Family ties: Women's work and family histories and their association with incomes in later life in the UK

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Editorial Note and Acknowledgments

Tom Sefton is a Research Fellow at the Centre for Analysis of Social Exclusion (CASE) at the London School of Economics. Maria Evandrou is Professor of Gerontology and Director of the Centre for Research on Ageing (CRA) at the University of Southampton. Jane Falkingham is Professor of Demography and International Social Policy and Director of the ESRC Centre for Population Change at the University of Southampton. The authors would like to thank the Nuffield Foundation who funded this research (grant number AGE/00056/6). We are also grateful to Howard Glennerster for helpful comments on an earlier version of this paper. This paper will also appear as Centre for Research on Ageing Discussion Paper No.0705.

Abstract

This paper examines the relationship between the family and work histories of older women in the UK and their individual incomes in later life, using retrospective data from the first fifteen waves of the British Household Panel Survey. The associations between women's family histories and their incomes later in life are relatively weak, and in many cases insignificant. Divorce, early widowhood and re-marriage are not associated with significant differences in older women's incomes, whilst motherhood is only associated with a small reduction in incomes later in life – and not at all for certain sub-groups of the population. Whilst there are significant differences in the work histories of older women with different family histories, this does not translate into large differences in their personal incomes, because work history-related income differentials are also relatively small. Even long periods in employment are not associated with significantly higher incomes in later life if these periods were in predominantly part-time or 'mixed' employment. Our analysis demonstrates how effective public transfers have been in dampening work history-related differentials in older women's incomes, especially for widows and those towards the bottom of the income distribution. On the one hand, this could be seen as a positive finding in that the 'pension penalty' associated with events such as motherhood and divorce are not as severe as is often anticipated. On the other hand, the main reason for this is that the pension returns to working longer are relatively low, especially for low-skilled women. Recent pensions reforms should eventually produce more equitable outcomes as between men and women, though possibly at the expense of greater inequality among women with different work and family histories.

JEL classification: H55, I38
Key words: older women; pensions; work history; family history; life course; retirement incomes.

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Introduction

This paper examines the relationship between the family and work histories of older women in the UK and their association with personal incomes in later life. The presumption is that early marriage and having children leads to shorter and more interrupted work histories and that this in turn will limit women's ability to build up their own pension entitlements and savings for their retirement, making them more dependent on their spouse's income and increasing the risk of being in poverty in old age.

Women are less likely to be in paid employment and where they are in the labour market they are more likely to be working part-time, especially if they have children. However, the extent to which periods of caring for children or other relatives places women at a disadvantage in acquiring pension entitlements depends also on the structure of the pension system, including the balance between private and public provision and the redistributive features within pension schemes. The pension problem for women stems from their different life course experiences *in combination* with a pension system that was not designed to meet women's needs (Falkingham and Rake, 2001).

The current gender division in private pension coverage is stark, with non-state pensions accounting for 22% (£54) of gross income for single female pensioners in 2006-07 compared with 29% (£78) for men (DWP, 2008). In part this is because women's employment rates have historically been lower than men's, but also because many private pension schemes are designed in ways that tend to disadvantage women in part-time employment, with interrupted work histories and typically flatter earnings profiles. Furthermore, occupational schemes have generally provided little protection for widows or divorced women and no provision for periods spent caring. At the same time, changes in British state pension provision since 1980 have reduced its redistributive impact, as the value of the basic state pension has fallen in relative terms (Ginn and Arber, 1999). The decline of state pensions and the shift towards greater private pension provision is expected to magnify the pension penalties arising from earlier domestic and caring roles, leading to increasing differentiation among older women according to their marital, fertility and employment history.

More recent reforms have sought to address some of the inadequacies in the system, including better, though still deficient, provision for pension sharing following divorce, and credits for carers in the State Second Pension (S2P), but these still leave many gaps and will in any case take many years to feed through into pensioners' incomes. The Pensions Commission report also pointed to several trends that are favourable to women, including rising employment rates at all ages (though much of this has been in part-time work), narrowing pay differentials between men and women (for full full-time, though not part-time, female employees), and some convergence in sex-based annuity rates. Other things being equal, this might be expected to reduce the

gender gap in private pension incomes and in overall pensioner incomes over the next 30 years (Pensions Commission, 2004).

The welfare state was constructed on the assumption that women would be largely dependent on their husband's earnings during their working lives and on their pensions in retirement – the so-called 'breadwinner' model (Land, 1994; DWP, 2005).[1] Hence, the state pension was designed to provide a basic income for married couples, based on the main earner's contributions, usually the husband's. However, changes in social norms and the decline of marriage as a lifelong contract has made reliance on a husband for income in later life an increasingly unacceptable and risky strategy for women. As argued in the Pensions Commission report, 'an effective pension system for the future must be one in which the vast majority of women accrue pension entitlements, both state and private, in their own right' (Pensions Commission, 2004, p 259).

Using retrospective data on family and work histories, we explore the association with women's incomes in later life. How do marriage, divorce, widowhood and having children influence women's employment patterns and how, if at all, does this impact on their incomes in retirement? To what extent does the British welfare state help to cushion some of the adverse effects on women's pension outcomes? Whilst the data we have can only help to answer these questions for the current generation of pensioners – those who have completed their working lives – the results help to define more clearly the challenges to be addressed in reforming the pension system if pensioner poverty and existing inequalities in older women's incomes are to be reduced. The implications of our findings are considered in the light of the Government's two recent white papers on pensions (DWP, 2006a; DWP, 2006b) and the subsequent legislation in the 2007 and 2008 Pensions Acts.

Approach

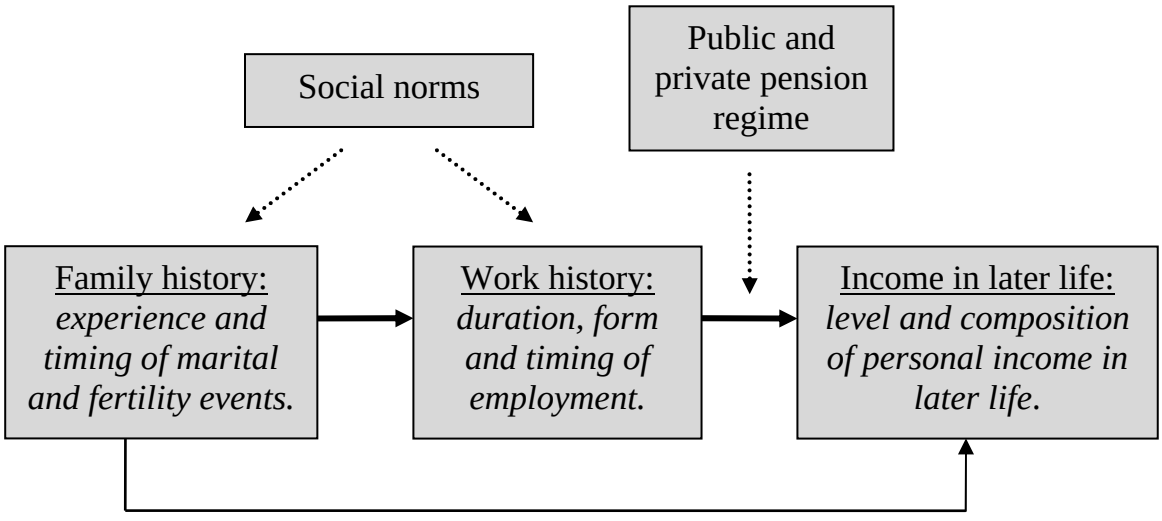
Our analysis focuses on women's personal (or individual) incomes, because these will be most closely related to their own family and work histories. Whilst equivalised household income is arguably a better measure of people's material living standards, the inclusion of partners' incomes will in many cases obscure the financial impact of married women's own family and work histories, which our analysis is designed to uncover. There are, in addition, strong conceptual arguments for examining personal incomes in their own right. Conventional measures of household income assume that resources are shared equally among all household members, which may not be the case in practice. Nor does pooling householders' incomes allow for the benefits that command over one's own resources can confer on individuals in terms of greater autonomy and independence, as all sources of household income are effectively treated as equivalent.

[1] In the early 1930s - the data available at the time Beveridge was developing his proposals- only 10% of married women were in the workforce.

Family histories can impact directly on retirement incomes in various ways. The financial costs of bringing up children may reduce women's ability to save for retirement and alter the preferred trade-off between current and future consumption (Sykes et al, 2005). If some women expect to be largely dependent on their husband's income in later life, they may be more likely to opt out of an occupational pension scheme or, as many women did, forego their right to a state pension in return for lower National Insurance contributions - an option that is no longer available. Marriage also confers certain derived pension rights based on the spouse's (or former spouse's) contributions, as well as a potential inheritance.

However, the premise underlying this paper is that women's marital and fertility histories primarily affect their incomes in later life through the impact on their work histories and hence the ability to accumulate their own private and public pension rights and other savings for retirement. This broad conceptual framework motivates the structure of this paper, which looks first at the relationship between women's work histories and their incomes in later life; secondly, at the relationship between women's family and work histories; and thirdly at the relationship between family histories and incomes in later life (see Figure 1). Whilst the latter is the main focus of the paper, the first two stages help to interpret the results from the final stage of our analysis, some of which are perhaps contrary to expectations.

Figure 1: Conceptual framework



In practice, family and work histories are interdependent. Women who have children are more likely not to work or to work fewer hours to fit around their caring responsibilities. But, it is also the case that decisions about whether and when to have children will be related to individuals' career choices. Those with a stronger a priori attachment to the labour market and greater earnings potential are perhaps more likely to postpone having children (Walker et al, 2000). Women with higher earnings

potential may also be less likely to marry, because they are more financially independent, and may have fewer children, because the opportunity cost in terms of foregone earnings is greater; on the other hand, they may choose to have more children, because they can afford to do so. Our analysis does not explicitly model the endogeneity of this relationship. Thus, in considering the results of our regression analysis, the coefficients on the family or work history variables should be seen as indicating the strength of association with retirement incomes, rather than implying a causal relationship.

Previous research findings

Two previous studies have analysed the British Household Panel Survey (BHPS) to investigate income in later life. Bardasi and Jenkins (2002) examined the association between men and women's work histories and the probability of having a low equivalised household income in later life. They found that after controlling for age, education, and marital status, the greater the proportion of their working life spent by women in managerial, professional, technical and clerical occupations, the smaller the risk of having a low income in later life. However, the proportion of time in spent in other, lower-status, occupations was not associated with a significantly lower risk of low income. Moreover, time spent in part-time employment or unemployment was not associated with a significantly higher risk of low income. In contrast, marital status was much more important for women than for men in its association with low incomes in later life: being single (never married, divorced, or widowed) was found to be strongly associated with a higher probability of having a low income, implying that for many older women having a partner with a good working history may be more important than what they did in their own working lives.

Subsequent research by the same authors (Bardasi and Jenkins, 2004) investigated gender differences in the receipt and value of private pension income. For both sexes, the longer the time spent economically active, particularly in higher-skill occupations, the greater the probability of receiving a private pension. For women, the longer the time spent in part-time or self-employment, the lower the probability of receiving a private pension. They found no statistical association between women's PPI receipt and the lifetime marital status variables they employed after controlling for work history, and so concluded that the effects of marriage and children appear to operate entirely through their impact on women's work histories.

This current paper, although also using the BHPS, differs from and builds on these previous studies in several respects. Firstly, its primary focus is on the impact of *family history*, using information on work history as a means to understanding one of the main channels through which marital and fertility events affect women's ability to accumulate their own pensions and savings. Secondly, the analysis is exclusively concerned with the incomes of older women with different family and work histories, as opposed to gender differences in older people's incomes. Thirdly, the variables summarising individual's family and work histories are configured in various ways in

order to examine in more detail the impact of the duration and timing of family and work history events and the interaction between variables (e.g. allowing the impact of having children to vary by birth cohort and by level of education). Fourthly, the current study uses a different income measure: total personal income, as opposed to equivalised household income (Bardasi and Jenkins, 2000) or private pension income (Bardasi and Jenkins, 2004) for the reasons discussed in the previous section. A continuous measure of income is used as we are interested in the effects at the top, as well as the bottom, end of the income distribution. Finally, we consider the breakdown of incomes by source to help understand observed income differentials between sub-groups of women, including the effectiveness of public transfers in alleviating inequalities in private sources of income.

Other studies have addressed the same or related issues, using alternative datasets and methodologies. Rake et al (2000) examined women's incomes over the lifetime, including the consequences of having children and of divorce on retirement incomes. Their analysis used a simulation model to estimate incomes over the life course for a set of hypothetical individuals with different levels of education and different marital and fertility histories. They found that the pension costs of having children were substantial for low- and mid-skilled mothers, but close to zero for graduate women who were assumed to remain in almost continuous employment. The flat-rate Basic State Pension softens the 'cost' of motherhood for women who take a career break, but significant differences remain in the overall retirement incomes of low- and mid-skilled women with and without children - and these costs increase with the number of children. According to their model, the pension consequences of divorce depend on the skill levels of women and their partners, the length of their marriage, and whether they remarry. Women who divorce after short marriages and do not remarry are likely to be worst affected, because they have fewer rights to their ex-husband's pension and find it difficult to build up their own pension entitlement, especially if they have young children to look after.

Ginn (2003) is a compilation of previous research by the author and co-researchers looking at how changes and continuities in the gender division of labour and in patterns of partnering shape gender inequalities in pensioners' incomes. This study is largely based on cross-sectional data (from the General Household Survey) on the labour market participation, earnings, and private pension coverage of different population sub-groups to provide an indication of likely differentials in pension outcomes, alongside a detailed understanding of the UK pensions system. They show, for example, that there is a dramatic reduction in full-time employment and earnings among mothers in all educational groups, particularly women with very young children, which suggests that even graduate mothers are likely to experience a substantial loss in pension entitlements compared with their counterparts who did not have children. This analysis is very valuable in highlighting potential problems with the current system of pension provision for women, in particular inadequate provision for women who have children or who experience divorce.

Her conclusions are supported by detailed analysis of the membership of private pension schemes among younger and older adults using data from the 1994/95 Survey of Family and Working Lives (Walker et al, 2000). Women aged 35 or over at the time of interview were almost three times as likely as men not to have any non-state pension cover. Of this group, women who had long spells out of the labour market, had their children earlier or had more children were all at greater risk of not having a non-state pension. These factors were found to be significant in a multivariate (logistic regression) analysis.

Using retrospective data on women's family and work histories, we can examine the relationship between individuals' family and work histories over their *whole working lives*, as opposed to a snapshot of their family and employment status at, or up to, a particular point in time. We can also observe directly the impact of different family and work histories on incomes in later life, rather than having to infer this (as in Ginn, 2003) or simulate their likely impact on hypothetical individuals with stylised biographies (as in Rake et al, 2000), useful as such studies can be. The advantage of using actual data on 'real' people is that our results reflect the complexities of people's lives and of the evolving pension system which they lived through, rather than a simplified biography in a 'policy constant' world.

The disadvantage with this approach is that we can only observe outcomes for the current generation of older people who have already reached retirement. Their family and work histories may be different to those of future pensioners, who will have lived their lives in a very different social and economic environment. There are, for example, few 'never married' lone parents in our sample of older people, so it is not possible to investigate the impact of experiencing this particular family status on incomes later in life. Even for those events that are commonly observed in our sample, such as marriage and having children, the relationship between these events and work histories may have changed over time; so, for example, women are now much more to likely to continue working when they get married and are tending to return to work sooner after having children. This, in turn, will modify the relationship between family histories and incomes in later life, in this case presumably reducing the 'pension penalty' of marriage and motherhood. Finally, the pension system has been evolving over time, altering the relationship between work histories and retirement incomes. Hence, the relevance of our findings to subsequent generations of older people needs to be considered carefully in light of changes in society and reforms to the British pension system.

The British pension and welfare system

The relationship between family and work histories, on the one hand, and retirement incomes, on the other, will be determined in large part by the structure of the state and private pension systems and the overall balance between the two. This section provides a brief description of Britain's current pension and welfare systems (i.e. prior to the implementation of the reforms of the 2007 and 2008 Pension Acts) in order to

set the context for, and help interpret, the empirical analysis that follows (see PPI (2006) for further details).

The first component of the British pension system is the Basic State Pension (BSP). Entitlement to the BSP is accumulated mainly via contributions made when in paid employment (above a certain level of earnings). A full flat-rate pension requires 39 years of National Insurance (NI) contributions for women, though credits are imputed for full-time students, the unemployed and claimants of certain NI benefits. Home Responsibilities Protection (HRP), which was introduced in 1978, reduces the required number of years of contributions for those who were not working because they were caring for children and the long-term sick or disabled.[2] But, HRP will have had little impact on the current generation of pensioners, most of whom would have been past their childbearing years by the time this came into effect. A married women's pension (equivalent to 60% of the maximum rate) is paid when a married woman's own entitlement would be worth less than 60% of the full-rate. Widows can claim on their spouse's qualifying record if it is better than their own, whilst divorced women can count their spouse's qualifying record as their own up to the point of divorce. This system ensures that the vast majority of women are receiving the Basic State Pension, though only around 30 per cent of older women were receiving the full-rate in 2005.

The BSP was only indexed in line with inflation during most of the 1980s and 1990s and has fallen below the minimum subsistence level. The poorest British pensioners without private sources of income are, therefore, dependent on means-tested income support, though take-up rates are well below 100%. Means-tested benefits for pensioners have become much more generous in recent years (both in real terms and relative to benefits for working age adults), whilst the Pension Credit, which was introduced in 2003, was designed not to penalise pensioners with modest savings, extending support to many more pensioners..

The second and smallest component of the British system is the State Earnings-Related Pension, which started life in the 1960s as the Graduated Retirement Pension (very small amounts), was replaced in 1978 by SERPS (more generous, but subsequently cut), and then by the State Second Pension in 2002 (no more generous, on average, but more redistributive). About 60% of employees contract out to private alternatives. The rules for calculating the level of SERPS were initially favourable to women, being based on the best 20 years of earnings. The basis of benefits has since been changed to average earnings over individuals' whole working lives, disadvantaging people with shorter work histories. Reductions in the accrual rate and changes in the indexation rules have also reduced the overall generosity of the scheme, but these only came into effect from 1999, so will not have affected the older people in our sample, who by then had already reached the state retirement age[3]. The

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2 Home Responsibilities does not provide complete protection, as the number of qualifying years required for a full Basic State Pension cannot be reduced below 20.

3 The youngest women in our sample were aged 65 in 2004 and, therefore, reached the state

youngest pensioners in our sample are the first to have been in a position to benefit in full from the introduction of SERPS, having just had sufficient time to accumulate 20 years worth of contributions, although those with earnings below the Lower Earnings Limit (including many part-time workers) and those unable to work due to caring responsibilities or disability will not have been credited with any contributions during those years. The progressive nature of the S2P, which imputes higher contributions to low earners and carers, will eventually prove more generous to most women than the original SERPS scheme, though not in the short-run (Disney and Emmerson, 2004).

The third, and fastest growing, component of the pension system is occupational and personal pension schemes. The initial rise in employer-provided pensions in the 1950s and 1960s was reflected in rising occupational pension incomes as a percentage of GDP from around 1980 onwards. Most maturing pensions are Defined Benefit schemes, providing generous and secure replacement of earnings, but one that is skewed in favour of white collar workers with stable careers and a rising earnings profile. Many workers are not covered at all, including most part-time workers, employees of small firms, low skill occupations and early leavers; these are all groups that are over-represented among women. Compared with public pension schemes, they typically provide very limited protection for periods spent out of the labour market and fewer derived rights for widows and divorced women than state pensions. Some of the inequities in the system have been removed by regulatory intervention - for example, giving early leavers a right to a refund of contributions within 2-5 years and 'preserved' pension rights beyond that - but these reforms only provide partial protection and were introduced too late to benefit many of the women in our sample. Women working part-time were, and still are, at the greatest risk of having an employer who does *not* offer a pension scheme, although the gap with full-time workers has narrowed somewhat over the last two decades.[4]

In summary, the public pension system is contribution-based and includes an earnings-related component, but the link with work histories is likely to be much weaker than for private pensions, because the system includes stronger redistributive elements and offers greater protection against events such as widowhood. The benefits of private pension schemes are likely to be distributed unequally even among those who have worked most of their working lives, disadvantaging certain groups of women, such as part-time and low-skilled workers.

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retirement during 1999.

4 According to estimates presented in the First Pensions Commission Report (Pensions Commission, 2004), only around 15-20% of part-time female employees were members of an employer's pension scheme in 1983, rising to between 30-35% in 2002. The corresponding figures for full-time female employees are 50-55% in 1983 and 60% in 2002.

Methodology

Our analysis of the family and work histories of older women (aged 65+) is based on data from the first fifteen waves of the British Household Panel Survey (BHPS). For the purposes of this analysis, the crucial data is contained in the survey's retrospective employment, marital, and fertility history files. These are described in more detail below.

In the second wave, individuals were asked about their labour market status retrospectively since first leaving full-time education. In each successive wave, individuals are asked to provide the same information for the period since the last interview date, which is used to extend individuals' employment histories up to wave 15 (or earlier for those individuals who dropped out of the panel). The retrospective data is from a derived data set deposited at the UK Data Archive (UKDA) by the Institute for Social and Economic Research (Halpin, 1997; Halpin 2000) and data covering the panel period is from a separate data set also deposited at the UKDA. Information from the two data sets is merged, using the latter data set in preference where there is an overlap. Our derived data set consists of information on individual's self-reported employment status at monthly intervals, based on the following categorisation: full-time employed, part-time employed, self-employed, unemployed, long-term sick or disabled, family care, full-time student, retired, or other. This is used to construct a series of work history variables, based on different ways of classifying individuals' work histories, including the total number of years in different types of employment and the phasing of employment over the working life.

The marital history data consists of the dates and current status of any marriages, including end dates for marriages that ended in divorce, separation or widowhood. The fertility history data consists of the number and birth dates of any natural children (Pronzato, 2007). Again, this data is used to construct a series of family history variables to summarise women's experience of marital and fertility events, such as divorce and the number and timing of children.

Work and family histories are both defined over a 40-year period between the ages of 20-60, covering all or most of women's working lives up to the current state retirement age. Subsequent changes in employment or marital status (i.e. post-60) are controlled for in our regression analysis, but are not counted as part of their work or family 'history'. To be included in the sample, individuals must have complete work and/or family histories between the ages of 20-60. In addition, they must be aged over 65 at some point during the panel period (1991-2005) and have non-missing income data, including a breakdown by income source. Most individuals are observed more than once over the panel period. Though their work and family histories will be identical (pre-60), other characteristics, including current marital status and income, may change. In particular, many older women become widows during the panel period with knock-on effects on their incomes. Rather than foregoing this additional information, all observations of the same individual are included in the sample provided they meet the above criteria. Cross-tabulations are weighted and regression

estimates adjusted to allow for multiple observations of the same individual.[5] The weights used for multiple observations are equal to 1/n, where n is the number of times each individual appears in the data set. This yields a total sample of 11,306 observations on 1,447 individuals with complete family histories and 11,101 observations on 1,420 individuals with complete work histories. Our sub-sample comprises around 80 per cent of all older women in the original BHPS sample and is representative of the total sample in terms of the main socio-economic characteristics, such as age, education and incomes.

The income measure used comprises own private pension income from occupational and personal pension schemes; other private income, including survivors' pensions, income from savings and investment, earnings (for the minority still in paid work), and other private transfers; public pension income, including the basic state pension and state earnings-related pension; and other public transfers, including means-tested benefits, disability-related benefits and other non-means-tested benefits. Assets that are reported to be jointly held and benefits that are jointly received are split evenly between partners, using existing derived variables in the BHPS data set. This includes means-tested benefits, which are calculated on the basis of the combined income and assets of the benefit (or family) unit.

As individuals are observed at multiple points in time, up to fourteen years apart, incomes in earlier years are adjusted upwards in line with the growth in average earnings over the intervening period. The index used is the OECD's seasonally-adjusted MEI earnings index for the manufacturing sector. A small number of observations with very low or very high incomes are trimmed from the sample to prevent the results being unduly influenced by these outliers, some of which are likely to be due to reporting or recording error. In our multivariate analysis, incomes are logged, because this produces a better fit and because it makes more intuitive sense for the regressors to have a proportionate, as opposed to an absolute, association with incomes.

In examining the relationship between family and work histories and incomes in later life, it is necessary to control for other factors that may be correlated with both. Initial data analysis shows, for example, that "never married" women are more likely to have a degree level qualification than other women (see Table A6). Not controlling for education would, other things being equal, lead us to over-estimate the negative association between marriage and women's retirement incomes. The control variables included in our analysis include a set of background variables and post-60 controls, which are expected to influence individuals' retirement incomes independently of, or in combination with, their work or family history. The background controls are birth cohort and education and the post-60 controls are current employment status (whether still in part-time or full-time employment), current marital status, and the number of years since reaching 65, which may influence income independently of birth cohort depending on the rules for indexing pensions, the presence of age-contingent or age-

[5] We use the cluster option in Stata to adjust the standard errors in our regression estimates.

related benefits, and other factors. Dummy variables are also included for each survey year to control for the effects of policy change over the study period. In subsequent analysis, the work and family history variables are interacted with some of these control variables in order to test whether, for example, the association between having children and retirement incomes varies by birth cohort or by level of education. A full list of the variables used in our analysis and summary statistics are provided in Appendix B.

Impact of work history

In the first stage of our analysis, we investigate the association between older women's work histories, as defined by the duration, timing, and nature of economic activity, and their incomes in later life. What are the relative returns in pension terms of being in predominantly full-time or part-time employment? Is it better to have an early career break, followed by a long uninterrupted spell of employment than to have a mid- or late-career break? We begin by examining bivariate relationships between older women's incomes and different categorisations of work histories, and then examine the significance of these associations in a multivariate setting.

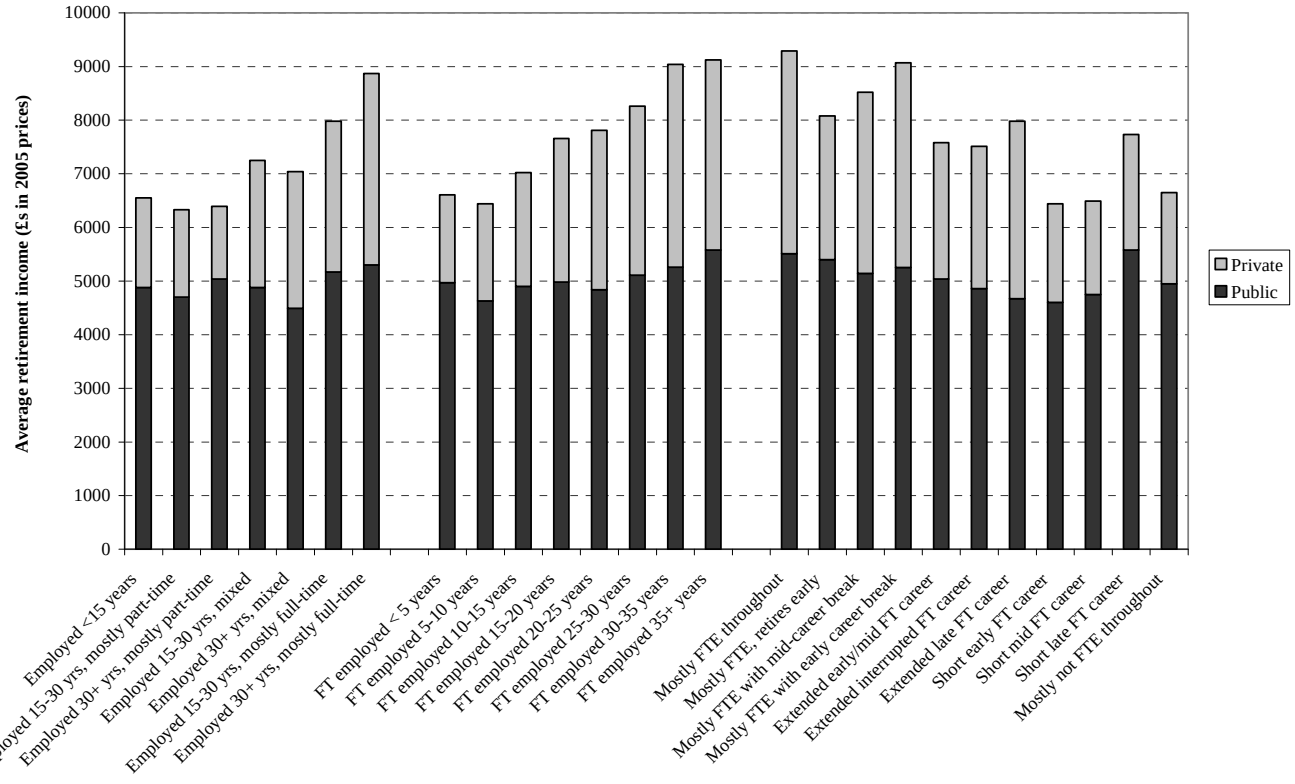
There is wide variation in levels of economic activity among the older women in our sample. On average, they spent 14 years in full-time employment, 7 years in part-time employment, 1 year in self-employment, and 18 years in one of the economically inactive categories. Around 16 per cent of older women were predominantly full-time employed for between 15-30 years and 20 per cent were predominantly full-time employed for 30 or more years - defined as spending two-thirds of more of their employed years in full-time employment. The remainder were either predominantly part-time employed (16 per cent), in mixed part-time/full-time employment (17 per cent)[6], or economically active for fewer than 15 years (32 per cent).

Older women who worked predominantly part-time for most of their working lives are no better off than women who had shorter part-time careers or those who were predominantly inactive. Women who had shorter, but predominantly full-time careers are better than off than women who had longer part-time or mixed careers, though not as well off as those with longer, predominantly full-time careers. Longer periods of full-time employment are associated with progressively higher incomes, but the phasing of employment also appears to matter. Comparing older women who worked a similar length of time, those who had a later career have higher average incomes than those whose employment was concentrated earlier in their working lives (see Figure 2).

6 Mixed employment is defined as spending less than a two-thirds of the total number of employed years in either full-time or part-time employment, including women who had extended periods of self-employment.

Work history-related differences in older women's incomes are due largely to differences in private pension incomes; over half of older women who worked mainly full-time for 30 years or more were in receipt of a private pension, compared to a fifth of those who were in predominantly part-time employment – and the average value of these pensions was substantially greater. The mean value of women's own private pension income ranges from close to zero for women who were predominantly inactive to around £2,500 per year for those who were full-time employed for most of their working lives.

Figure 2: Older women's incomes by work history



Source: own analysis using waves 1-15 of the BHPS

There are also differences in public pension income by duration of employment, but these are much smaller than for private sources of income, which is what we would expect given the design of the state pension system. The system is contributory, but many older single women qualify for a partial or full state pension on the basis of their current or former husband's contributions. Even among women who have been employed for fewer than 15 years, only 5 per cent are not receiving a state pension, though many will not be eligible for the full amount. The implementation of SERPS in the late 1970s may have strengthened the link between public pensions and past earnings among younger pensioners, though the effect will be dampened in future by subsequent reductions in the generosity of SERPS and its replacement by the more redistributive S2P scheme.

Women who have been economically inactive for most of their working lives are only marginally more likely to be receiving other (non-pension) public transfers. Women in this position will often have partners with high or moderate incomes and so are often ineligible for means-tested benefits even if their own personal income is relatively low. As public transfers comprise around two thirds of older women's total personal incomes, on average, this dilutes the differentials in private incomes, which are more strongly related to individuals' own work histories. Women who had predominantly full-time careers receive more than twice as much in private income as women who were predominantly inactive, but only around a third more in total income.

The significance of these bivariate associations between work histories and incomes in later life is confirmed in multivariate analysis, controlling for a range of socio-economic characteristics, including birth cohort, education, current employment status and marital status. Separate regressions are run for each way of categorising women's work histories. So, for example, the top panel in Table 1 shows the results of the regression with three work history variables denoting the total number of years spent in full-time employment, part-time employment, and self-employment. The dependent variable is logged income, so the coefficients can broadly be interpreted as percentage effects (relative to the reference category in the each case). So, for example, the interpretation of the first line in Table 1 ("with controls") is that an extra year in full-time employment (as opposed to being economically inactive) is associated with a 0.7 per cent increase in older women's incomes.

Women with higher educational qualifications generally have a stronger attachment to the labour market, so controlling for this variable weakens the association between employment and retirement incomes. The inclusion of current marital status also has quite a strong dampening effect on the work history coefficients for reasons that are discussed below. Adding these control variables reduces the size of the coefficients, but in nearly all cases they remain statistically significant. The notable exceptions are the coefficients on the number of years in part-time and self-employment and the coefficients on 'mixed' employment careers. Even long periods in employment are not associated with significantly higher incomes in later life if these were in predominantly part-time or 'mixed' employment.

Table 1: Regression of older women's incomes by type and duration of employment

	No controls	With controls
Number of years in employment:		
Full-time employed	0.010***	0.007***
	[0.001]	[0.001]
Part-time employed	-0.003**	-0.001
	[0.002]	[0.001]
Self-employed	0.006**	0.002
	[0.003]	[0.002]
Type of career[1] (reference group: employed <15 yrs)		
Employed 15-20 yrs, mostly part-time	-0.021	0.007
	[0.047]	[0.034]
Employed 30+ yrs, mostly part-time	-0.045	-0.006
	[0.062]	[0.046]
Employed 15-30 yrs, mixed	0.089*	0.031
	[0.052]	[0.038]
Employed 30+ yrs, mixed	0.057	0.053
	[0.056]	[0.044]
Employed 15-30 yrs, mostly full-time	0.215***	0.144***
	[0.040]	[0.033]
Employed 30+ yrs, mostly full-time	0.347***	0.216***
	[0.037]	[0.031]
Duration in full-time employment (reference group: FT employed 35+ yrs)		
FT employed < 5 years	-0.379***	-0.213***
	[0.045]	[0.039]
FT employed 5-10 years	-0.401***	-0.261***
	[0.050]	[0.042]
FT employed 10-15 years	-0.335***	-0.207***
	[0.056]	[0.044]
FT employed 15-20 years	-0.214**	-0.106**
	[0.059]	[0.048]
FT employed 20-25 years	-0.178***	-0.040
	[0.057]	[0.051]
FT employed 25-30 years	-0.148**	-0.049
	[0.066]	[0.059]
FT employed 30-35 years	-0.036	-0.050
	[0.063]	[0.056]
Observations	*11,101*	*11,101*

Dependent variables is logged individual income.

Standard errors in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%

Control variables are: birth cohort (3 categories), highest educational qualification (3 categories), marital status (married or single), current employment status, years since reaching 60, and survey year. Analysis is based on sample of 1,420 individuals (and 11,101 observations) who are aged over 65 and have non-missing income data in one or more waves of the BHPS and provided complete retrospective employment histories over their working life (between the ages 20-60).

1. Where individuals have been employed full-time (or part-time) for more than two thirds of that period, their career is defined as "mostly full-time" (or "mostly part-time"). Other careers are defined as "mixed", which includes women who spent roughly equal amounts of time in full-time and part-time employment and women who were self-employed for more than a third of their career.

Many women who have children return to part-time employment after a career break, at least whilst their children are growing up. And, as a consequence, they benefit little in pension terms, even if they been economically active for most of their working lives. Part-time employment is much less likely to be covered by a private pension scheme (Pensions Commission, 2004) – and, as we have seen, work-history related differences in older women's incomes are driven primarily by private pension receipts. Periods spent out of the labour market or in part-time employment may also damage women's career progression, adversely affecting their future earnings and pension prospects. Women cannot necessarily start up their career again where they left off; they often miss out on a critical period in their career when their male counterparts are being promoted (Manning and Petrongolo, 2004) and they may have to take a less skilled job in order to find part-time work, because part-time jobs are concentrated in lower status occupations. Only 22% of women in managerial or professional occupations work part-time, compared with 42% in administrative and secretarial occupations, and 70% in unskilled occupations (DWP, 2005).

As time spent in part-time and self-employment is not associated with significantly higher incomes for older women, we focus on the duration and phasing of full-time employment in our subsequent analysis. First, we categorise the number of years of full-time employment into five-year bands to see whether the relationship between full-time employment and older women's incomes is linear (as is implicitly assumed in using the number of years in full-time employment as the main regressor in our first regression). This analysis provides some evidence of a pensions poverty trap. Older women who have worked full-time for up to 15 years are no better off in retirement than those who worked full-time for less than 5 years. For those women who have combined full- and part-time employment (or self-employment), the pensions poverty trap is even deeper as we have seen. Older women who have worked 30 years or more in mixed or predominantly part-time employment are no better off, on average, than women who were economically inactive for most of their working lives.

Perhaps more surprisingly, women who have worked full-time for between 20-25 years are no worse off in retirement than those who worked full-time for more than 35 years, after controlling for differences in socio-economic characteristics. Beyond around 20-25 years, there do not appear to be any significant additional returns (in terms of retirement income) to further years in full-time employment. The most plausible explanation is that work history-related differences in private pension incomes are being obscured by other sources of income that are unrelated to women's own work histories, such as derived pension rights[7], or that are only weakly related to them, such as state pensions. As work history-related differences in older women's incomes are primarily driven by differences in private pension receipts, we might expect the relationship between the number of years in full-time employment and

[7] If we deduct pension income from spouse's previous employers, for example, then the incomes of women who have worked full-time for between 20-25 years are significantly lower than those who worked full-time for 35 or more years (the reference group), although the coefficient is still relatively small (-0.097).

older women's incomes to strengthen in future as private pensions grow in importance as a share of older women's overall incomes.

The differences by timing of employment are also striking. Older women who were full-time employed for most of their 20s do not have significantly higher incomes than women who were not, whilst having worked full-time for most of their 50s is more strongly associated with higher retirement incomes than having doing done so in their 30s or 40s. For similar reasons, older women whose employment was concentrated towards the end of their working lives have significantly higher incomes than women who worked for a similar length of time early in their working lives (see Table 2). A short later career is associated with better outcomes than a short early career; and it is better to have had an early career break and worked the rest of your working life than to have worked most of your working life and retired early. Interrupted careers are more similar in their effects to late careers; what seems to matter most is that the individual continued working well into their 50s. This has obvious implications for carers who reduce their hours or stop work altogether in order to look after for elderly relatives, as it is in their fifties that women are most likely to become carers.[8]

This finding is most likely accounted for by a combination of two factors. Firstly, most occupational pension schemes penalise those who retire before the official retirement age and who are not part of an early retirement scheme. In the past, early leavers would often lose all their rights to an occupational pension.[9] Since leavers' rights were introduced – the key changes were in 1975 and 1986 - they now have 'preserved' rights based on their accumulated contributions up to the point they leave, but these are indexed to inflation and not to earnings, eroding their value over time relative to those who remain in the scheme. Secondly, there is a 'period' effect: as membership of private pension schemes has been increasing gradually over time among women, it follows that women who worked later in their working lives are more likely to be covered.

8 According to the 2001 Census, about one in four women in this age group are providing some care.

9 According to the British Retirement Survey, 30 per cent of women aged 60-74 who had joined an occupational pension will never draw a pension from it, compared to 14 per cent of men (Disney, Grundy and Johnson, 1997).

Table 2: Regression of older women's incomes by timing of employment

	No controls	With controls
Timing of employment		
Full-time employed for majority of 20s	-0.004	-0.016
	[0.028]	[0.022]
Full-time employed for majority of 30s	0.126***	0.058*
	[0.039]	[0.032]
Full-time employed for majority of 40s	0.068	0.060*
	[0.042]	[0.036]
Full-time employed for majority of 50s	0.204***	0.137***
	[0.034]	[0.028]
Duration and timing of FT employment[1] (reference group: mostly not FTE throughout)		
Mostly FT employed throughout	0.378***	0.214***
	[0.042]	[0.037]
Mostly FT employed, retires early	0.237***	0.075
	[0.062]	[0.050]
Mostly FT employed with mid-career break	0.305***	0.231***
	[0.065]	[0.058]
Mostly FT employed with early career break	0.364***	0.261***
	[0.070]	[0.062]
Extended early/mid FT career	0.082	0.093*
	[0.069]	[0.056]
Extended interrupted FT career	0.207***	0.154***
	[0.048]	[0.045]
Extended late FT career	0.206***	0.165***
	[0.063]	[0.050]
Short early FT career	-0.037	-0.046
	[0.037]	[0.027]
Short mid FT career	-0.079	-0.086
	[0.098]	[0.071]
Short late FT career	0.226***	0.096**
	[0.064]	[0.046]
Observations	*11,101*	*11,101*

1. For this categorisation, individuals' working lives are divided into four ten-year periods, covering their 20s, 30s, 40s and 50s. The reference group consists of individuals who were not full-time employed for the majority of any of these four ten-year periods. Individuals who were full-time employed for the majority of all four ten-year periods are defined as "mostly full-time employed throughout". The other categories consist of individuals who were full-time employed for the majority of one of the four ten-year periods (short career), two of the four ten-year periods (extended career) and three of the four ten-year periods ("mostly active with career break"). These categories are further broken down according to the phasing of full-time employment; for example, the "extended late career" comprises individuals who were full-time employed for the majority of their 40s and 50s, but not in their 20s or 30s.

Interaction effects

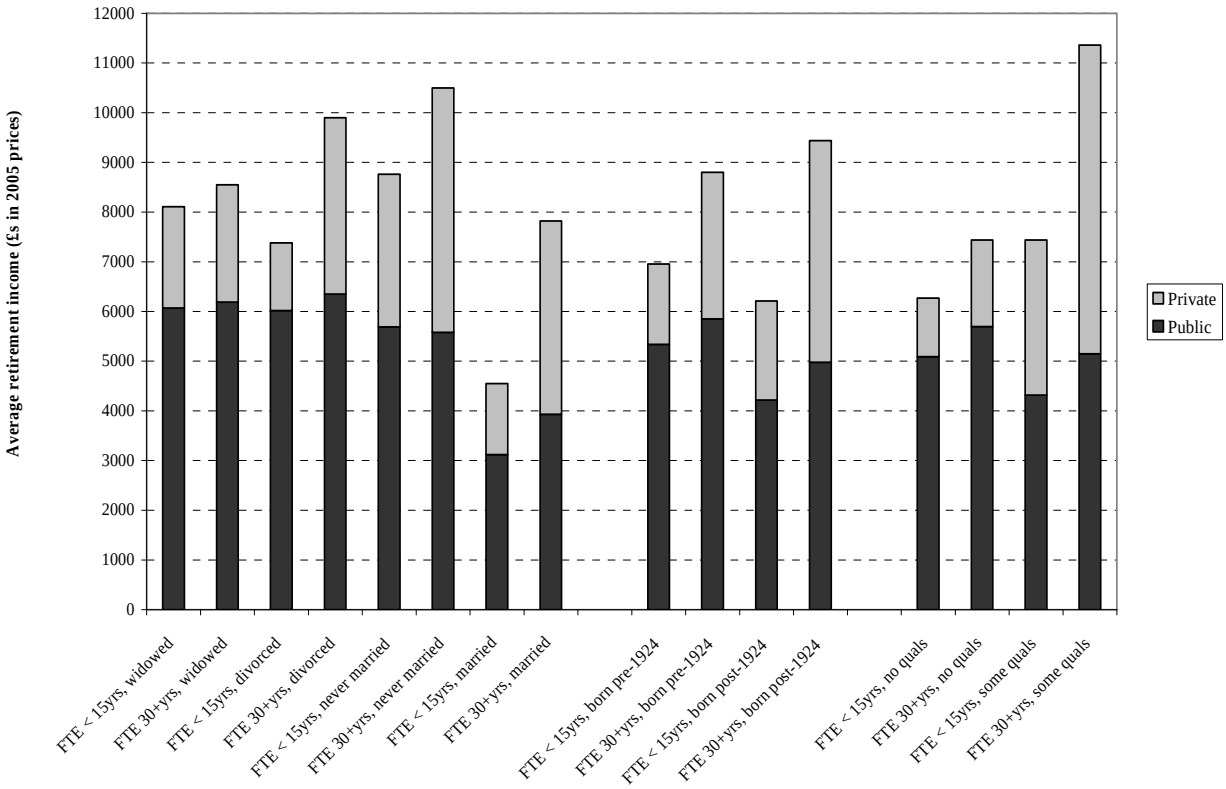
The analysis presented in Tables 1 and 2 assumes that the association between work histories and incomes in later life is the same for all sub-groups of older women. This assumption is now relaxed by introducing interaction effects, allowing the impact of work history to vary by birth cohort and other characteristics that we might expect to influence the relationship between work history and retirement incomes. To simplify the analysis, we use the number of years in full-time employment as a summary measure of individuals' work histories, which is interacted in turn with current marital status (widowed, divorced, never married, or married), birth cohort (born pre- or post-1924), and level of education (none or some formal qualifications). Bivariate results are presented graphically using a three-way categorisation of the number of years in full-time employment. Average incomes for each of these sub-groups are presented in Figure 3 and the significance of the observed income differentials are tested formally using regression analysis (see Table 3). The first coefficient in each panel measures the strength of the association for the reference category (e.g. widows in the top panel) and the other coefficients represent the additional effect of being in one of the other categories relative to the reference group; thus, a significant coefficient for a particular sub-group indicates that the association between work history and later life incomes is significantly greater (positive interaction term) or weaker (negative interaction term) than for the reference group.

Interacting work history with current marital status shows that there is no significant association between women's work histories and incomes in later life for older widows – the reference group in this particular regression. The reason for this becomes clear when looking at the more detailed breakdown of incomes in Table A2. Widowed women who have been in full-time employment for longer do have larger private pensions of their own, but this is offset by other private sources of incomes - most notably derived pension rights - and diluted by large public transfers. Widows are entitled to a Category B pension based on their partner's contributions record if this is better than their own, disproportionately benefiting those women with the weakest contributions record of their own. Many widows also become eligible for means-tested benefits, which reduces the number of women with very low incomes, including those with little or no employment history and few derived pension rights.

The interaction effects are positive for all the other marital status groups and statistically significant in the case of never married women and still married women. For these sub-groups of older women, the association between work histories and later life incomes is due largely to differences in their own private pension incomes. State pensions are only weakly associated with the amount of time spent in full-time employment, because married women receive at least 60 per cent of their husband's entitlement if this exceeds their own, whilst divorced women can lay claim to their ex-husband's contributions record for the period they were married; and all individuals are credited for periods out of the labour market due to unemployment or long-term sickness or disability. The overall effect of public transfers is to dampen work-history related differences in private pension incomes, though these remain significant except

in the case of divorced women (in part because the sample of older divorced women is too small to detect significant differences).

Figure 3: Interaction effects involving work histories, women aged 65+



Source: own analysis using waves 1-15 of the BHPS

Table 3: Interaction effects involving work histories, women aged 65+

	With controls
By current marital status (reference group: widowed)	
Yrs in FT employment	0.001
	[0.001]
Yrs in FT employment x divorced	0.004
	[0.003]
Yrs in FT employment x never married	0.006**
	[0.003]
Yrs in FT employment x married	0.015***
	[0.002]
By birth cohort (reference group: born pre-1924)	
Yrs in FT employment	0.003**
	[0.001]
Yrs in FT employment x born post-1924	0.009***
	[0.002]
By education (reference group: no qualifications)	
Years in FT employment	0.004***
	[0.001]
Years in FT employment x some qualifications	0.008***
	[0.002]
Observations	*11,101*

Dependent variables is logged individual income, excluding one case with zero reported income. Standard errors in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%. Controls variables are as in Table 1.

The interaction term between work history and birth cohort is also highly significant, implying that work history matters more for younger cohorts than for older ones. Part of the explanation is that younger cohorts are less likely to be widowed (when we observe them in the panel) and, for the reasons given above, work history-related income differentials are greater among women who are still married. But, this only accounts for part of this effect. Private pension coverage has been rising over time, so that women who were born later are more likely to be in receipt of a private pension than older cohorts with similar work histories[10] – and, as already noted, private pension income is more closely related to past employment than other sources of income.

Finally, work history matters more for more educated women. The majority of unqualified women are not in receipt of a private pension even if they have worked full-time for 30 or more years (only 37 per cent, compared with 78 per cent for women with some qualifications) and among those who were receiving a private

[10] Of the women in our sample, the proportion in receipt of their own private pension (excluding survivors pensions) is 20 per cent among women born before 1921, 26 per cent among those born between 1921-25, 37 per cent among those born between 1926-30 and 41 per cent among those born after 1931 (see Table A3).

pension, its mean value was around half that of their qualified counterparts. Less qualified women have less to gain from having a long full-time career and therefore have less to lose from being economically inactive for long periods.

Relationship between family and work histories

In the next section of this paper, we look more closely at the relationship between women's family and work histories. We know from previous research that women with young children are much less likely to be in work and that, if employed, are more likely to be working part-time. Such analyses are based largely on cross-sectional data, examining the relationship between family status and employment status at a given point in time (for example, Ginn, 2003). Retrospective data enables us to examine the relationship between family and work histories over women's entire working lives. Again, we are interested in how the timing of family events, such as marriage and having children, impacts on women's employment patterns. How, for example, do the work histories of women who have children early or have more children differ from women who have children in their 30s or who have fewer or no children? We also look at the impact of divorce and widowhood on women's employment histories, distinguishing between women who remained single or those who re-married. As our sample of older women who experienced divorce or early widowhood is relatively small, these events are combined in some of our categorisations.

Table 4 examines the relationship between marital and work histories, whilst Table 5 examines the relationship between fertility and work histories. As we would expect, never married women have by far the strongest attachment to the labour market. They are full-time employed for an average of 31 years during their working lives (between the ages of 20-60) and inactive for only 7 of those years, compared with an average of 14 years in full-time employment and 18 inactive years for all older women in our sample. The next most economically active group are women who experienced divorce and did not re-marry, which is also the smallest group, though one that is expected to grow in future; these women worked full-time for, on average, 18 years. Women who were widowed and remained single have work histories that are very similar to those who stayed married throughout their working lives. Many of theformer group were widowed in their mid or late 50s and would have had little time to modify their own work history in response to widowhood.

Table 4: Relationship between marital and employment histories, women aged 65+

Employment history (aged 20-60)	Never married	Married, stayed married	Divorced or widowed, re-married	Divorced, stayed single	Widowed, stayed single	All older women
Years in employment:						
Full-time employed	30.9	12.0	14.8	17.8	13.0	14.0
Part-time employed	1.2	7.6	6.4	4.8	7.2	6.8
Self-employed	1.1	1.1	1.8	0.8	0.7	1.1
Inactive	6.8	19.3	16.9	16.6	19.2	18.0
	40.0	**40.0**	**40.0**	**40.0**	**40.0**	**40.0**
Pattern of employment:						
Active <15 yrs	10.8	34.5	28.6	24.6	31.7	31.4
15-30 yrs, mainly part-time	0.0	12.4	4.7	10.3	10.6	10.4
30+ yrs, mainly part-time	2.4	6.7	6.9	0.0	6.6	6.2
15-30 yrs, mixed	2.8	9.8	12.0	5.0	13.5	9.8
30+ yrs, mixed	1.7	7.6	11.9	8.2	2.9	6.9
15-30 yrs, mainly full-time	6.3	15.2	15.0	29.1	18.5	15.6
30+ yrs, mainly full-time	76.0	13.8	21.0	22.8	16.1	20.0
	100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Individuals	*100*	*907*	*135*	*55*	*200*	*1,397*

Source: own analysis using waves 1-15 of the BHPS

Having children is, not surprisingly, associated with fewer years in employment. The average number of economically inactive years increases from around 12 years for older women who married and did not have children to more than 24 years for women who married and had four or more children. Although women who had small families worked longer than women with larger ones, the biggest step change is between women with no children and women with at least one child. Among married women without children, 42 per cent had worked predominantly full-time for 30 years or more, falling to 19 per cent of women who had one child, 12 per cent of women who had two children, and 7 per cent of women who had three or more children (see Table 5). There are also very marked differences in the work histories of never married women who did not have children and those who married and did not have children. For this generation at least, marriage appears to be a major influence on women's employment patterns independent of the effect of having children. Among older cohorts, many women were expected, or even compelled, to give up their job upon marriage, as it was assumed they would be financially dependent upon their husband.

Table 5: Relationship between number of children and employment history, women aged 65+

			Ever married:			
Work history (aged 20-59)	Never married, no children	Ever married, no children	One child	Two children	Three children	Four or more children
Years in employment:						
Full-time employed	31.1	22.0	15.0	11.8	9.3	8.5
Part-time employed	1.2	5.0	7.5	8.2	7.8	6.0
Self-employed	1.1	0.9	1.1	0.8	1.7	1.1
Economically inactive	6.6	12.1	16.4	19.1	21.2	24.4
	40.0	**40.0**	**40.0**	**40.0**	**40.0**	**40.0**
Pattern of employment:						
<15 yrs	11.4	20.1	25.2	32.2	36.5	51.1
15-30 yrs, mainly part-time	0.0	2.5	10.3	12.1	17.3	10.1
30+ yrs, mainly part-time	2.6	5.1	7.2	7.6	5.6	5.2
15-30 yrs, mixed	1.8	7.0	8.1	12.4	13.5	8.5
30+ yrs, mixed	1.8	9.7	10.5	7.3	5.2	3.8
15-30 yrs, mainly full-time	4.9	14.0	19.4	16.8	14.7	14.7
30+ yrs, mainly full-time	77.5	41.5	19.4	11.7	7.3	6.7
	100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Observations	*95*	*152*	*278*	*408*	*253*	*206*

Source: own analysis using waves 1-15 of the BHPS

Table 6 looks at the combined impact of marriage and having children, including the timing of marriage. Among women who did not have children, there are notable differences in the work histories of women who married in their 20s and women who never married or married late. Women who married later and did not have children are much more likely to have worked full-time for longer periods than women who married earlier and did not have children, who are more likely to have had mixed or predominantly part-time careers. This pattern may be specific to this generation, for whom it was commonplace for women to give up work upon getting married, whereas interruptions to work are now more closely tied to having children. Among women who had children, later marriage is also associated with longer periods in full-time employment, though still typically quite short. The most common career pattern among women who married later and had children is a short early full-time career, indicating that most of these women did not continue in full-time employment after they married and had children.

Table 6: Relationship between family and employment history, women aged 65+

Employment history (aged 20-59)	Never married	Married in 20s, no children	Married in 30s or later, no children	Married in early 20s, had children	Married in late 20s, had children	Married in 30s or later, had children
Years in employment:						
Full-time employed	30.8	20.1	25.7	10.7	11.0	18.2
Part-time employed	1.2	6.2	2.8	8.2	6.7	5.1
Self-employed	1.1	1.1	0.5	1.2	1.1	0.4
Inactive	6.8	12.7	11.0	19.9	21.2	16.3
	40.0	**40.0**	**40.0**	**40.0**	**40.0**	**40.0**
Pattern of employment:						
Active <15 yrs	10.8	23.7	13.3	34.3	39.6	25.7
15-30 yrs, mainly part-time	0.0	3.8	0.0	14.8	9.8	0.0
30+ yrs, mainly part-time	2.4	6.6	2.2	8.2	4.0	0.9
15-30 yrs, mixed	2.8	7.4	6.3	8.3	16.6	15.6
30+ yrs, mixed`	1.7	12.1	5.1	6.8	6.2	10.8
15-30 yrs, mainly full-time	6.3	10.9	20.1	15.4	15.7	28.9
30+ yrs, mainly full-time	76.0	35.6	53.1	12.2	8.1	18.1
	100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Mostly FT employed throughout	62.5	26.4	34.7	5.2	2.8	13.5
Mostly FT employed, retired early	16.7	8.3	21.9	3.2	0.7	1.2
Mostly FT employed, mid-career break	1.4	2.9	5.6	2.4	6.6	6.6
Mostly FT employed, early career break	0.0	2.3	0.0	3.7	1.2	1.1
Extended early/mid FT career	1.8	12.3	9.6	2.9	4.6	15.7
Extended interrupted FT career	0.0	1.9	0.0	4.0	10.2	11.0
Extended late FT career	0.8	0.9	4.8	8.3	0.7	0.9
Short early FT career	6.7	21.8	9.9	12.4	52.0	41.1
Short mid-life FT career	0.0	0.9	4.0	5.1	0.4	2.8
Short late FT career	1.1	1.1	0.0	4.3	2.3	1.8
Mostly not FT employed throughout	9.0	21.2	9.5	48.6	18.4	4.5
	100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Individuals	*100*	*100*	*52*	*784*	*265*	*96*

Source: own analysis using waves 1-15 of the BHPS

Finally, we look at how employment patterns have changed between successive cohorts of women as this has important implications for the relationship between family histories and older women's incomes now and into the future. First, we compare the work histories of younger and older pensioners in our sample, distinguishing between women who did and did not have children. Among women who had children, we find a marked decrease in the average number of years spent economically inactive between the cohorts born pre-1920 and post-1927 (from around 23 to 17 years). Most of the corresponding increase in economic activity has been in mixed or predominantly part-time careers. The proportion of mothers working fewer than 15 years fell from nearly 50 per cent (among those born pre-1920) to 22 per cent (among those born post-1927), but the proportion working full-time for 30 or more years only increased only marginally from 10 to 13 per cent (see Table 7).

At the same time, there has also been a small increase in the labour market participation of women who did not have children among younger birth cohorts. All of this increase was in part-time employment and due entirely to an increase in employment among ever married women without children as former conventions concerning the employment of married women have changed.[11]

It is also of interest to look at the employment patterns of more recent cohorts of women who have not yet reached retirement, even though it is too early to assess the impact on their incomes in later life. Have the trends in employment patterns observed between older and younger cohorts of pensioners continued or even accelerated among the next generation of pensioners? We consider their early employment histories from age 20 up to 45 as this covers the period when women, if they became mothers, are likely to have been looking after young children. The results presented here are for all women, but the pattern is very similar if instead we had looked only at women who had children. Comparing successive ten-year cohorts, we find that there has been a fairly steady decline in the average number of years spent economically inactive from around 14 years among the oldest cohort to 9 years among the youngest cohort. Nearly all of the increase in economic activity among women born up to the 1950s - and due to retire between 2010 and 2020 - is in part-time employment. The bottom panel of Table 8 examines the proportion of women working in continuous or near-continuous full-time employment as this type of career has been shown to be most strongly associated with higher incomes in later life. This shows that for the cohorts born up to the end of the 1950s there has, if anything, been a slight reduction in the proportion of women working full-time for more than 20 out of the 25 years. Whilst there has been a substantial reduction in the proportion of women working for less than ten years (from about half to a fifth of women), most of the increase has been in predominantly part-time careers. On this evidence, at least, it is unlikely that there will be an increase in the proportion of women reaching retirement age with a record of near-continuous full-time employment, at least over the next two decades.

[11] Only in the 1940s were marriage bars on women in teaching and the Civil Service removed.

Table 7: Relationship between education and employment histories by whether had child

	No children			Had children		
Employment history (aged 20-59)	Born pre-1920	Born 1920-1927	Born post-1928	Born pre-1920	Born 1920-1927	Born post-1928
Years in employment:						
Full-time employed	25.3	26.5	24.4	10.5	11.6	12.6
Part-time employed	2.6	3.5	5.2	5.4	8.3	9.0
Self-employed	1.3	0.6	1.0	0.9	1.0	1.5
Inactive	10.8	9.4	9.4	23.2	19.1	16.8
	40.0	**40.0**	**40.0**	**40.0**	**40.0**	**40.0**
Pattern of employment:						
Active <15 yrs	23.9	13.4	9.6	48.7	32.6	21.5
15-30 yrs, mainly part-time	0.0	2.2	3.2	10.2	13.7	13.3
30+ yrs, mainly part-time	3.5	3.0	6.8	3.5	7.6	8.9
15-30 yrs, mixed	2.1	4.7	10.2	8.0	9.9	15.0
30+ yrs, mixed	8.1	5.5	5.8	5.0	7.6	8.4
15-30 yrs, mainly full-time	7.8	14.8	8.4	14.2	16.4	19.6
30+ yrs, mainly full-time	54.6	56.4	56.0	10.4	12.2	13.3
	100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Observations	*93*	*90*	*64*	*378*	*378*	*394*

Source: own analysis using waves 1-15 of the BHPS

Analysis by McRae (2003) supports this conclusion for an even younger cohort using longitudinal data on women who had their first child in 1988 (the majority of whom would have been born in the early 1960s). She found that although there has been a rise in the proportion of women who are returning to work more quickly after childbirth, fewer women were in full-time employment more than ten years after the birth of their first child than was the case 12 months after giving birth. Only ten per cent of first-time mothers had maintained continuous full-time employment by the time their first child was 11 years old.

Table 8: Changes in early employment histories of women by birth cohort up to age 44

	Birth cohort:				
	Born pre-1920	Born in 1920s	Born in 1930s	Born in 1940s	Born in 1950s
All women:					
Average no. of years employed, aged 20-45:					
Full-time employed	9.0	9.9	9.5	9.3	9.5
Part-time employed	1.9	3.2	4.7	5.1	5.0
Self-employed	0.6	0.4	0.6	1.0	1.2
Inactive	13.5	11.4	10.3	9.5	9.4
	25.0	**25.0**	**25.0**	**25.0**	**25.0**
Early patterns of employment, aged 20-45:					
Employed <10yrs	51.1	35.0	25.7	20.6	19.1
Employed 10-20 yrs, mostly part-time	11.6	19.1	25.7	31.3	27.0
Employed 20+ yrs, mostly part-time	4.9	6.5	12.7	11.8	17.2
Employed 10-20 yrs, mostly full-time	13.3	18.2	20.1	19.8	21.7
Employed 20+ yrs, mostly full-time	19.0	21.1	15.8	16.6	14.9
	100.0	**100.0**	**100.0**	**100.0**	**100.0**
Individuals	*503*	*591*	*577*	*746*	*399*

Source: own analysis using waves 1-15 of the BHPS

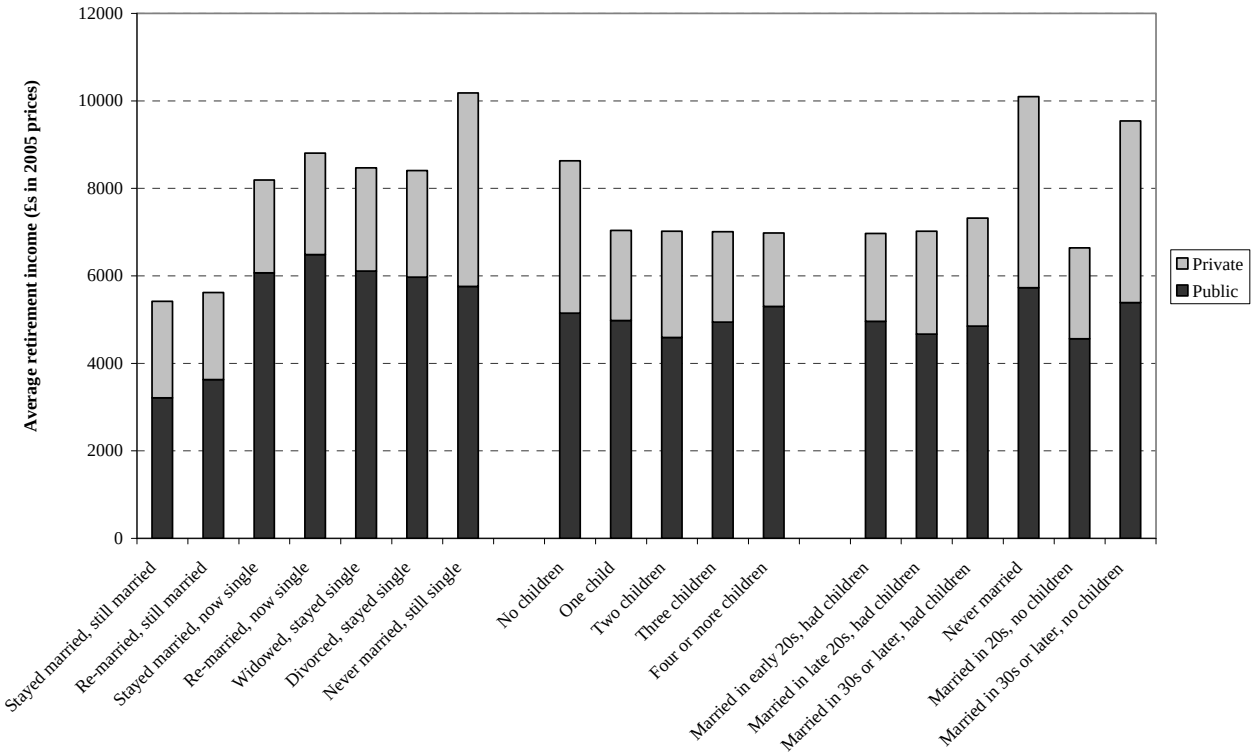
Based on total sample of 2,816 women with a full employment history between the ages of 20 and 45 and who appear at least once in the BHPS panel. The youngest women in this sample were born in 1959 and turned 45 in 2004.

Impact of family history

In this penultimate section, we examine the relationship between family histories and incomes in later life, using the analysis in previous sections to help interpret the results. Our expectation, which is supported by empirical evidence, is that family histories will mostly influence retirement incomes through their impact on women's work histories.[12] We focus on the regression results, but refer to the more detailed breakdown of incomes in Figure 4 and Table A3 to help understand any significant sub-group differences in incomes.

[12] When work history variables are included alongside the family history variables, the coefficients on the family history variables are either reduced substantially or rendered insignificant.

Figure 4: Incomes in later life by family history, women aged 65+



In the first regression reported in the top panel of Table 9, we investigate the impact of women's marital histories. Without controls, "never married" women have significantly higher incomes than "ever married" women. Never married women (comprising around 7% of the sample) are twice as likely to have a private pension as other women (56% vs 28%) and, for those in receipt, the mean value of their pension is more than twice as large, which in turn is closely related to differences in their work histories (see Table 6). Controlling for current marital status – whether still married or single - and for other socio-economic characteristics substantially reduces the size of the coefficient, but it remains significant and positive. This is because widows receive large public transfers and, in some cases, survivor benefits that compensate in part for work history-related differences in private pension income between "ever married" and "never married" women.

Older women who experienced divorce or early widowhood and remained single are no worse off, or better off, in later life than women who stayed married and were widowed later in life. Women who were divorced have higher private pensions of their own, because they have more complete work histories, but they have fewer derived pension rights than women who were widowed early or later in life – and these two effects appear to cancel each other out. Private pension schemes typically provide partial protection for the widows of scheme members, but none for partners of divorced members. The state pension system offers some protection to divorced women, but again less generous than its treatment of widows in terms of their rights to a pension based on their former husband's contributions record.

Table 9: Individual incomes in later life and family history, women aged 65+

	No controls	With controls
Marital history: (reference group: stayed married)		
Never married	0.503***	0.095**
	[0.047]	[0.041]
Divorced/widowed, re-married	0.133***	0.023
	[0.050]	[0.041]
Divorced, stayed single	0.317***	-0.054
	[0.050]	[0.042]
Widowed, stayed single	0.354***	0.038
	[0.029]	[0.028]
Timing of first marriage: (reference group: married in early 20s)		
Never married	0.442***	0.095**
	[0.047]	[0.040]
Married in late 20s	0.008	-0.029
	[0.035]	[0.027]
Married in 30s or later	0.172***	0.106***
	[0.044]	[0.037]
Number of children: (reference group: no children)		
One child	-0.207***	-0.084**
	[0.044]	[0.036]
Two children	-0.237	-0.089***
	[0.040]	[0.033]
Three children	-0.224***	-0.091
	[0.044]	[0.036]
Four or more children	-0.211***	-0.103***
	[0.046]	[0.037]
Age when had first child2: (reference group: first child in early 20s)		
No children	0.235***	0.083***
	[0.038]	[0.032]
Had first child in late 20s	0.029	-0.006
	[0.033]	[0.026]
Had first child in early 30s	0.011	-0.033
	[0.048]	[0.038]
Had first child in late 30s or later	0.011	0.004
	[0.069]	[0.051]

Table 9 cont:

	No controls	With controls
Family history: (reference group: married in early 20s, had children)		
Married in late 20s, had children	0.015	-0.026
	[0.038]	[0.029]
Married in 30s or later, had children	0.061	0.025
	[0.055]	[0.041]
Never married	0.440***	0.098**
	[0.047]	[0.040]
Married in 20s, no children	-0.037	-0.010
	[0.049]	[0.042]
Married in 30s or later, no children	0.379***	0.263***
	[0.058]	[0.064]
Observations	*11,306*	*11,306*

Dependent variables is logged individual income, excluding one case with zero reported income.
Standard errors in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%
Control variables are: birth cohort (4 categories), highest educational qualification (3 categories), currently marital status (single or married), currently employment status (not employed, full-time or part-time), number of years since reaching 65, and survey year.
The analysis is based on a sample of 1,447 individuals (and 11,306 observations) who are aged over 65 and have non-missing income data in one or more waves of the BHPS and provided complete retrospective marital and fertility histories over their working life (between the ages 20-60).

Women who re-married have similar incomes, on average, to women who stayed married throughout their working lives, whether they are still married or now widowed; any differences are not statistically significant after controlling for other socio-economic characteristics. Re-married women have, on average, marginally more complete work histories, but not sufficiently different to be reflected in significantly higher private pension incomes. And both groups have similar derived pension rights; women lose any pension rights relating to their former husband when they re-marry, but acquire rights based on the contributions of their new spouse.

Having children is associated with significantly lower incomes in later life, even after controlling for other factors, including current marital status. The size of this effect is relatively small, however: equivalent to a reduction of less than 10 per cent in their personal income. Substantial differences in work histories between women with and without children are translated into small, though significant, differences in retirement incomes, due largely to differences in private pension income and investment income. Perhaps more surprisingly, there is no significant association between the incomes of older women and the size of their family. As we saw earlier, women who had fewer children generally worked for longer periods, but this is not reflected in higher retirement incomes. In each case, around a quarter of women are receiving their own private pension and the average amounts received are only marginally higher for

women who had one child than for women who had four or more children. The extra years of employment worked by women who had fewer children do not appear to improve their pension prospects, presumably because much of it is part-time or in lower status occupations that are not typically covered by private pensions.[13]

The timing of children does not appear to affect women's pension prospects, but the timing of marriage does make a difference. Compared with women who marry in their early 20s (the reference group), women who first married in their 30s or later have higher incomes in later life, after controlling for other factors. Further analysis suggests that later marriage is only associated with significantly higher incomes for the sub-group of women who did not have children (around 4 per cent of all older women). These women are much more likely to have a private pension than other married women and receive a larger state pension and more investment income, perhaps because they were more career-oriented and able to save more without the financial pressures of bringing up children. By contrast, women who married in their 20s and did not have children (around 6 per cent of our sample) do not have significantly higher incomes than the reference group. This group are typically less qualified and concentrated in lower status occupations, which helps to explain why their longer work histories are not reflected in higher retirement incomes (see below).

Interaction effects

We now consider various interaction effects between family history and other demographic and social variables, mirroring the earlier analysis of work histories. More specifically, we look at whether the relationship between having children and older women's incomes varies by current marital status, birth cohort, or education. The results are shown graphically in Figure 5 and regression analysis is used to test the significance of the interaction terms in Table 10.

As in our analysis of work histories, we find that the negative association between motherhood and older women's incomes is significantly stronger for older women who are still married and for younger cohorts (born post-1924). The reasons for this are inter-linked. Widows, who comprise a high proportion of the older cohorts in our sample, receive a more generous state pension and, in some cases, a private survivor's pension that cancels out any differences in the pension entitlements of women with and without children. At the same time, higher rates of private pension coverage among younger cohorts have widened the income differential between women with and without children, by strengthening the relationship between women's work histries and their retirement incomes.

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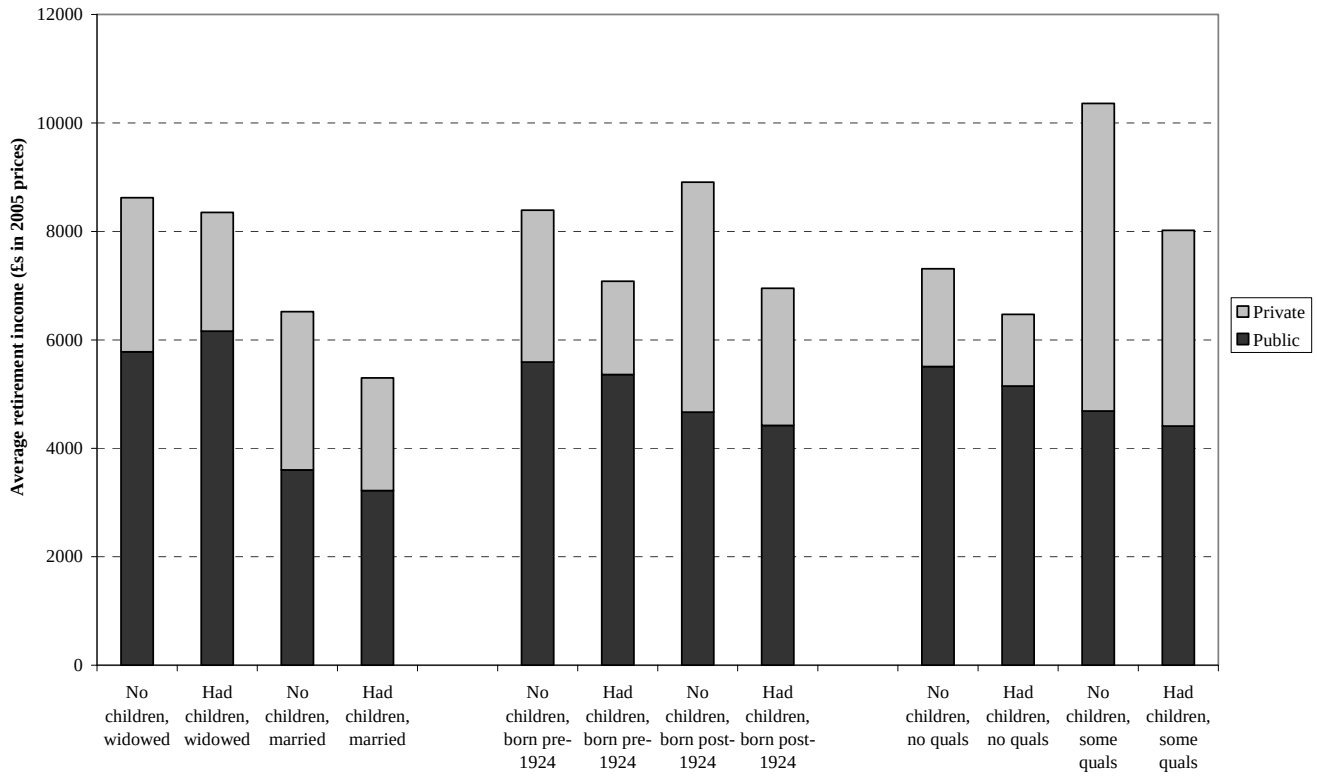
13 An alternative explanation is that the women may be more likely to have had more children if they could afford to do so. We do, however, control for education and occupational status, so this would need to be due to other unobserved determinants of earnings potential (e.g. energy and drive) that would also need to be positively correlated with having more children. Also, older women's propensity to have children is not related to their spouse's income, which we might expect to be the case if fertility were significantly influenced by women's own or shared income.

Figure 5: Interaction effects involving family histories, women aged 65+[1]



Source: own analysis using waves 1-15 of the BHPS

1. Results are not shown for divorced or never married women, because the sample of divorced women who did not have children is too small and the sample of never married women who had children is too small.

There is one trend that we might have expected to operate in the opposite direction. Women are now more likely to return to work after having children - and this is evident in our data, albeit at an early stage in this social trend. Comparing the work histories of mothers born pre-1920 and post-1927, there is a marked decrease in the number of years spent economically inactive (see Table 7). Other things being equal, we might have expected the increased economic activity of mothers to reduce the 'pension penalty' associated with having children. That this has not happened in practice is because most of the increase has been in mixed or predominantly part-time careers, which are not associated with significantly higher incomes in later life (see Table 1). Furthermore, our analysis of the early work histories of women approaching retirement suggests that changes in employment patterns are unlikely to reduce the pension penalty of having children for the foreseeable future unless private pension schemes start to provide much improved returns for scheme members with non-continuous non-full-time employment.

Table 10: Interaction effects involving family histories, women aged 65+

	With controls
By current marital status: (reference group: widowed)	
Had children	-0.006
	[0.038]
Had children x divorced or separated	0.099
	[0.111]
Had children x never married	-0.240***
	[0.068]
Had children x married	-0.178**
	[0.074]
By birth cohort: (reference group: born pre-1924)	
Had children	-0.036
	[0.038]
Had children x born post-1924	-0.111**
	[0.057]
By education: (reference group: no qualifications)	
Had children	-0.088**
	[[0.034]
Had children x some qualifications	-0.043
	[0.061]
Observations	*11,306*

Dependent variables is logged individual income, excluding one case with zero reported income.
Standard errors in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%

The association between having children and incomes in later life is greater for more qualified women, although this interaction term is not quite significant once other factors are controlled for. Private pension coverage has been universally poor for less qualified women, even those who have been in full-time employment for most of their working lives. As these women have less to gain in pension terms from working longer, it follows that they have less to lose from having children and other interruptions to their work history. This finding contradicts the results of the simulation model in Rake et al (2000), which concluded that the pension costs of having children were substantial for low- and mid-skilled mothers, but close to zero for women graduates. The reason for this becomes clear when we take a closer look at the assumptions underlying their simulation model. 'High-skilled' mothers are assumed to remain in almost continuous employment throughout their working lives, whereas the graduate mothers in our sample worked for an average of just 23 years, only 15 of which were in full-time employment (see Table A7). This is marginally higher than their less qualified counterparts, but considerably less than for qualified women who did not have children.

In summary, women who had children are predicted to have incomes that are around 10 per cent lower than women who did not have children across all the older women in our sample. However, the size of this effect is found to vary considerably between different sub-groups of older women. The pension penalty of motherhood is relatively small for women born prior to 1924 and older single women (3 per cent or less), but much larger for women born post-1924 and women who are still married (between 15-20 per cent). Thus, the association between having children and lower incomes in later life is significant, though only for selected groups of older women.

Quantile regressions

The results so far have been based on ordinary least squares regression, which constrains the effects of work and family history (and other covariates) to be constant across the income distribution. So, for example, having a child is assumed to be associated with a uniform proportionate reduction in older women's incomes. With interaction terms, the size of the effect is allowed to vary between different sub-groups of women (for example, women with or without formal qualifications). However, there are good reasons for suspecting that the effects of family and work history may also vary across different parts of the income distribution. The welfare state might be expected provide some protection against the adverse financial repercussions of an incomplete work history for those on low incomes, but perhaps not for those on higher incomes.

Quantile regression provides a more complete picture, by estimating a series of conditional quantile functions. For more information on the application of quantile regression techniques, see Koenker and Hallock (2001). We run two separate models for the family history and work history variables, respectively. The family history model includes a dummy variable identifying women who had children, which is reported in Figure 6, as well as the same set of control variables as used in the main analysis above. The work history model includes a variable denoting the number of years in full-time employment, which is reported in Figure 7, and the same set of control variables as in the family history model. For each covariate, we plot 17 quantile regression estimates spanning the income distribution at 5-percentile intervals. This is the solid line with square markers in Figures 6 and 7. Filled in squares indicate that these estimates are statistically significant (at the 10% level). The paler lines either side represent the 90 percent confidence bands.

The quantile estimates for the family history model show that the income differential between women with and without children is greatest in the middle of their respective distributions and smallest at the bottom; indeed, the coefficients are not statistically significant at the 10th, 15th, and 20th percentiles (see Figure 6). The pattern is similar for the work history model, but with the opposite signs; again, the association between full-time employment and incomes in later life is strongest in the middle of the income distribution, though significant across the whole distribution (see Figure 7).

Figure 6: Quantile estimates for family history model

Ever had child

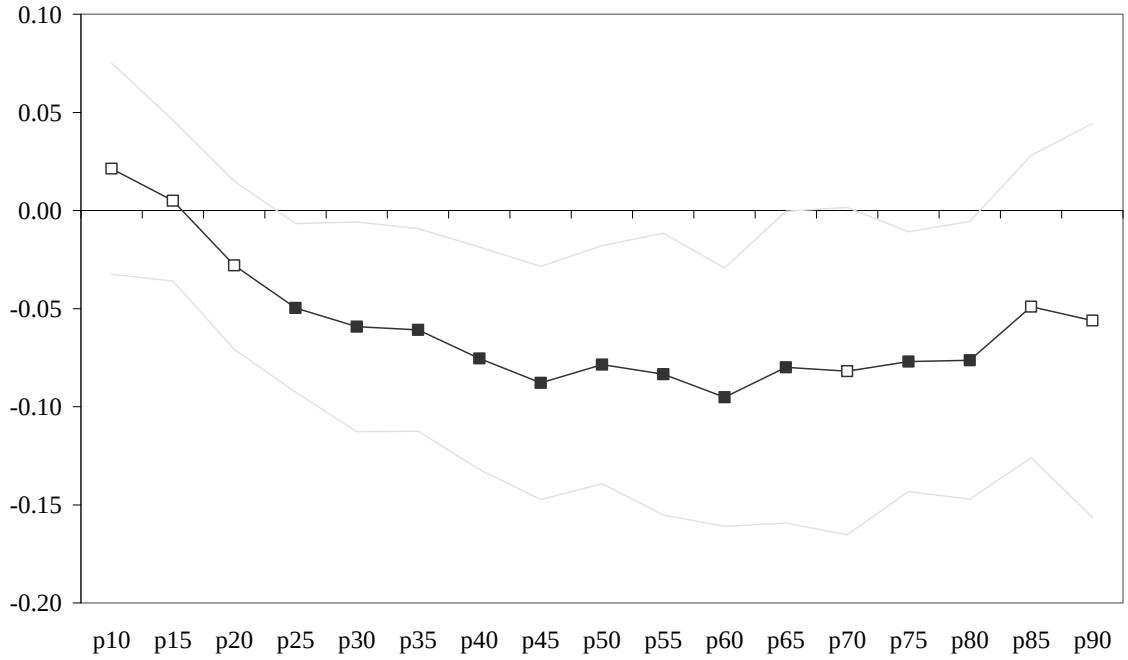
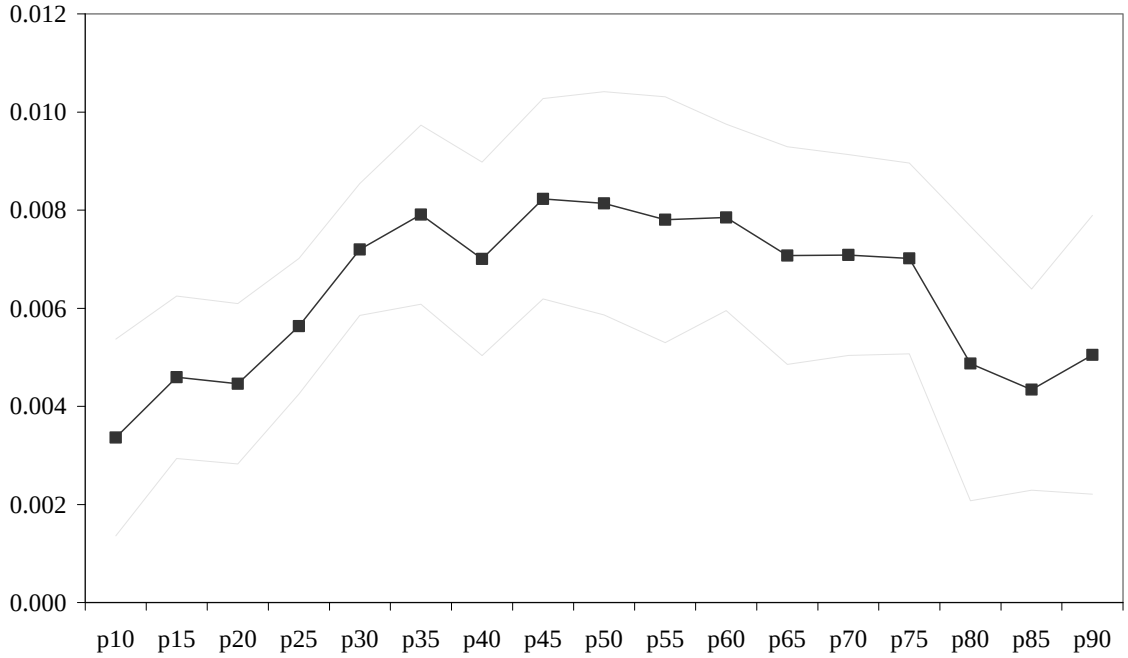


Figure 7: Quantile estimates for work history model

Years in full-time employment



At the bottom end of the income scale, the availability of public transfers, including means-tested benefits (but also other non-means-tested benefits), serve to compress work history-related differentials in incomes, by providing a floor on incomes, albeit at a relatively low level of income. The implications of this are discussed further in the concluding section. The impact of family and work history becomes more apparent towards the middle of the income distribution, as longer periods of employment are rewarded with larger private pension incomes. It is less clear why the income differential appears to be somewhat narrower again at the top end of the income scale. One possible explanation is that derived pension rights, investment income, and current earnings feature more prominently at the top end of the income distribution, masking the impact of individuals' family and work histories, which operate largely through their own private pension entitlement. Thus, it appears that the benefits system reduces life history-related income differentials at the bottom of the income distribution, whilst non-pension private sources of incomes obscure life history-related income differentials at the top of the income distribution.

Summary and conclusions

Key findings

- Our analysis confirms the importance of full-time employment for the accumulation of pension rights. An additional year spent in full-time employment is associated with a 0.7 per cent increase in women's incomes later in life, although this relationship is non-linear (see below). This effect is largely accounted for by differences in private pension incomes.
- Part-time employment and self-employment does not have a statistically significant association with older women's incomes. Compared with women who were inactive for most of their working lives, even long careers are not associated with significantly higher incomes in later life unless they were in predominantly full-time employment. Many women return to part-time employment for at least part of their subsequent working career to fit around their caring responsibilities, which is often concentrated in lower status occupations and, until recent years, with very low rates of private pension coverage. Periods in spent out of the labour market or in part-time employment may also damage women's career progression, adversely affecting their future earnings and pension prospects over and above the immediate impact this has on their contributions record.
- The low pension returns to part-time employment and to short periods of full-time employment are compounded by the operation of the benefits system. Whilst it provides a basic minimum income for women with very low incomes, it is also partly responsible for generating a 'pensions poverty trap', whereby women who have worked up to 15 years in full-time employment or 30 years or more in predominantly part-time employment are no better off than women who were economically inactive for most of their working lives. Quantile regression confirms that the compression in work-history related income differentials is strongest at the bottom end of the income distribution. Arguably, the problem is

not that the minimum guaranteed income is too high, but that the pension returns to non-full-time employment are so low.

- Perhaps more surprisingly, women who have worked full-time for between 20-25 years are no worse off in retirement than women who were full-time employed for at least 35 years, possibly because differences in private pension incomes are obscured by other sources of income that are unrelated, or only weakly related, to women's own work histories.
- Timing also matters: older women whose full-time employment was concentrated towards the end of their working lives (particularly in their 50s) have significantly higher incomes than women who worked for a similar length of time early on in their working lives. Two factors are likely to account for this finding: firstly, occupational pension schemes have tended to penalise early retirees and, secondly, private pension coverage has been increasing over this period, favouring those who have worked more recently.
- The 'breadwinner' model is still relevant to many older women: the association between women's work histories and incomes in later life is not statistically significant for widows, because work history-related differences in widowed women's incomes are offset by derived rights to their former husband's private pensions and substantially diluted by public transfers based on their former husband's contributions record, disproportionately benefiting those women with the weakest contributions record of their own.
- Women's own work histories matter more for younger cohorts of pensioners, at least in part because the increasing importance of private pensions in people's incomes is strengthening the relationship between past employment histories and retirement incomes. Work history matters less for older women with no formal qualifications, as the majority of these women are not in receipt of a private pension even if they have worked full-time for 30 or more years.
- Divorce, early widowhood and re-marriage are not associated with significant differences in older women's incomes, after controlling for current marital status. So, for example, women who were divorced and remained single are no worse off, or better off, in later life than women who stayed married and were widowed later in life. Divorced women have higher private pensions of their own, because they generally have more complete work histories, but fewer derived pension rights than widows.
- Two groups of women stand out as having significantly higher incomes, on average: those who never married and those who married in their 30s or later and did not have children (together comprising 11% of our sample.) By contrast, women who married in their 20s and did not have children (around 6 per cent of our sample) do not have significantly higher incomes than women who married in their early 20s and had children. This group are typically less qualified and concentrated in lower status occupations, which may explain why their longer work histories are not reflected in higher retirement incomes.
- Having children is associated with significantly lower incomes in later life, even after controlling for other factors; but, the number of children does not appear to make any difference. Women who only had one child have more complete work

histories than women who had larger families, but this is not reflected in higher retirement incomes, because much of it is part-time and/or in lower status occupations.

- Across all the older women in our sample, women who had children are predicted to have incomes that are around 10 per cent lower than women who did not have children, holding other factors constant. However, the size of this effect varies considerably between different sub-groups of older women, being greater for women born later, those who are still married, and more educated women (though in the latter case, the interaction term is not quite statistically significant). We might have expected the increase in economic activity among younger cohorts of mothers to have reduced the pension penalty of motherhood; that this has not happened in practice is because most of the increase in mothers' economic activity has been in part-time employment.

Implications of findings in relation to previous research

This paper provides a more detailed understanding of the relationship between women's family and work histories and their incomes in later life. Our results support some of the conclusions from previous research, using lifetime data on the marital, fertility and employment histories of the current generation of pensioners to quantify the size and significance of these associations; but, not all the results are consistent with expectations and some are previously untested.

On the whole, the associations between women's family histories and their incomes later in life are relatively small, in many cases insignificant, and explain only a small proportion of the overall variation in older women's incomes. Divorce, early widowhood and re-marriage are not associated with any significant differences in older women's incomes, whilst motherhood is only associated with a small reduction in incomes later in life – and not at all for certain sub-groups of the population, such as widows. Whilst there are significant differences in the work histories of older women with different family histories, this translates into relatively small differences in their personal incomes, because work history-related income differentials are also relatively small and insignificant in the case of non-full-time employment. Our analysis demonstrates how effective public transfers have been in dampening work history-related differentials in older women's incomes, especially at the bottom end of the income distribution.

On the one hand, this could be seen as a positive finding in that the 'pension penalty' associated with life course events like motherhood and divorce is not as severe as often anticipated. On the other hand, the main reason for this is that the pension returns to working longer are relatively low, even for women with longer and predominantly full-time careers and even more so for women who have combined part- and full-time employment. As women's employment rates have been rising, today's younger women will retire with more complete employment histories than today's pensioners and this, it is sometimes argued, will mean that future cohorts of women retire on higher incomes. However, our analysis of early work histories by birth cohort suggests that, at least under the pension system that has prevailed in the

recent past, it is unlikely that women retiring over the next two decades will benefit significantly from the additional years they have spent in employment.

It is hard to escape the conclusion that much, perhaps most, of the difference in older men and women's incomes is attributable not to differences in their work and family histories, but rather to gender differences in the pension returns to employment. Some of the factors that have contributed to the latter are slowly being addressed from explicit discrimination in the labour market to more subtle barriers to gender equality. The irony is that these changes will, assuming they are effective, increase the pension penalty of motherhood and caring, by increasing work history-related differentials in incomes. The outcome will be more equitable as between men and women, but at the expense of greater inequality among women with different work and family histories. More could be done to bolster the pension rights of women with greater family commitments, but this is harder to do when, as successive governments have encouraged, private pensions have a growing role in the overall pension system.

Implications for the future and for pensions reform

These conclusions are based on the outworking of a different pension system to that likely to prevail in the future. To conclude this paper, we briefly consider the implications of our findings in the light of the reforms announced in two White Papers (DWP 2006a; DWP, 2006b) and legislated in the 2007 Pensions Act and 2007/08 Pensions Bill.

The first major change is a commitment to up-rate the basic state pension in line with earnings at some point between 2012 and 2015 and to relax the contribution conditions, so that a much higher proportion of women will qualify for a full-rate BSP – an estimated 90% of women by 2020 (DWP, 2006a). At the same time, S2P will gradually be turned into a flat-rate top-up to the BSP (by around 2030), though with more stringent contributory requirements than for the BSP. For the reasons discussed earlier, maintaining the value of BSP will help to dampen work and family history-related differentials in retirement incomes, compared with a situation in which it were indexed only to prices. Changes in the contributions conditions will help those women who do not currently meet the requirements in full, though our analysis suggests they will make little difference in aggregate, because work history-related differentials in state pension income are already relatively small, due largely to spouse and widow' benefits. The main effect is that more women will gain entitlement to a state pension in their own right, rather than on the basis of their current or former spouse's contributions.

The other major component of the proposed reforms is low-cost Personal Accounts with automatic enrolment for all employees and compulsory employers' contributions, unless employees decide to opt out of the scheme. Introducing a stronger element of compulsion into private pensions should disproportionately benefit women, because they are concentrated in the sectors and types of jobs that are presently least likely to be covered by an employer-sponsored pension scheme. On average, future cohorts of women will clearly be better off in retirement once they have had sufficient time to

accumulate a decent private pension of their own. It is more difficult, however, to predict how this will affect the relationship between women's family histories and their incomes in later life, including the 'pension penalty' of having children.

On the one hand, it should ensure that women who have worked in non-continuous non-full-time employment - many of whom are mothers - will receive significantly higher incomes in retirement in return for the time they have spent in work. They should also benefit from the shift from Defined Benefit to Defined Contribution schemes, which are more portable and work better for those whose careers are characterised by frequent moves into and out of employment and between jobs. This group will be better off than they would otherwise have been relative to their peers who have worked predominantly full-time for an employer that was already operating an occupational pension scheme. The proposed reforms will also reduce inequities in pension outcomes between women with similar work histories but in different occupations or sectors, by reducing disparities in private pension coverage.

On the other hand, women with very limited work histories, including a disproportionate number of mothers with low or no qualifications, will benefit little, whilst the biggest beneficiaries will be women with complete or almost complete work histories in sectors or occupations that currently have poor occupational pension coverage, including less qualified women who do not have children. Thus, for women with low qualifications or working in lower status occupations, the 'pension penalty' of having children is likely to increase as a result of the proposed reforms. This is simply the converse of the point made earlier: as less qualified women will have more to gain in pension terms from working longer under the new system, they will also stand to lose more from interruptions to their work history. This motivates the call from various organisations for the government to offer direct state contributions or increased tax relief to the personal accounts of certain disadvantaged groups, including women who spend substantial periods of their life unable to work or save due to caring responsibilities (Age Concern, 2006; Fawcett Society, 2006).

The same organisations have also pointed out that these reforms do little to help those women who are currently approaching retirement. Changes to the state pension system are not being applied retrospectively and, in the case of earnings-indexation, will not be implemented for several years, so will take many years to feed into women's retirement incomes – as will the introduction of Personal Accounts. Our analysis reinforces this point by showing that the early employment histories of women currently aged over 45 seem unlikely in themselves to ensure better pension outcomes for the next generation of pensioners.

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Table A1: Personal incomes of older women in the UK by employment history

			Private pension		Other private		Public pension		Other public	
	% of sample	Total income	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
	%	*£*	*%*	*£*	*%*	*£*	*%*	*£*	*%*	*£*
Type of career:										
Employed <15 years	32.1	6550	8	190	65	1480	95	3780	41	1100
Employed 15-30 yrs, mostly part-time	9.8	6330	18	290	64	1340	97	3700	36	1000
Employed 30+ yrs, mostly part-time	6.1	6380	20	390	73	960	97	3880	43	1160
Employed 15-30 yrs, mixed	9.8	7250	28	750	71	1620	99	4030	35	850
Employed 30+ yrs, mixed	6.7	7050	37	920	71	1630	96	3680	32	810
Employed 15-30 yrs, mostly full-time	15.7	7980	42	1290	70	1520	97	4100	43	1070
Employed 30+ yrs, mostly full-time	19.7	8870	53	2440	73	1130	97	4370	39	930
Duration in full-time employment:										
FT employed < 5 years	31.4	6610	11	230	63	1410	95	3770	42	1200
FT employed 5-10 years	19.0	6440	15	300	73	1510	97	3840	35	790
FT employed 10-15 years	11.5	7020	23	590	69	1530	97	3910	37	990
FT employed 15-20 years	8.4	7670	44	1170	68	1510	96	3950	41	1030
FT employed 20-25 years	7.6	7800	49	1360	70	1610	98	3990	38	850
FT employed 25-30 years	6.1	8270	51	1930	75	1220	97	4070	39	1040
FT employed 30-35 years	6.0	9040	52	2430	77	1350	96	4330	37	930
FT employed 35+ years	10.0	9120	52	2670	69	870	98	4580	41	1000
Phasing of FT employment										
Mostly FTE throughout	12.0	9290	52	2830	70	950	98	4570	41	940
Mostly FTE, retires early	4.7	8070	38	1310	77	1370	96	4210	45	1190
Mostly FTE with mid-career break	3.5	8530	53	1830	78	1550	96	4290	39	850
Mostly FTE with early career break	2.6	9060	70	2960	60	860	99	4240	36	1010
Extended early/mid FT career	5.1	7580	24	650	69	1890	96	3900	41	1140
Extended interrupted FT career	4.8	7510	50	1280	76	1370	97	3940	40	920
Extended late FT career	5.1	7980	59	1660	72	1650	97	3730	35	940
Short early FT career	21.8	6430	17	380	74	1460	97	3820	32	780
Short mid FT career	3.3	6490	22	500	53	1240	95	3760	36	990
Short late FT career	3.3	7720	42	1020	63	1130	98	4320	54	1260
Mostly not FTE throughout	33.8	6650	12	230	64	1470	95	3790	42	1160
All older women	**100.0**	**7300**	**28**	**930**	**69**	**1400**	**96**	**3960**	**39**	**1010**

Table A2: Personal incomes of older women in the UK by employment history: interaction effects

			Private pension		Other private		Public pension		Other public	
	% of sample	Total income	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
	%	£	%	£	%	£	%	£	%	£
Interaction with current marital status:										
FTE < 15yrs, widowed	32.2	8110	14	300	71	1740	95	4660	53	1410
FTE 15-30yrs, widowed	10.4	8880	40	1070	73	1720	96	4780	56	1310
FTE 30+yrs, widowed	6.0	8540	35	1300	66	1060	96	4830	53	1360
FTE < 15yrs, divorced	3.0	7390	21	480	45	880	92	4060	61	1960
FTE 15-30yrs, divorced	1.6	8420	52	1070	54	950	97	4540	64	1860
FTE 30+yrs, divorced	1.0	9900	44	2610	66	940	98	4840	54	1510
FTE < 15yrs, never married	1.2	8760	19	930	62	2140	98	4550	47	1140
FTE 15-30yrs, never married	0.6	8720	22	780	81	1150	99	4360	75	2430
FTE 30+yrs, never married	5.2	10500	68	4020	78	900	97	4700	38	880
FTE < 15yrs, married	25.3	4560	15	290	65	1140	98	2680	19	440
FTE 15-30yrs, married	9.5	6640	57	1960	70	1300	98	3030	16	360
FTE 30+yrs, married	3.8	7830	59	2620	75	1270	98	3570	17	360
Interaction with birth cohort:										
FTE < 15yrs, born pre-1924	35.2	6950	11	240	69	1380	96	4140	47	1200
FTE 15-30yrs, born pre-1924	9.8	7340	32	730	70	1270	97	4280	47	1060
FTE 30+yrs, born pre-1924	8.9	8810	42	2140	69	810	96	4530	50	1320
FTE < 15yrs, born post-1924	26.7	6210	20	420	65	1570	96	3400	29	820
FTE 15-30yrs, born post-1924	12.4	8310	61	2020	70	1620	97	3770	34	900
FTE 30+yrs, born post-1924	7.1	9450	64	3120	76	1340	98	4430	26	550
Interaction with education:										
FTE < 15yrs, no qualifications	42.8	6270	11	170	61	1010	95	3860	45	1230
FTE 15-30yrs, no qualifications	13.5	7270	36	720	65	1140	97	4180	49	1240
FTE 30+yrs, no qualifications	9.3	7450	37	1180	61	560	97	4450	48	1250
FTE < 15yrs, some qualifications	19.1	7430	24	650	80	2470	98	3730	25	590
FTE 15-30yrs, some qualifications	8.9	8980	66	2670	81	2000	97	3730	25	570
FTE 30+yrs, some qualifications	6.4	11360	74	4520	88	1690	97	4540	28	610

Table A3: Personal incomes of older women in the UK by family history

			Private pension		Other private		Public pension		Other public	
	% of sample	Total income	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
	%	£	%	£	%	£	%	£	%	£
Marital history:										
Stayed married, still married	36.3	5410	32	990	68	1220	98	2810	18	400
Re-married, still married	4.0	5620	30	770	63	1220	95	3180	18	450
Stayed married, now single	28.7	8190	20	460	74	1660	96	4780	53	1290
Re-married, now single	5.7	8800	27	670	71	1650	97	4750	61	1740
Widowed, stayed single	13.9	8470	26	730	67	1630	95	4620	52	1490
Divorced, stayed single	4.1	8400	45	1360	55	1080	94	4390	56	1580
Never married, still single	7.3	10190	55	3290	75	1130	98	4670	43	1090
Married in early 20s	60.6	6930	28	740	66	1280	96	3840	41	1070
Married in late 20s	21.2	7000	24	650	74	1670	97	3900	34	780
Married in 30s or later	10.7	8090	34	1210	78	1850	97	4220	33	820
Fertility history:										
No children	18.1	8630	43	2000	77	1480	97	4310	36	840
One child	19.9	7040	27	810	72	1250	96	3970	39	1010
Two children	29.5	7020	29	840	73	1590	97	3780	34	810
Three children	17.6	7010	25	580	67	1490	98	3940	39	1000
Four or more children	14.9	6980	24	560	53	1120	95	3860	47	1440
Had first child in early 20s	35.7	6860	27	660	59	1050	96	3870	46	1280
Had first child in late 20s	28.6	7200	29	820	75	1710	97	3880	34	790
Had first child in early 30s	13.6	7030	24	710	75	1600	96	3860	33	860
Had first child in late 30s or later	4.0	6990	22	640	72	1620	96	3960	33	770
Family history:										
Married in early 20s, had children	55.8	6970	28	720	65	1290	96	3850	41	1110
Married in late 20s, had children	18.7	7020	24	670	74	1680	97	3890	34	780
Married in 30s or later, had children	7.0	7320	28	910	75	1560	96	4050	31	800
Never married	7.4	10100	56	3250	75	1120	98	4660	42	1070
Married in 20s, no children	7.4	6650	27	780	73	1300	96	3850	32	710
Married in 30s or later, no children	3.7	9550	46	1760	83	2390	99	4550	35	840

Table A4: Personal incomes of older women in the UK by family history: interaction effects

			Private pension		Other private		Public pension		Other public	
	% of sample	Total income	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
	%	£	%	£	%	£	%	£	%	£
Interaction with current marital status:										
No children, widowed	6.1	8610	31	1090	79	1750	97	4790	45	990
Had children, widowed	40.5	8350	21	520	71	1670	95	4720	54	1440
No children, married	4.8	6520	35	1320	76	1600	98	3210	16	390
Had children, married	35.7	5310	31	910	67	1170	98	2810	18	410
Interaction with birth cohort:										
No children, born pre-1924	9.6	8390	35	1700	77	1100	97	4500	45	1090
Had children, born pre-1924	41	7070	17	410	69	1310	96	4150	48	1210
No children, born post-1924	8.5	8900	51	2330	77	1910	98	4100	25	570
Had children, born post-1924	40.9	6960	37	1040	67	1490	97	3600	30	820
Interaction with qualifications:										
No children, no quals	10.3	7310	27	910	67	890	97	4350	46	1160
Had children, no quals	53.2	6470	20	340	61	980	96	3930	46	1220
No children, some quals	7.8	10360	63	3420	89	2250	98	4260	22	430
Had children, some quals	28.7	8020	40	1430	80	2180	98	3770	25	640

Table A5: Socio-economic characteristics by employment history, women aged 65+

Column percentages

	Work history (pre-60):							
	<15yrs active	15-30yrs, mainly part-time	30+yrs, mainly part-time	15-30yrs, mixed	30+yrs, mixed	15-30yrs, mainly full-time	30+yrs, mainly full-time	**All**
	%	*%*	*%*	*%*	*%*	*%*	*%*	***%***
Birth cohort:								
Born pre-1920	51.5	28.9	21.8	26.7	29.7	31.2	35.5	**37.2**
Born 1920-1927	29.3	37.2	35.1	29.3	34.3	33.9	35.1	**32.6**
Born post-1928	19.2	33.9	43.1	44.1	36.0	34.9	29.4	**30.2**
Education:								
No qualifications	73.6	70.3	71.9	54.5	57.3	62.2	59.3	**65.6**
Other qualifications	19.9	19.7	23.8	29.4	30.0	23.3	21.2	**22.5**
Higher and degree	6.5	10.0	4.3	16.2	12.7	14.5	19.5	**11.9**
Marital status:								
Single	62.7	51.0	52.1	60.3	48.5	62.7	70.9	**61.3**
Married	37.3	49.0	47.9	39.7	51.5	37.3	29.1	**38.7**
Employment status:								
Not employed	99.1	94.2	95.9	96.8	90.8	96.4	96.6	**96.7**
Employed part-time	0.7	5.8	4.1	3.2	6.6	2.6	2.8	**2.8**
Employed full-time	0.2	0.0	0.0	0.0	2.6	1.0	0.5	**0.5**
Years since reached 65	10.8	8.1	7.1	7.8	8.1	8.2	9.3	**9.1**
All older women	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table A6: Socio-economic characteristics by family history, women aged 65+

Column percentages

	Family history (pre-60):						
	Never married	Married in 20s, no children	Married in 30s or later, no children	Married in early 20s, had children	Married in late 20s, had children	Married in 30s or later, had children	**All**
	%	*%*	*%*	*%*	*%*	*%*	*%*
Birth cohort:							
Born pre-1920	42.1	35.1	35.6	28.3	47.0	40.2	**34.5**
Born 1920-1927	35.2	29.8	41.2	31.6	31.9	29.3	**32.0**
Born post-1928	22.7	35.2	23.2	40.1	21.0	30.5	**33.6**
Education:							
No qualifications	48.2	65.9	54.7	68.7	60.2	48.9	**63.5**
Other qualifications	27.2	21.2	27.9	21.6	25.7	37.7	**24.1**
Higher and degree	24.6	13.0	17.4	9.7	14.1	13.4	**12.4**
Marital status:							
Single	98.0	51.6	68.3	55.2	59.0	58.0	**59.5**
Married	2.0	48.5	31.7	44.8	41.0	42.0	**40.5**
Employment status:							
Not employed	97.9	96.0	97.1	96.3	95.4	97.6	**96.4**
Employed part-time	2.1	3.7	2.9	2.9	4.2	2.1	**3.1**
Employed full-time	0.0	0.3	0.0	0.8	0.4	0.3	**0.6**
Years since reached 65	10.5	8.4	9.4	7.5	10.9	9.8	**8.7**
All older women	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table A7: Relationship between education and employment histories by whether had child, women aged 65+

	No child			Had child		
	None	Other	Degree or higher	None	Other	Degree or higher
Employment history (aged 20-59)						
Years in employment:	*Yrs*	*Yrs*	*Yrs*	*Yrs*	*Yrs*	*Yrs*
Full-time employed	24.6	27.2	26.7	10.7	12.0	15.2
Part-time employed	3.9	2.4	4.1	7.7	7.8	6.0
Self-employed	0.7	0.6	1.9	0.9	1.4	1.8
Inactive	10.9	9.8	7.3	20.6	18.7	17.0
	40.0	**40.0**	**40.0**	**40.0**	**40.0**	**40.0**
Pattern of employment:	*%*	*%*	*%*	*%*	*%*	*%*
Active <15 yrs	19.9	15.7	8.0	37.6	31.5	22.0
15-30 yrs, mainly part-time	0.7	3.2	2.2	13.7	9.7	10.4
30+ yrs, mainly part-time	4.5	1.8	6.3	7.3	7.2	1.6
15-30 yrs, mixed	4.8	4.6	6.2	8.9	14.9	15.4
30+ yrs, mixed	7.6	3.0	5.8	5.8	10.3	7.4
15-30 yrs, mainly full-time	11.9	11.7	4.2	15.2	17.3	23.6
30+ yrs, mainly full-time	50.6	60.2	67.3	11.6	9.2	19.6
	100.0	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Individuals	*139*	*61*	*46*	*740*	*270*	*131*

APPENDIX B: Description of variables used in the analysis

Work history variables

Number of years in employment:
Total number of years spent in full-time employment, part-time employment and self-employment over their 40-year working life (between the ages of 20-60).

Pattern of employment:
Based on the total number of years in employment and the proportion of this time spent in full-time, part-time, or self-employment. Categories are defined as follows:

Active <15yrs: employed for less than 15 years in total.
Short part-time career: employed for between 15-30 years, at least two thirds of which is part-time.
Long part-time career: employed for 30 or more years, at least two thirds of which is part-time.
Short mixed career: employed for between 15-30 years, neither predominantly part-time or full-time.
Long mixed career: employed for 30 or more years, neither predominantly part-time or full-time.
Short full-time career: employed for between 15-30 years, at least two thirds of which is full-time.
Long full-time career: employed for 30 or more years, at least two thirds of which is full-time.

Duration of full-time employment:
Total number of years in full-time employment in 5-year bands (i.e. less than 5 years, 5-10 years, 10-15 years, etc).

Timing of full-time employment:
Whether full-time employed for the majority of their 20s, 30s, 40s or 50s (at least 5 years out of each ten year period).

Duration and timing of full-time employment:
Respondents' working lives are divided into four ten-year periods, covering their 20s, 30s, 40s and 50s and categorised as follows:

Mostly full-time employed throughout: FTE for majority of every ten year period.
Mostly full-time employed, retires early: FTE for majority of 20s, 30s and 40s, but not 50s.
Mostly full-time employed, mid-career break: FTE for majority of 20s, 30s and 50s or 20s, 40s and 50s.
Mostly full-time employed, early career break: FTE for majority of 30s, 40s and 50s, but not 20s.
Extended early/mid full-time career: FTE for majority of their 20s and 30s or 30s and 40s.
Extended, but interrupted, full-time career: FTE for majority of their 20s/40s, 20s/50s or 30s/50s.
Extended late full-time career: FTE for majority of their 40s and 50s.
Short early full-time career: FTE for majority of their 20s (but not in their 30s, 40s or 50s).
Short mid full-time career: FTE for majority of either their 30s or 40s.
Short late full-time career: FTE for majority of their 50s (but not their 20s, 30s or 40s).
Mostly not full-time employed throughout: not FTE for majority of any of the four ten year periods.

Summary statistics are provided overleaf.

	Sample size (individuals)	Proportion of sample (%)
Type of career:		
Employed <15 years	456	32.1
Employed 15-30 yrs, mostly part-time	142	9.8
Employed 30+ yrs, mostly part-time	83	6.1
Employed 15-30 yrs, mixed	141	9.8
Employed 30+ yrs, mixed	98	6.8
Employed 15-30 yrs, mostly full-time	224	15.7
Employed 30+ yrs, mostly full-time	276	19.7
Duration in full-time employment:		
FT employed < 5 years	445	31.4
FT employed 5-10 years	268	19.0
FT employed 10-15 years	168	11.5
FT employed 15-20 years	119	8.4
FT employed 20-25 years	110	7.7
FT employed 25-30 years	85	6.1
FT employed 30-35 years	87	6.0
FT employed 35+ years	138	10.0
Phasing of FT employment		
Full-time employed for majority of 20s	712	50.7
Full-time employed for majority of 30s	368	26.2
Full-time employed for majority of 40s	453	31.8
Full-time employed for majority of 50s	423	30.2
Mostly FTE throughout	164	12.0
Mostly FTE, retires early	66	4.7
Mostly FTE with mid-career break	50	3.5
Mostly FTE with early career break	39	2.6
Extended early/mid FT career	73	5.1
Extended interrupted FT career	66	4.8
Extended late FT career	76	5.1
Short early FT career	310	21.8
Short mid FT career	50	3.3
Short late FT career	45	3.3
Mostly not FTE throughout	481	33.8
All older women	**1,420**	**100.0**

Family history variables

Most of these variables are self-explanatory. All variables refer to respondent's marital and fertility history up to the age of 60. So, for example, someone who is divorced or widowed at 62 would not be included in the "ever divorced" or "ever widowed" categories (although they would be counted as single in the post-60 control variables). Similarly, a woman would only be included in the "re-married" category if they re-married before the age of 60. The fertility variables only include natural children (and not adopted or step-children).

Summary statistics are provided below.

	Sample size	**Proportion of sample (%)**
Marital history:		
Never married	103	7.4
Married, stayed married	935	64.8
Divorced or widowed, re-married	142	9.7
Divorced, stayed single	61	4.2
Widowed, stayed single	206	13.9
Married in early 20s	885	60.6
Married in late 20s	305	21.2
Married in 30s or later	154	10.7
Fertility history:		
No children	259	18.1
One child	286	19.9
Two children	428	29.5
Three children	260	17.6
Four or more children	214	14.9
Had first child in early 20s	515	35.7
Had first child in late 20s	416	28.6
Had first child in early 30s	197	13.6
Had first child in late 30s or later	60	4.0
Family history:		
Never married	103	7.4
Married in 20s, no children	108	7.4
Married in 30s or later, no children	53	3.7
Married in early 20s, had children	813	55.8
Married in late 20s, had children	269	18.7
Married in 30s or later, had children	101	7.0
All older women	**1,447**	**100.0**

Control variables:

Summary statistics are provided below for the sample of women with complete family histories.

	Sample size	Proportion of sample (%)
Age cohort:		
Born pre-1920	468	34.5
Born 1920-1927	475	32.0
Born post-1928	504	33.6
Highest qualification:		
No qualifications	901	63.5
Other qualifications	359	24.1
Higher and degree	187	12.4
Current marital status:		
Single (never married, divorced, or widowed)	745	59.5
Married	702	40.5
Current employment status:		
Not employed	1,354	96.4
Employed part-time	77	3.1
Employed part-time	16	0.6
Years since reaching 65:	1,447	8.7 (mean)
Survey year	1,447	1998 (median)