concave pattern. This paradox is resolved when part-time experience is differentiated by the skill level of the job: part-time experience in a high-skill job brings a positive wage return; in lower-skill jobs it gains a positive return only at longer durations. The switch from full- to part-time work itself has a marked negative effect on earnings, in evidence for several years after the switch. The return to full-time work, conversely, has a positive impact, reinforcing the implication of a wage disadvantage to part-time status. Changing employer on the switch to part-time work adds further to the pay disadvantage, in contrast to its insignificant effect for working women in general. Most significantly, particularly for more educated women, a part-time job may be not simply a reduced-hours version of a previous full-time job but may involve occupational downgrading. One-quarter of women in Britain who switch from full- to part-time work move to an occupation where the average level of education is below that of their previous full-time job. This includes over 20 percent of professional women, half of whom move to jobs classified as low-skilled. As they downgrade occupationally women receive the lower pay of the less skilled occupation, reflecting the implied underutilisation of their human capital. Our estimates indicate that a woman in a high-skilled occupation who switches to part-time work, downgrading to an intermediate-level occupation for five years, and then returning to full-time work in the same job, will have permanently lower earnings and earnings growth; after five years in part-time work and a further five back in full-time work her earnings will be almost 40 percent below their potential level had she remained in full-time work in her high-skilled job.

This underutilisation of women's human capital in part-time jobs is a major issue for economic efficiency, while its impact on their future earnings trajectory and the rewards to their human capital is a challenge to gender equity.

Part-time Employment Can Be a Life-time Setback for Earnings:

A Study of Women in Britain 1975-2001

In Britain, as in the other advanced economies, women have been entering the labour force in substantial numbers over recent decades. This rising commitment to employment, and the enhanced economic status which it brings, is underpinned by, and in turn reinforces, their rising educational attainment; girls and young women now outperform their male counterparts at all levels, from age six to higher education, often by substantial margins. Women's gains in human capital, through education and increased labour market attachment, are narrowing the gender pay gap, again as in other economies. The British situation is, however, unusual in two respects. Firstly, women's employment is heavily concentrated in part-time work. Around 45 percent of working women in Britain now are working part-time, a higher proportion than in any other advanced economy with the exception of the Netherlands. This reflects the role of part-time work as a major route through which women combine family responsibilities with paid employment, particularly during the peak childcare years, in the face of the limited availability of affordable, good quality childcare. Secondly, and particularly strikingly, labour market outcomes for women working part-time are exceptionally poor. As is widely documented, part-time jobs, which are predominantly held by women, are concentrated in low-wage, low-status occupations, where little training is provided and opportunities for career advancement are limited. The narrowing of the gender pay gap applies only to full-time work. Not only have women working part-time failed to match the gains made by their full-time peers, but the deterioration of their relative position has led to the designation of women working part-time as 'the new underclass' (Humphries and Rubery, 1995), with the gender pay gap increasingly characterised in terms of 'the part-time pay penalty' (Manning and Petrongolo, 2008).

The focus of this paper is the part-time pay penalty, viewed in a life-cycle perspective. It is clear that less educated women, facing lower labour market returns, have less incentive to commit time to the labour market. Further, part-time work reduces the accumulation of experience and therefore future earnings. While relevant, both of these explanations are insufficient. With 45 percent of women in employment working part-time self-selection is inadequate support for a 'new underclass'. Rising educational attainment is an offsetting force to the shortfall in work experience. More tellingly, crowding into low-wage occupations, traditionally viewed as a major source of the gender pay gap, can now be seen in sharper perspective. By exploiting longitudinal data Connolly and Gregory (2008) establish that one-quarter of women in Britain who switch from full- to part-time work experience occupational downgrading, moving to an occupation where the average level of education and qualification of those working there is below that of their previous full-time job. This includes over 20 percent of professional women, half of whom move to jobs classified as low-skilled, while two-thirds of nurses who leave full-time nursing become part-time care assistants, utilising only a limited portion of their specialised skills. As they downgrade occupationally women receive the lower pay of the less skilled occupation, reflecting the implied underutilisation of their human capital.

We trace the implications of the switch to part-time work for women's earnings trajectories over subsequent years. Before the arrival of children over 90 percent of working women are employed full-time, and women's hours of work are only marginally below men's. The move into part-time work typically takes place following the birth of the first child, when women are in their late 20s. At that point participation in full-time work drops sharply, partially replaced by part-time work; from a very low level participation in part-time work jumps initially to over 30 percent, then continues to increase over the following ten years. Part-time work thus features most prominently when women are in their 30s, a stage of significant career-building and earnings growth among full-time workers. For many women part-time work is only a temporary state, although often of some years' duration, with a substantial proportion then moving back into full-time work.[1] This makes its impact on subsequent earnings levels and trajectories a major concern.

The present work builds on our previous analysis of occupational downgrading to examine how far a spell in part-time work is damaging to women's subsequent career progression. Several channels can be identified. The rate of accumulation of work experience is clearly attenuated for the duration of part-time employment, which can be expected to have a permanent adverse effect. When the switch to part-time work also involves a change of employer, as commonly occurs, firm-specific capital is lost. Most challengingly, particularly for more educated women, when a part-time job is not simply a reduced-hours version of a previous full-time job but involves occupational downgrading, the opportunity for career-building is damaged. In the spirit of the literature on the 'scarring' effect of an unemployment spell on subsequent earnings we focus on the implications of the switch to part-time work and the time spent working part-time for women's future earnings, including the impact of a change of employer and occupational downgrading where these have accompanied the switch to part-time work.

Using data drawn from a 25-year unbalanced panel dataset which records the earnings, hours of work and occupations for around 60,000 women each year, we find that the wage return to the human capital accumulated in part-time work is clearly lower than for full-time work, even when time spent in part-time work is adjusted to a full-time equivalent basis. Moreover the wage return does not follow the standard concave profile of the return to full-time work experience, but takes a convex profile. This paradox is resolved when experience in part-time work is differentiated by the skill level of the job held: when it is in a high-skill job part-time experience brings a positive wage return; in lower-skill jobs part-time experience gains a positive return only at longer durations. The switch from full- to part-time work itself has a marked negative effect on earnings, in evidence for several years after the switch. The return to full-time work, conversely, has a positive impact on earnings, reinforcing the implication of a wage disadvantage to part-time status. Changing employer on the switch to part-time work adds further to the pay disadvantage of part-time work, in contrast to its insignificant effect on average for other working women. Of particular significance, we find a strong additional wage penalty where the switch to part-time work involves occupational downgrading, and, even more strongly, occupational downgrading accompanied by a change of employer. Simulations indicate that a woman in a high-skilled occupation who switches to part-time work, downgrading to an intermediate-level occupation for five years, and then returns to full-time work while continuing

in the same job, will have permanently lower earnings and earnings growth; after five years in part-time work and a further five back in full-time work her earnings will be almost 40 percent below their potential level had she remained in full-time work in her high-skilled job.

In the context of women's rising educational attainment and increasing commitment to the labour market, with 45 percent of women currently working part-time, and two-thirds working part-time at some stage in their adult life-cycle, the underutilisation of their human capital in part-time jobs is a major issue for economic efficiency, while its impact on their future earnings trajectory and the rewards to their human capital is a challenge to gender equity.

The paper is structured as follows. Section 1 describes our dataset. Section 2 profiles the role of part-time work in the first half of the life-cycle of women born in 1958 or later. In Section 3 we present estimated human capital wage equations focusing on the respective contributions of full- and part-time work. Section 4 considers the occupational dimension. Section 5 concludes.

1. The New Earnings Survey Panel Dataset (NESPD)

To trace earnings trajectories over a period of time individual-level panel data is required. The ideal panel dataset would be large and long, giving complete work histories and a rich set of personal and household characteristics paralleling labour market status. Since the switch to part-time work is a relatively infrequent event, involving only around 5 percent of working women each year, 9 percent of those in full-time work, a large sample is required to generate a reasonably large numbers of switches. Since the spell in part-time work may last for a period of years it is important to observe a significant portion of the life-cycle. Work experience is a crucial dimension for the analysis and must be observed, in both full- and part-time status; it cannot be adequately imputed. A woman's labour supply decisions, including the choice of part-time work and its duration, are influenced by her educational level and household situation (presence of a partner, number and ages of children) which should therefore be controlled for in the analysis. No available dataset meets these requirements in full. For the best overall coverage we use the New Earnings Survey Panel Dataset (NESPD).

The NESPD for Britain is the panel dataset generated from the sequential annual New Earnings Surveys (NES), which survey the pay, hours of work, occupation and other employment details of a 1% sample of all employees. The annual sample for the NES is identified by a specified pair of terminating digits in the National Insurance number issued to each individual on leaving school. This generates a random sample of individuals of all ages, in all occupations and types and sizes of firms. Since individuals retain their NI number for life and the same terminating digits are used to draw the sample in each year, the cross-sectional sampling frame automatically generates a panel; this forms the New Earnings Survey Panel Dataset (NESPD).

The NESPD offers a number of major advantages for present purposes. The sample is very large, over 74,000 women each year. The Statistics of Trade Act, under which the Survey is conducted, makes return of the Survey questionnaire compulsory, providing a high response rate. The process of sample location, through employers' Pay-As-You-Earn (PAYE) income tax returns to the tax authorities in each year, automatically maintains the panel by adding a random sample of new workers each year as they enter employment. The sample location process ensures that individuals who have been out of the Survey in any period, due to non-employment or a failure of sampling, are re-identified in subsequent employment, minimizing cumulative attrition. Pay and contractual hours of work are taken from the employer's payroll records, which should ensure accuracy in the classification of part-time workers and in the measurement of hourly earnings in full- and part-time work, avoiding misreporting and recall bias. The length of the panel, up to 27 years, gives the opportunity to trace women's earnings and occupational trajectories for over half the employment life-cycle for older cohorts along with substantial periods for younger cohorts.

However, some limitations of the NESPD should also be noted. Part-time workers are acknowledged to be under-sampled in the NES. The location of the sample through the employer's annual PAYE return means that employees falling below the PAYE tax threshold, who need not be included in their employer's return, may not be identified for the Survey. Those low-paid in terms of total earnings are most likely to be working part-time.[2] Employers, however, are increasingly supplying their tax returns by computerised excerpt from their payroll

records, automatically including low-paid workers. More significantly, at least a month elapses between the date at which the individuals for the NES sample are located and their employer identified from the PAYE returns, and the Survey pay week. Those changing employer in this interval are lost to the sample; even where there is a direct job-to-job move the previous employer does not have pay information for the relevant week, while the new employer cannot be identified. To the extent that women switching to part-time work are frequently also job changers this group will be under-sampled. The NES is a spot survey, relating to a specified pay week in April of each year. By recording contractual hours only for the interview week workers may be misclassified relative to their average status over the year, and within-year spells of full- or part-time work will be missed. Finally, as an administrative dataset drawn from payroll records, the NES contains only limited information on personal characteristics - in a typical year only the individual's sex, age and occupation. Important characteristics on which information is lacking are educational attainment and qualifications, as well as household or family circumstances.

Since we wish to capture the effect of a spell in part-time work on women's subsequent earnings on a life-cycle perspective we restrict the sample to women whose entire labour market experience to date can be observed. The selection is therefore confined to the birth cohorts of 1958 or later; the oldest women in the sample are thus aged 16 (the minimum school-leaving age) in 1975, and the sample follows them until age 43 in 2001. The youngest potentially are the birth cohort of 1985, aged 16 in 2001. The crucial advantage of this restriction is that years of labour market experience and employer tenure, in full- and part-time work separately, can be calculated directly from years present within the Survey, although any failures of sample location will make these underestimates. However, the information in the Survey does not allow us to identify those still in full-time education, where greatly increased numbers have taken part-time jobs in recent years. To eliminate as far as possible casual part-time jobs for students women are selected into the sample only from the first year in which they are recorded in full-time work; all prior observations of part-time jobs are dropped (although they are counted in one variant of the measure of work experience). This selection criterion also implies that we eliminate from the sample those women who are only ever observed in part-time work. The majority of these are in the younger cohorts, consistent with on-going education; but we also discard some older women

with substantial durations in part-time work. In previous work we established that part-time work provides dual tracks for women in the labour market: supporting employment continuity during the childcare years until full-time employment is resumed, or alternating with non-employment in a part-time/non-employment cycle (Connolly and Gregory, 2006)[3]. Our current concern is with the earnings trajectory of the former group only. To reinforce this perspective on women with strong labour market attachment the sample is further restricted to those present in the Survey for a minimum of three years.

Meaningful comparisons of pay between full- and part-time employment require earnings to be measured on an hourly basis. In the NES normal basic hours of work are reported in response to the question:

> *Basic weekly hours of work*. During the pay-period, what was the weekly average number of hours paid at basic rate of pay?

These are therefore contractual paid hours as recorded in the payroll department. In line with most British and OECD (but not US) practice part-time work is defined as fewer than 30 work hours per week.[4] The Survey reports gross weekly earnings and overtime earnings for the Survey week. Our measure of hourly earnings is gross weekly pay, excluding overtime pay, divided by normal basic hours. This is deflated to 2001 prices using the RPI.

An important marker in the Survey records where the individual's pay has been affected by absence, including cases of zero pay (which may be periods of unpaid maternity leave beyond the statutory period of paid leave). Individuals whose pay is affected by absence or who have zero pay are retained in the panel sample but with their pay recorded as 'missing'. Extreme high or low values of hourly earnings are trimmed, to take account of possible errors of measurement or coding. At the top end this involved a very small number of observations in excess of ten times the year's median. At the bottom hourly earnings below 25% of the median have been dropped.

In our previous analysis of occupational downgrading (Connolly and Gregory, 2008) we constructed a 15-occupation ranking, based on the average level of educational attainment and qualifications of men and women working there on a full-time basis. Since this is too detailed for

current purposes, we aggregate these to define three levels of occupation: high, medium and low-skilled. The basis for the three-way classification is broadly that low-level occupations are those where the average age of completing education is 16, the legal minimum; medium-level occupations are held by individuals completing education at ages 17-18 i.e. with final-level high school qualifications or a comparable period of vocational training; occupations typically held by those educated beyond age 19 are classified as high-level. Indicative occupations are:

High-skill occupations - major groups 1-3 of SOC90, and occupations 1-6 of Connolly and Gregory (2008): corporate managers and administrators; service industry managers; educational, legal, medical and other professionals; teachers; nurses; paramedical associate professionals.

Intermediate-skill - major groups 4, 6 and 7 of SOC90, occupations 7-11 of Connolly and Gregory: buyers and sales representatives, clerical and secretarial occupations, skilled trades, care workers.

Low-skill - SOC major groups 5 and 8, Connolly and Gregory occupations 12-15: sales assistants, waiters, bar staff, shelf-fillers, drivers, domestic and office cleaners.[5]

The total sample is therefore 596,160 observations on 62,061 individuals. Individuals are in the Survey between three and 27 years, at ages 16 to 43, and for an average of 9.6 years. Loss of pay due to absence or other factors affects 14.0 percent of the individual-year observations.

2. The profile of full- and part-time work

The age-profile of engagement in part-time work by working women is shown in Chart 1 for seven four-year age cohorts, from their first record in full-time work. Two features are immediately worth note. From the time the women reach their later 20s participation in part-time work shows remarkable similarity, even across birth cohorts separated by up to 20 years. At age 27, 17.1 percent of the birth cohort of 1958-62 who were in work were working part-time, closely tracked by 18.0, 19.0, and 20.6 percent through to the birth cohorts of the mid-1970s. This convergence is maintained over the remaining available segments of the life-cycle. Secondly, but of less relevance for current purposes, the proportion of young women working part-time has increased steadily across the birth cohorts, from 3 percent at age 21 among those

born around 1960 to 9 percent among those born around 1980. This supports our rigorous initialisation of selection into the sample by a first appearance in full-time employment, but also indicates that much more interleaving of work and continuing education is now taking place.

[Chart 1 about here]

Since the role of part-time work remains so constant across birth cohorts we analyse this in more detail only for the longest cohort, those of 1958-62. The basis for the Survey means that women in this birth cohort may enter, leave and re-enter the Survey at any time. Table 1 shows that, for this age-cohort, the total numbers recorded in work in the Survey peaked at age 19-22. In the early working years full-time work predominates; it then declines steadily through the childcare years until beginning a minor upturn as the women reach their 40s. Part-time work rises sharply as women move through their 20s and into their 30s, peaking at ages 35-38 before beginning to decline. Between the ages of 30 and 43 well over one-third of working women work only part-time, while over the four years at ages 35-38 fewer than half of working women engage in full-time work throughout. Notably, even within a four-year window as many as one woman in seven may engage in both full- and part-time work.

[Table 1 about here]

These patterns are confirmed by the age-profile of switches between full- and part-time work. Table 2 illustrates this for each of the birth cohort groups. In total 50,753 individual-year observations (8.5% of the total) involve switches of status. 70 percent of these involve a switch from full- to part-time work with 30 percent in the reverse direction (reflecting uncompleted part-time spells at age 43 or younger). The number switching from full-to part-time work peaks strongly at ages 27-34 before dropping back. The numbers making the reverse switch from part-time back to full-time work peaks rather later, at age 35-38, but by the time they are in their early 40s more women are switching from part-time back to full-time work than in the reverse direction.

[Table 2 about here]

A well-established feature of part-time work is its over-representation in low-skill jobs. The distribution of women in full- and part-time work across occupations at the three levels introduced above is shown in Table 3. The proportion employed in high-skill occupations is always higher for women working full-time than among part-timers, while the reverse applies for low-skill occupations. The rise in general levels of educational attainment is reflected clearly in the trends in skill-structure; for both full- and part-time work the proportion of women in occupations characterised by high levels of education has been rising, while the proportion in low-education occupations has been falling. The trends for the two groups are, however, quite distinct. While the proportion of women in full-time work who are employed in high-education occupations has risen strongly, more than tripling over the 20 years, the proportion among part-timers has barely changed since the mid-1980s. Women working part-time have largely failed to share in the increasing skill-bias of the occupational structure.

[Table 3 about here]

3. Work Experience and Earnings

Since our observations are an unbalanced panel and we lack information on individual educational attainment we treat this as time-invariant within our observation period and estimate human capital wage equations using individual-level fixed effects. Table 4 reports the initial variants of this.

The first columns give the minimal standard human capital formulation, where (the logarithm of) the real wage is related to years of work experience and their square, and tenure and its square, plus a dummy variable for part-time status. All variables are highly significant. Part-time status carries an average (intercept) pay penalty of 11.2 percent (a log difference of 0.106); this result is in line with the common findings in the literature.

The second columns differentiate work experience and tenure between their full- and part-time components. Again all variables are highly significant. The return to the marginal year of full-time work is very close to the return to all work experience in the previous variant, and the return to full-time tenure similarly. These suggest that the full-time component is dominant in determining the wage. The striking result, however, is that the return to part-time experience reverses the concave profile for full-time work; part-time experience gives a positive return only after several years of at best a flat, more closely a falling, profile. When work experience is differentiated in this way the average pay penalty for part-time status is cut by almost three-quarters, to just 3 percent, and with its significance substantially reduced. A richer description of work experience makes a major contribution to 'explaining' the part-time pay penalty.

[Table 4 about here]

The most striking results are from specification three, where full- and part-time work experience are further categorised by the skill-level of the occupation in which they were acquired. Full-time experience in a higher-level occupation gives a strong upward earnings profile, reaching a maximum after 16 years, or in the late 30s for the highest level occupations (those requiring education and training beyond age 18) and after 15 years, in the early 30s, for the intermediate-level occupations (requiring education at least to age 18). The profile for full-time experience in low-skill occupations is flatter and reaches a maximum earlier, after 13 years, or in the late 20s for those who left school at the minimum leaving age. The return to part-time work experience is very different. Where it is gained in a high-level occupation it gives the same convex profile as full-time experience but at a lower marginal return. Part-time experience in intermediate or low-skill jobs, on the other hand, maintains the concave profile, yielding a positive marginal return only after 6-7 years. With this further elaboration the (intercept) pay penalty to part-time work falls further; while still statistically significant it is no longer economically compelling.

A central question which we wish to address concerns the impact on earnings of a switch between full- and part-time status. Is there a parallel with the 'scarring' effect of unemployment on future earnings?[6] Table 5 adds to the previous extended human capital specification dummy variables for the switch, in both directions, between full- and part-time work. In the light of the

evidence from the 'scarring' literature of the potential persistence of these effects both switch of status variables are included with lags of up to five-years. The switch to part-time work imposes an immediate penalty of approximately 7.1 percent; the penalty persists over at least four years, diminishing monotonically. The switch from part-time work back to full-time, on the other hand, is less well determined; it involves a small premium (after the first year), and again dies away in under five years. With the introduction of the switch of employment status the intercept variant of the part-time pay penalty becomes insignificant, and the effects of the work experience variables are essentially unchanged.

[Table 5 about here]

4. Job and occupational change with the switch to part-time work: their impact on earnings

The pay return to job-changing is a contentious issue.[7] Clearly it involves the sacrifice of any return to tenure, deriving from firm-specific human or match capital. Against this, many job changes are made for higher financial reward; but many also, particularly in the present context, are made as part of an optimisation process where other considerations than financial return obtrude: shorter and/or more flexible working hours, less travel, fewer responsibilities. *A priori* the impact of job changing is unclear; it is particularly so for women in the context of the switch between full- and part-time work. In specification five a job change itself has a very small effect, probably reflecting the balance of opposing roles. But when the job-change accompanies the switch the part-time work the combined effect is a substantial pay loss, around 12.9 percent, again persisting, at a steadily diminishing rate, for up to five years, although at the same time the impact of the switch to part-time work is reduced. Not unexpectedly, job change claims part of the return to tenure. The returns to experience are unaffected, and the part-time intercept remains insignificant.

For most women changing occupation when moving between full- and part-time work involves occupational downgrading. From our three-level occupational classification we construct the variable 'downgrade', indicating where any occupational change with the switch of employment

status involves a move down this three-level ranking. The results of adding this to the specification above are shown in Table 6, firstly adding 'downgrade' itself (specification six) and then 'downgrade' in conjunction with job change (specification seven). Specification 6 shows that occupational downgrading is a very significant further contributor to the wage loss on switching to part-time work. Switching to part-time work with a job change continues to incur an average wage penalty of 12.6 percent to which occupational downgrading adds a further 9.1 percent. Downgrading with a job change (specification seven) divides the effect between the two, adding only marginally to the total effect.

[Table 6 about here]

The results in Tables 4-6 show that part-time work has an adverse effect on women's earnings through several channels; the part-time pay penalty is not a single effect but has multiple sources. The rewards to work experience and, to a lesser extent, tenure, are much lower for part-time than for full-time work. This gap is noticeably greater than the difference in hours worked. The average hours worked by part-timers, 17.7 per week, are just under one-half of the average 36.9 hours worked by full-timers; measuring work experience on a full-time-equivalent basis is far from eliminating the differential return. The wage penalty from this is permanent. It is reinforced by a long-lasting, although diminishing, penalty to the switch in status itself, accentuated if the switch in employment status also involves a change of employer or, particularly damagingly, occupational downgrading.

These various effects are illustrated in the simulations in Chart 2. The baseline case is a woman continuing in a high-skill occupation with her current employer. Her earnings trajectory rises as she accumulates high-skill work experience and tenure, gaining 6.5% in the first year and 55% over the ten years. The next two trajectories trace the earnings path of a woman who switches to part-time work in year 0, works part-time for six years (the sample average) still in a high-skill job, and then returns to a full-time, high-skill job. In the first case she remains with the same employer throughout. Her earnings then take the slightly lower trajectory, reflecting the lower return to part-time high-skill experience and tenure; on return to full-time work she catches up with her counterpart who had continued in full-time work throughout but is now experiencing the

diminishing returns to extended experience. In the second case she changes employer, experiencing an immediate pay setback of 6.8%, but this diminishes to zero after four years. Again, the return to part-time experience, even high-skilled, keeps the trajectory below the full-time path through the part-time years; but the return to full-time work brings the higher return to early full-time experience, closing the gap against the diminishing marginal return to full-time experience.

[Chart 2 about here]

The remaining two trajectories involve occupational downgrading, in the first case from high to medium skill, and in the second from high to low skill; each case involves an initial change of employer but no change of employer or from the downgraded skill level on returning to full-time work. In each case a pay gap of over 16% opens up immediately due to the downgrade and change of employer. Thereafter the lower returns to part-time experience in the medium or low-skill occupations keeps the trajectory lower, creating a widening gap. Even with the return to full-time work, the failure to reverse the occupational downgrading of the part-time years keeps the pay trajectory low. Not only does the gap to the full-time trajectory never close; after ten years it has widened to almost 40%.

5. Conclusions

The pay penalty associated with part-time work is conventionally estimated by a simple indicator variable recording part-time employment status. In this paper we have analysed a range of channels through which this effect operates. Experience in part-time work is very poorly rewarded. Part-time experience in a high-skill occupation gives a wage return well under half of that to full-time experience. Part-time experience in medium- or low-skill occupations yields a positive marginal return only after 6-7 years. But the biggest pay setbacks come when the switch to part-time work involves a change of employer and downgrading in the skill level of the occupation. These setbacks, carried forward by the negligible returns to experience in lower skill occupations, lead to a widening of the gap. Even a return to full-time work at the lower skill level leaves the gap continuing to widen.

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The implications of this analysis for women seeking to balance family responsibilities with continued employment through part-time work are clear:

- retain a high-skill job, to continue to receive a return to work experience
- remain with the current employer
- avoid lower-skill jobs where work experience is largely unrewarded
- above all, avoid occupational downgrading.

Unfortunately the combination of the switch to part-time work with a job change and downgrading to a lower level occupation is all too common, and each component of it exacerbates the adverse trajectory of pay for part-time work.

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Table 1 Full- and Part-time Profile by Age-group: Birth Cohorts 1958-62

| Age-group | Total | Numbers | | | Percentages | | |
		Full-time only	Part-time only	Mixed	Full-time only	Part-time only	Mixed
15-18	10664	10582	-	82	99.2	-	0.8
19-22	13913	13061	258	594	93.9	1.9	4.3
23-26	12555	10548	1154	853	84.0	9.2	6.8
27-30	11789	7681	2711	1397	65.2	23.0	11.9
31-34	11817	6152	4056	1609	52.1	34.3	13.6
35-38	12104	5723	4465	1916	47.3	36.9	15.8
39-43	11263	5785	4201	1277	51.4	37.3	11.3

Table 2 Switchers between Full- and Part-time Work, by Birth Cohort and Age-group

Birth cohort

Age-group	1958-62		1963-67		1968-72		1973-78		1978-83	
	full- to part-time	part- to full-time	full- to part-time	part- to full-time	full- to part-time	part- to full-time	full- to part-time	part- to full-time	full- to part-time	part- to full-time
15-18	82	12	96	13	108	7	84	9	77	8
19-22	827	231	908	291	1040	327	921	308	364	148
23-26	1736	443	2289	718	2391	853	1381	652	34	37
27-30	3107	872	3295	1069	2934	1239	321	164		
31-34	3154	1343	3386	1593	956	464				
35-38	2718	1945	1401	1006						
39-43	1735	1656								
All ages	13359	6502	11375	4690	7429	2890	2707	1133	475	193

Total switches	Full- to part-time	35 345
	Part- to full-time	15 408
	All	50 753

Table 3 Occupational Level of Full- and Part-time Workers; selected years
percentages

	Full-time workers				Part-time workers			
	Educational level of occupation				Educational level of occupation			
	numbers	percentages			numbers	percentages		
		high	medium	low		high	medium	low
1980	10960	13.1	67.1	19.8	236	9.3	63.1	27.5
1985	17112	20.4	63.6	16.0	1075	20.3	59.9	19.8
1990	23436	25.1	61.2	13.7	4022	23.3	57.6	19.1
1995	24501	31.8	56.4	11.8	8077	20.5	61.9	17.5
2001	23295	42.5	48.8	8.7	11609	22.9	64.6	12.5

Table 4   Human Capital Wage Equations for Full- and Part-time Work

	Specification 1		Specification 2		Specification 3	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
Part-time	-0.106	-85.91	-0.030	-19.54	-0.025	-17.08
Work experience	0.087	218.25				
Work experience squared	-0.002	-168.09				
Full-time experience			0.082	201.67		
- high skilled occupation					0.087	176.75
- medium skilled occupation					0.066	151.98
- low skilled occupation					0.025	32.23
Full-time experience squared			-0.002	-141.31		
– high skilled occupation					-0.003	-93.93
– medium skilled occupation					-0.002	-105.5
– low skilled occupation					-0.001	-20.99
Part-time experience			-0.022	-24.72		
– high skilled occupation					0.034	29.56
– medium skilled occupation					-0.034	-37.17
– low skilled occupation					-0.029	-20.23
Part-time experience squared			0.002	22.50		
– high skilled occupation					-0.002	-14.96
– medium skilled occupation					0.003	30.47
– low skilled occupation					0.002	12.72
Tenure	0.007	23.56				
Tenure squared	-0.001	-23.39				
Full-time tenure			0.008	25.57	0.012	39.34
Full-time tenure squared			-0.001	-32.60	-0.001	-35.75
Part-time tenure			0.019	20.22	0.012	13.8
Part-time tenure squared			-0.001	-8.32	-0.001	-6.34
Constant	1.164	201.87	1.109	193.54	1.075	191.45
R-squared	0.2679		0.3172		0.4390	
Number of observations	511358		511358		511358	
Number of individuals	61581		61581		61581	

Dependent variable is the ln of real hourly earnings.
All equations include year dummies.

Table 5 The Wage Scar from Part-time Work

	Specification 4		Specification 5	
	Coef.	t-value	Coef.	t-value
Part-time	0.009	1.26	0.014	2.00
Full-time experience in high skill occupation	0.068	92.79	0.067	91.01
Full-time experience in high skill occupation squared	-0.001	-40.15	-0.001	-39.40
Full-time experience in medium skill occupation	0.046	53.46	0.046	52.67
Full-time experience in medium skill occupation squared	-0.001	-22.11	-0.001	-22.15
Full-time experience in low skill occupation	0.029	19.46	0.029	19.34
Full-time experience in low skill occupation squared	-0.000	-6.38	0.000	-6.76
Part-time experience in high skill occupation	0.042	25.96	0.043	26.02
Part-time experience in high skill occupation squared	-0.002	-13.25	-0.002	-14.51
Part-time experience in medium skill occupation	-0.015	-10.02	-0.015	-9.79
Part-time experience in medium skill occupation squared	0.002	19.50	0.002	17.43
Part-time experience in low skill occupation	-0.009	-4.40	-0.010	-4.97
Part-time experience in low skill occupation squared	0.001	7.54	0.001	6.43
Full-time tenure	0.005	15.47	0.002	4.74
Full-time tenure squared	0.000	-14.71	0.000	-7.67
Part-time tenure	0.009	9.74	0.001	0.73
Part-time tenure squared	-0.001	-6.17	0.000	2.04
Switch full- to part-time	-0.071	-11.78	-0.020	-3.12
lag1	-0.060	-11.58	-0.031	-5.62
lag2	-0.052	-11.68	-0.032	-6.75
lag3	-0.040	-10.67	-0.029	-6.73
lag4	-0.024	-7.51	-0.016	-4.21
lag5	-0.011	-4.02	-0.004	-1.00
Switch part- to full-time	-0.023	-3.77	-0.039	-5.91
lag1	0.027	4.96	0.015	2.57
lag2	0.028	5.83	0.018	3.32
lag3	0.023	5.35	0.014	2.96
lag4	0.014	3.59	0.005	1.02
lag5	0.007	1.93	-0.003	-0.72
Job changer			-0.012	-7.96
Switch full- to part-time with job change			-0.129	-32.26
lag1			-0.073	-18.82
lag2			-0.047	-12.04
lag3			-0.027	-7.03
lag4			-0.019	-4.96
lag5			-0.018	-4.30

Constant	1.621	216.89	1.527	159.13
R-squared	0.3065		0.3144	
Number of observations	263422		259256	
Number of individuals	43344		42950	

Dependent variable is the log of the real hourly wage; year dummies are included.

Table 6 Occupational Downgrading and Earnings

	Specification 6		Specification 7	
	Coef.	t-value	Coef.	t-value
Part-time	0.017	2.43	0.017	2.47
Full-time experience in high skill occupation	0.067	91.46	0.067	91.60
Full-time experience in high skill occupation squared	-0.001	-41.05	-0.001	-41.09
Full-time experience in medium skill occupation	0.044	50.83	0.044	50.99
Full-time experience in medium skill occupation squared	-0.001	-21.36	-0.001	-21.43
Full-time experience in low skill occupation	0.026	17.36	0.026	17.39
Full-time experience in low skill occupation squared	0.000	-5.81	0.000	-5.80
Part-time experience in high skill occupation	0.043	25.82	0.043	25.91
Part-time experience in high skill occupation squared	-0.002	-14.87	-0.002	-14.91
Part-time experience in medium skill occupation	-0.016	-10.95	-0.016	-10.85
Part-time experience in medium skill occupation squared	0.002	17.6	0.002	17.58
Part-time experience in low skill occupation	-0.009	-4.27	-0.009	-4.10
Part-time experience in low skill occupation squared	0.001	4.33	0.001	4.21
Full-time tenure	0.001	3.11	0.001	2.96
Full-time tenure squared	0.000	-6.70	0.000	-6.58
Part-time tenure	-0.001	-0.73	-0.001	-0.96
Part-time tenure squared	0.000	3.27	0.000	3.44
Switch full- to part-time	-0.018	-2.94	-0.020	-3.11
lag1	-0.030	-5.49	-0.030	-5.58
lag2	-0.032	-6.59	-0.032	-6.63
lag3	-0.028	-6.52	-0.028	-6.57
lag4	-0.015	-4.01	-0.015	-4.08
lag5	-0.003	-0.83	-0.003	-0.8
Job changer	-0.009	-6.07	-0.008	-5.05
Switch full- to part-time with job change	-0.126	-31.7	-0.124	-31.00
lag1	-0.071	-18.32	-0.070	-17.90
lag2	-0.046	-11.78	-0.045	-11.54
lag3	-0.027	-6.91	-0.026	-6.74
lag4	-0.019	-4.77	-0.018	-4.61
lag5	-0.018	-4.32	-0.018	-4.37
Downgrade	-0.091	-34.44	-0.067	-16.96
lag1	-0.050	-19.22	-0.043	-10.83
lag2	-0.031	-11.76	-0.026	-6.64
lag3	-0.026	-10.1	-0.023	-5.81
lag4	-0.020	-8.17	-0.017	-4.51
lag5	-0.012	-4.71	-0.014	-3.45
Downgrade with job change			-0.041	-7.85

lag1			-0.014	-2.63
lag2			-0.008	-1.54
lag3			-0.005	-1.07
lag4			-0.005	-0.97
lag5			0.003	0.57
Constant	1.534	160.26	1.534	160.25
R-squared	0.3347		0.3340	
Number of observations	259256		259256	
Number of individuals	42950		42950	

Dependent variable is ln real hourly wage.
Specifications include year dummies.

Chart 1 Percentage of Working Women who are in Part-time Employment, by Birth Cohort
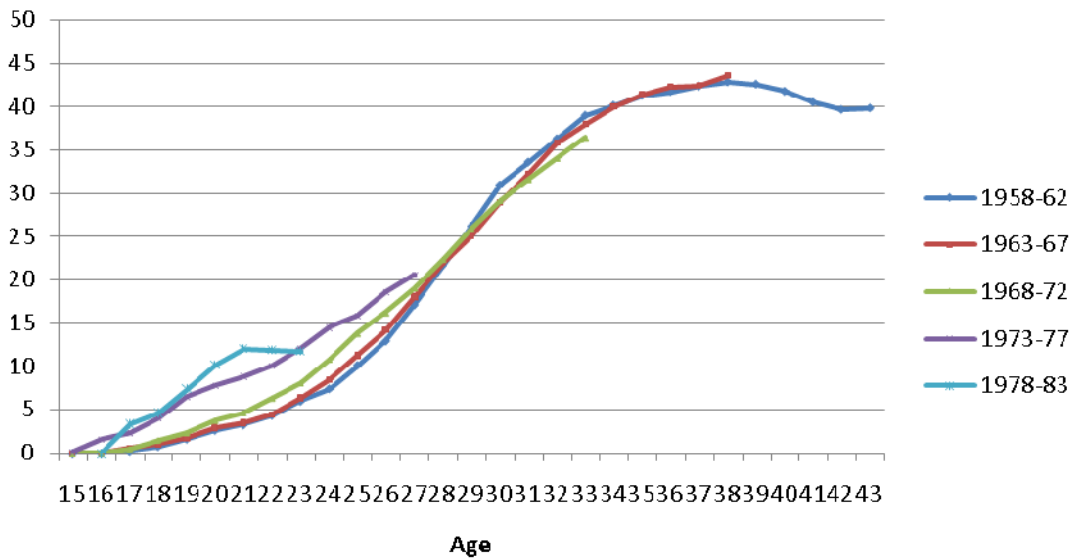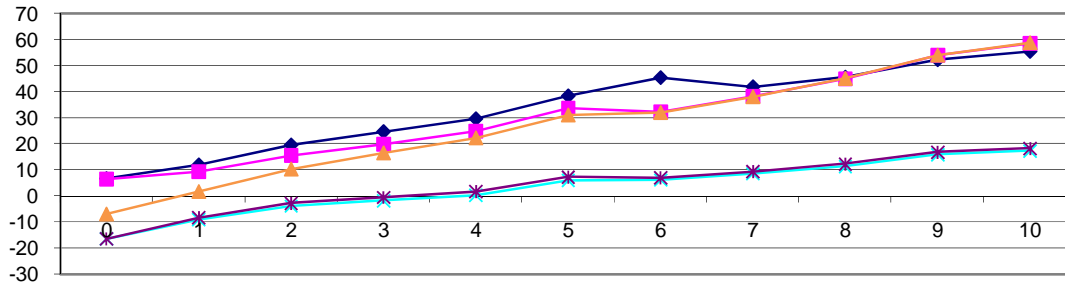
Legend:
- 1958-62
- 1963-67
- 1968-72
- 1973-77
- 1978-83

Age

Chart 2   Simulations - Growth of Pay over Ten Year Period

- Only FT - high skill
- FT to PT in year 0, PT to FT in year 6 - no change of employer always high skill level
- FT to PT in year 0 (with change of employer), PT to FT in year 6 - always high skill level
- FT to PT in year 0 (with change of employer and downgrade to medium skill), PT to FT in year 6 (same employer & skill level)
- FT to PT in year 0 (with change of employer and downgrade to low skill), PT to FT in year 6 (same employer & skill level)

[1] An extensive recent review is given in Paull (2008). See also Joshi, Macran and Dex (1996), Joshi, Paci and Waldfogel (1999)

[2] This has been a significant issue in assessing the impact of the introduction of the National Minimum Wage; the largest group whose pay is now set by the NMW are women working part-time. See Low Pay Commission (2001).

[3] That study used a different dataset, following the work histories through detailed full- and part-time employment and non-employment spells for a birth cohort of 1958 with a final sweep in 2000. This therefore overlaps exactly with the oldest cohort in the present study.

[4] Among UK sources the LFS differs from the NES in defining part-time as 30 or fewer hours per week; in the US 35 hours is normally the threshold. Practice across the OECD is discussed in Van Bastelaer et al (1997).

[5] Between 1991-2001 occupations in the NES were classified on the basis of Standard Occupational Classification 1990 (SOC90) where 370 occupational unit groups were distinguished. This is described in OPCS (1990).The KOS classification applied in 1975-90 distinguished some 440 individual occupations. Although SOC90 fundamentally recast the classification system constructing a mapping to combine the two at the three-way level only is relatively straightforward.

[6] For example Jacobson, Lalonde and Sullivan (1993) for the US, Gregory and Jukes (2001) for the UK.

[7] The large and contentious literature dates from the important debate between Altonji and Shakotko (1987) and Topel (1991), and important recent contributions include Stevens (2003).