

**Women's family histories and incomes in later life in the UK,
US and West Germany**

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June 2009

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Joint CRA / CASE Discussion Paper
CRA Discussion Paper no. 0904, CRA DP/0904
and CASE /138, Centre for Analysis of Social Exclusion,
London School of Economics

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Acknowledgements: This research was funded by the Nuffield Foundation under grant AGE/00056/6. The authors are grateful to the ESRC Data Archive for permission for and access to the BHPS. We are also grateful to Sarah Cheesbrough for her initial work on the project and to Dr Katherine Rake and Prof Paul Johnson who were original co-investigators on the grant.

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June 2009

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Abstract

Using data from several large scale longitudinal surveys, this paper investigates the relationship between older women's families histories and their personal incomes in later life in the UK, US and West Germany, By comparing three countries with very different welfare regimes, we seek to gain a better understanding of the interaction between the life course, pension system and women's incomes in later life. We conclude with a brief discussion of the 'women-friendliness' of different pension regimes in the light of our analysis.

Key words: comparative; older women; pensions; work history; life course.

Introduction

Women typically spend fewer years in paid employment and have more heterogeneous work histories than men, which adversely affects their ability to build up an adequate income for their retirement (Sefton, Evandrou and Falkingham, 2008). Much of this gender difference in employment patterns is due to family care responsibilities, the majority of which have been, and continue to be, borne by women. However, the extent to which periods of caring for children or older relatives disadvantages women in acquiring pension entitlements of their own depends on the structure of the pension system, including redistributive features within state pension schemes and the balance between public and private provision (Falkingham and Rake, 2001; Ginn, 2003). Married women's incomes in later life also depend critically on their entitlement to derived pensions based on their current or former husband's contributions record, though women may lose some or all of their entitlement upon separation or divorce. In summary, women's marital and fertility histories are expected to have a significant effect on their incomes later in life, but one that can be mitigated or magnified by the pensions and broader welfare system.

This paper adds to the previous literature in this field by examining the relationship between the family histories and individual incomes of older women in the UK, US and West Germany - three countries with very different welfare regimes. The paper sheds light on a number of important questions. What is the difference in the incomes in later life of older women who did and did not have children, and who did and did not experience divorce or widowhood earlier in their working lives? How does the strength of these associations vary between the UK, US and West Germany? And to what extent can any observed differences be attributed to the structure or design of different pensions systems? Our analysis makes use of retrospective family and work history data from longitudinal surveys for each country. To our knowledge, this is the first time that this kind of analysis has been carried out within a comparative framework, though similar studies have been undertaken for individual countries, the results of which are discussed below. This paper accompanies a separate paper by the same authors on the relationship between women's employment histories and their incomes in later life (Sefton, Falkingham and Evandrou, 2009).

Our findings are of interest in their own right, because they help us to understand part of the variation in older women's incomes within and between countries. They also help to inform the ongoing debate about the re-structuring of pension systems to reflect changing family structures. Pensions systems in the UK and elsewhere were designed on the assumption that women would in most cases be financially dependent on their husbands in old age. This is an increasingly risky strategy given that an increasing proportion of partnerships end in divorce or do not lead to marriage at all; and, in any case, not all husbands have an adequate pension of their own or share their income equally (Ginn, 2003). In the US it is estimated that the proportion of older women who are divorced will increase from 6% in 1991 to 19% in 2020 (Smeeding and Williamson, 2001) and similar increases are predicted in the UK and elsewhere

(e.g. Evandrou and Falkingham, 2000). These changes in family structures have undermined the assumption that women can or should depend on having a partner's income to support them in old age (EOC, 2005). A key challenge facing pension systems in these countries will be to secure a decent income in retirement for women with family and work experiences dramatically different from previous cohorts (Yakibu, 2000) and from those envisaged by the original architects of these welfare systems.

Background

The relatively low incomes of many older women reflect both labour market features (lower employment rates, lower average earnings, and more part-time work) and specific features of pensions systems, the effects of which vary between countries and also between sub-groups of the population, for example more or less educated women.

Women's employment is strongly related to their maternal status with lower employment rates (in particular full-time) for women with dependent children, especially mothers of pre-school children (e.g. Ginn, Street and Arber, 2001). However, the extent to which women reduce their employment after giving birth varies among countries due to differences in cultural norms and institutional factors, such as the availability of childcare. According to Harkness and Waldfogel (1999), the 'family gap' was greatest in Britain of the seven industrialised countries they looked at. 76% of British women without children (aged 22-44) were in full-time employment compared with only 26% of women with children, while the equivalent rates were 73% and 48% in the US and 72% and 40% in Germany (in the mid 1990s). In addition to the immediate impact on their contributions record, a career break to have children can have far reaching effects on women's lifetime earnings because they often experience occupational downgrading on returning to the labour market, especially when returning to a different employer and to part-time work (Ginn, 2003). The long-term financial impact of having children depends on the structure of the labour market, including, for example, the function of part-time work within the economy either as a temporary support to maintain a women's labour market attachment during the childcare years or as 'dead-end', where women are trapped in a limited (low status) job/ no-job cycle (Gregory and Connolly, 2008). Moreover, children not only affect work patterns, they also establish new child-focused priorities for spending and increase financial pressure by bringing additional costs, which can have a significant influence mothers' propensity to save. According to research commissioned by the Fawcett Society (2007), the gender savings gap is nearly twice the size of the gender pay gap, reflecting differences in household spending on children (Pahl, 2005) as well as women joining and leaving the household with unequal savings.

As already noted, the pension penalty of motherhood and other family events is mediated by the pension (and broader welfare) system. Different welfare regimes may be more or less favourable to women with shorter and/or more interrupted work

histories. Ginn and Arber (1999) and others have argued that the shift towards greater private pension provision in the UK [and the US] is likely 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 (Ginn and Arber, 1999). State pension schemes, it is argued, have the potential to ensure that the pensions costs of family care are more fairly shared between those who undertake such tasks and those who do not (Ginn, 2003). In recent decades, many countries have implemented specific reforms to their state pensions system and regulations on private pension provision in order to provide at least some protection of pension entitlements during periods of childcare and to strengthen the derived rights of widows and divorced women, although most of these changes were not retrospective and came too late to benefit the current generation of female pensioners.

Previous research in the UK has examined the combined effects of family and employment histories on private pension income using retrospective data from the British Household Panel Survey – the same data set employed in this analysis (Bardasi and Jenkins, 2004). They found no statistical association between the probability of receiving private pension income and life time marital status variables, concluding that the effects of marriage and children appear to work entirely through their impact on work histories. However, they did find a significant association between time spent married, separated and divorced (pre-60) and the *level* of private pension income for those in receipt of a private pension. Bardasi and Jenkins' tentative explanation is that women who marry may look to their husbands to play the predominant role in providing financially for them both in retirement.¹ As well as considering these issues in a comparative context, this paper builds on this previous study in a number of ways: by examining the effects of family history *separately* from that of work histories; by investigating the relationship *between* family and work histories; and by looking at the association with *total* individual incomes, including state pensions and other public transfers.

In the US, Yakibu (2000) examined how family history affects the odds of (actual or likely) private pension receipt for men and women approaching retirement, using data from the 1992 Health and Retirement Study. For women, being single or divorced was associated with higher odds of pension receipt, and having children decreased their odds. However, the former effect is reversed and the latter effect becomes insignificant when the analysis is repeated for couples' joint pension receipt. (Joint pension receipt is relevant to older women's individual incomes, because, if widowed, they are likely to acquire at least partial entitlement to their husband's pension.) Our analysis employs a similar conceptual framework, but uses a different data set, a different sample (women who are aged over 65) and a different income measure (gross individual income, as opposed to private pension receipt).

¹ The authors are not explicit about the mechanisms, but this could presumably involved married women being less concerned about finding jobs with good pension prospects and less likely to make additional voluntary contributions.

Further details of the data and methodology are provided in the next section. The final two sections present the main empirical findings and discuss some of the implications for our understanding of the effects of the life course on women's incomes in later life under different welfare regimes.

Data and methodology

There are various ways in which family histories might be expected to influence women's incomes in later life. Marriage may alter women's incentives to save for their retirement if they expect to be (more or less) financially dependent on their husband. The costs of bringing up children may also limit a women's ability to save for her retirement and alter the preferred trade-off between current and future consumption. However, the basic premise being examined in this paper is that women's family histories primarily affect their incomes in later life through the impact on women's employment records and hence their ability to accumulate pension rights and other forms of saving.

An earlier paper by the same authors examined the relationship between older women's incomes and their employment histories in the UK, US and West Germany and found significant associations between the two, though with some important differences between countries (Sefton, Falkingham and Eynaud, 2009). The association between older women's incomes and work histories was found to be strongest in West Germany and weakest in the UK, where there is evidence of a pensions poverty trap and where only predominantly full-time employment is associated with significantly higher incomes in later life. This paper complements and extends the previous analysis by focusing on the relationship between older women's incomes and their family histories. The relationship between women's family and work histories is then explored in order to shed further light on the previous study's findings.

The analysis uses data from three separate longitudinal surveys: the British Household Panel Survey (UK), the Panel Study of Income Dynamics (US) and the German Socio-Economic Panel (West Germany). All three data sets contain retrospective data on women's marital and fertility histories, including the timing and status of all previous marriage(s) and dates of birth for all natural children, as well as data on their employment history from school leaving age to the present. Our analysis is based on the sub-sample of older women (aged over 65 in 1991 or later years) with complete family histories up to age 60 and complete data on individual incomes and various socio-economic characteristics, such as education and current employment status. The US sample is restricted to older women who are household heads or married to household heads, because detailed income data is not collected for other household members. The German sample is restricted to residents of West Germany, because East German women have very different family and work histories and cannot sensibly be combined with their West German counterparts.

As these are panel surveys, the sample contains multiple observations of the same individual. Although the family history variables (up to age 60) will be constant across observations of the same individual, other variables, such as current marital status and income, are subject to change over time. Multiple observations are weighted in inverse proportion to the number of times that individual appears in the data set to ensure that equal weight is given to each person. The descriptive statistics (but not the regression estimates) are additionally weighted using the cross-sectional weights provided with each data set.² The total sample consists of 11,351 observations (on 1,449 individuals) for the UK, 3,011 observations (on 1,325 individuals) for the US and 11,784 observations (on 2,195 individuals) for West Germany.³ For the analysis of the relationship between family and work histories, we use the slightly smaller sub-sample of older women who also provided complete employment histories up to age 60.

The family history variables are categorised in various ways to examine the effect of marriage, divorce and widowhood; the timing of marriage; the number of (natural) children; and a summary variable combining information on the timing of marriage and children (e.g. married in early 20s and had children). Some events are too rare, particularly among this generation, and the sample is insufficiently large to allow investigation of the effects of, for example, the timing of divorce or the interaction between divorce and having (or not having) children.

The income variable consists of gross individual incomes, including state and private pensions (including survivor benefits), other private income (including earnings and investment income) and other public transfers (including social assistance and non-means-tested benefits). Income from family-level benefits, including means-tested benefits, and from jointly-held assets are split evenly between spouses, wherever possible using existing derived variables within each data set. As the study uses income data from different survey years (as many as fifteen years apart), incomes are adjusted for the growth in average earnings over the intervening period. A small proportion of observations with very low or very high incomes are dropped from the sample so that the results are not unduly influenced by these outliers, some of which are almost certainly due to reporting or recording errors.⁴ Incomes are logged in the regression analyses, implying a proportionate relationship between incomes and family events (and other right-hand-side variables).

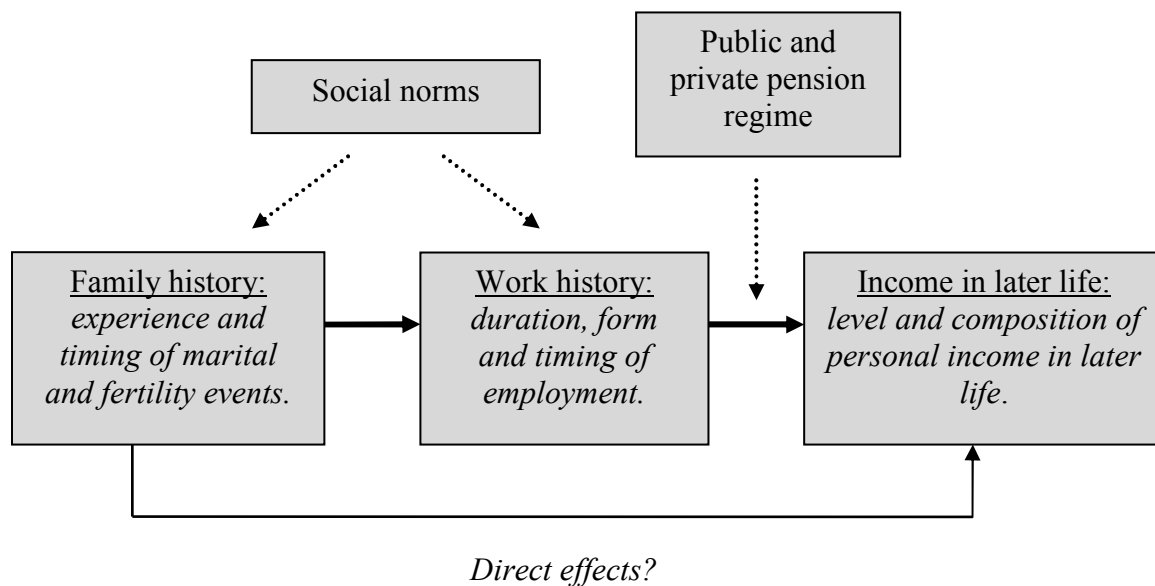
² These cross-sectional weights adjust for over-sampling of certain population sub-groups (e.g. non-whites in the US) and differential attrition over the panel period.

³ The number of observations per individual is much lower for the US data, because the disaggregated income data that is required for the analysis in this paper is only available in certain survey years (1991-1993 and 2005).

⁴ Observations are dropped if they report having negative or zero reported incomes if their reported incomes are in the top 1% of (earnings-adjusted) incomes for older women.

The main part of the empirical analysis consists of a series of regressions between (logged) individual incomes as the dependent variable and family history up to age 60 as the main independent variable, as well as a number of socio-economic characteristics as control variables. Current marital status is included as one of the control variables, because we are interested in the longer-term financial implications of family events experienced during women’s working lives *independently* of their current marital status. So, for example, we want to know whether there is a significant association between early widowhood (i.e. pre-60) and older women’s incomes *over and above* the effect of being widowed in later life. The other control variables are: level of education, birth cohort, race (US only), current employment status, number of years since reaching 65, and survey year. Summary statistics on these variables are provided in Appendix A.

Figure 1: Conceptual framework



In the conceptual framework, the implicit assumption is that family events, such as marriage or children, have an impact on women’s employment patterns, which in turn impacts on incomes in later life (see Figure 1). In practice, family and work histories are to some extent interdependent. Women who have children are more likely not to work and 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 are related to individuals’ career choices; women with a stronger a priori attachment to the labour market and greater earnings potential are perhaps more likely to start a family later in life (McKay et al, 1999). And, women with higher earnings potential may be less likely to marry, because they are more financially independent. The analysis does not explicitly model the endogeneity of these relationships. In considering the results of the regression analysis, the coefficients on the family history variables should, therefore, be seen as indicating the strength of the association with older women’s incomes, rather than implying a causal relationship (though for ease of exposition we

sometimes refer to the “effect” of specific family events on women’s incomes in later life).

Results

Descriptive analysis

The first stage of the analysis compares the family histories of older women in the three study countries. As expected for this generation, by far the most common experience is for women to marry relatively early, have children, and remain married. The most striking difference between countries is the much higher divorce rate among older American women; including those who re-married, more than one in five older women in the US experienced divorce, compared to around one in ten older women in the UK and West Germany. Older American women also more likely to marry and tended to marry earlier – three quarters of them did so by the age of 25. They also have larger families, on average, than their European counterparts – nearly one in three women have had four or more children, compared with around one in seven women in the UK and Germany. Older women’s family histories in the UK and West Germany are very similar (see Table 1).

International statistics show that *trends* in the main social indicators are similar in these and other advanced industrial economies, but with some notable differences between the US and the other two study countries. In all three countries, the average age at first marriage initially fell following the second world war and then rose from around 1960 onwards. In both the UK and US the total fertility rate (TFR) rose dramatically in the immediate post war period, whilst in Germany the TFR remained relatively steady or even fell slightly (Falkingham, 1997). The post war baby boom continued throughout the 50s in the US whilst in the UK, the fertility rate dropped back down, reflecting the continued rationing and austerity of post war Britain during this time and it was not until the end of the 1950s that the UK’s second ‘baby boom’ occurred (Falkingham, 1997; Evandrou and Falkingham, 2000). When our sample were in their child-bearing years (predominantly in the 1940s and 1950s), the TFR was still substantially higher in the US than in the UK or West Germany. The divorce rate in the US was also relatively high by the 1940s and 1950s, when most of our sample of pensioners were getting married and has actually fallen slightly since 1980, though it is still at a much higher level than in the UK and Germany. The divorce rate in the UK and West Germany only started to rise sharply from around 1970 onwards from quite a low level (see Table B1 in Appendix B).

Table 1: Older women's (aged 65+) family histories in the UK, Germany and US

	UK	US	West Germany
	%	%	%
Marital history (pre-60):			
Never married	7.4	3.0	6.6
Stayed married	64.8	59.9	61.5
Re-married	9.7	16.8	9.8
Divorced, stayed single	4.2	7.5	5.3
Widowed, stayed single	14.0	13.0	16.9
Married in early 20s	60.6	76.4	51.7
Married in late 20s	21.3	13.9	29.4
Married in 30s or later	10.7	6.8	12.4
Fertility history:			
No children	18.1	12.5	15.5
One child	20.0	10.9	23.5
Two children	29.4	24.9	30.5
Three children	17.7	20.1	16.4
Four or more children	14.9	31.6	14.2
Family history:			
Never married	7.4	3.0	6.6
Married in 20s, no children	7.4	6.7	6.7
Married in 30s or later, no children	3.7	3.2	3.7
Married in early 20s, had children	55.8	71.2	48.2
Married in late 20s, had children	18.7	12.4	26.2
Married in 30s or later, had children	7.0	3.6	8.7
	100.0	100.0	100.0
<i>Individuals</i>	<i>1449</i>	<i>1243</i>	<i>2195</i>

Table 2 shows the average incomes of older women by family history. In the top panel, the group with the lowest personal incomes are women who remained married throughout their working lives and are still married. Many of these women have interrupted work histories due to family responsibilities, but are not receiving survivor benefits and only receive small amounts of non-pension state benefits to compensate for their own low income as these benefits are often subject to a ‘family’ means-test. Re-married women have higher individual incomes than women who married once, though only if they are still married. Older currently single women have considerably higher incomes, either because they are receiving survivor benefits based on their former husband’s contributions or because they have a more complete work history of their own. But, the size and pattern of these income differentials varies by country and may also be affected by other socio-economic characteristics that are not controlled for in this initial descriptive analysis.

The middle panel of Table 2 shows that older women who did not have children have higher mean personal incomes than women who had children in the UK and West Germany, although the size of this differential is considerably less in the UK. In the US, women who had small families have higher incomes than women who had larger families, but contrary to expectations also have higher incomes than women who did not have children. In the bottom panel, there is some evidence that older women who married later have higher personal incomes, on average, than women who married early, though apparently only if they did not have children (in the UK and West Germany) and only if they did have children (in the US).

Table 2: Older women's incomes by family history in the UK, US and West Germany

\$US PPP, earnings-adjusted	UK	US	West Germany
Marital history:			
Stayed married, still married	8720	10780	7420
Re-married, still married	9080	16950	10240
Stayed married, now single	13160	19220	15850
Re-married, now single	14120	18990	15430
Widowed, still single	13630	19340	15630
Divorced, still single	13520	22340	13760
Never married	16340	19360	19200
Fertility history:			
No children	13850	16600	17090
One child	11360	19540	12410
Two children	11280	17310	11570
Three children	11290	16070	12450
Four + children	11200	13960	11490
Family history:			
Never married	16200	19360	19170
Married in 20s, no children	10680	15380	14540
Married in 30s or later, no children	15320	15890	17510
Married in early 20s, had children	11210	15580	11660
Married in late 20s, had children	11320	18550	12210
Married in 30s or later, had children	11760	18240	12270
All older women:	11750	16160	12750

As well as this variation in average incomes, there are also important differences in the composition of older women's incomes. State pension income is the largest single source of income in all three countries, but is much more dominant in West Germany. Private pension income plays an important role in the UK and the US, accounting for around a fifth of older women's incomes in both cases. Other private sources of income, including earnings and investment income, are much more significant in the US, whilst other state transfers are much more significant in the UK (see Table 3). The German data shows that derived pension rights comprise a substantial share of state pension income; this is likely to be the case in the UK and the US, too, though data on this is not available within our data sets.

Table 3: Composition of older women’s incomes in the UK, US and West Germany

Percentage of gross individual incomes	UK %	US %	West Germany %
Private pension income:	20.1	18.7	5.5
Own private pension	7.0	-	3.8
Derived private pension	2.9	-	1.7
Other private income:	12.4	31.3	11.5
Labour earnings	2.9	12.8	2.4
Investment income	9.0	16.4	8.6
Private transfers	0.5	2.1	0.5
State pension income:	54.1	48.1	80.9
Own state pension	-	-	46.8
Derived state pension	-	-	34.1
Other public transfers:	13.5	1.8	2.1
Means-tested benefits	7.3	-	-
Disability-related benefits	4.0	-	-
Other state benefits	2.2	-	-
	100.0	100.0	100.0

We conclude this section with a brief examination of the relationship between women’s family and work histories, which is relevant because the main channel by which family events affect incomes in later life is through their impact on women’s employment patterns. At this stage, we simply present the results of this analysis and highlight any significant differences between the three study countries. The implications are discussed later in the paper when these results are used to help interpret the results from the multivariate analysis.

For the minority of women amongst our sample who never married and did not have children, work histories are very similar in the UK, US and West Germany. On average, these women worked mostly full-time for between 32-33 years between the ages of 18-59 and in other forms of employment for between 3-5 years. For those women who married, there are some significant differences between countries. In the UK, ever married women experienced fewer years as ‘inactive’ than ever married women in West Germany, irrespective of whether they had children or how many children they had. The average number of years spent in mostly full-time employment is similar in the UK and West Germany but there are marked differences in the years

spent in ‘mixed’ employment (i.e. part-time or irregular full-time), with UK women being more likely to experience this type of employment than in either Germany or the US. In all three countries, women who experienced divorce and stayed single and women who re-married have more complete (and more full-time) work histories than other “ever married” women. Women who experienced widowhood and stayed single have similar work histories to women who were married throughout, at least in part because many of them will have experienced this event late in their working lives (see Table 4).

Table 4: Relationship between marital and employment histories in the UK, US and West Germany¹

Average no. of years spent in each employment status, aged 18-59

	Never Married	Married, stayed married	Divorced or widowed, Re-married	Divorced, stayed single	Widowed, stayed single
UK:					
Mostly FT	32.0	13.2	16.1	18.5	14.1
Mixed PT/FT	3.3	10.4	10.4	7.7	9.6
Inactive	6.7	18.4	15.4	15.8	18.2
US:					
Mostly FT	31.8	14.1	21.2	21.2	16.9
Mixed PT/FT	4.5	5.5	4.6	5.6	5.8
Inactive	5.6	22.4	16.2	15.2	19.3
West Germany:					
Mostly FT	33.1	12.1	15.4	21.1	13.7
Mixed PT/FT	2.9	6.8	7.0	5.5	5.4
Inactive	6.1	23.0	19.7	15.4	22.8
	42.0	42.0	42.0	42.0	42.0

1. Estimates are based on sample of older women with complete marital and work histories between the ages of 18-59. Sample sizes are 1,219 (UK), 1,031 (US) and 2,138 (West Germany).

Comparing married women in the UK and US with the same number of children, British women are economically active for around the same number of years in total as their American counterparts, but spend more of this time in part-time or mixed employment (see Table 5).

Table 5: Relationship between fertility and employment histories in the UK, US and West Germany

Average no. of years spent in each employment status, aged 18-59

	Never married, no children	Married, no children	Married, had children	Number of children:			
				1	2	3	4+
UK:							
Mostly FT	32.1	23.2	12.7	16.1	13.0	10.6	9.6
Mixed PT/FT	3.2	7.1	10.5	10.5	11.0	11.4	8.9
Inactive	6.6	11.7	18.8	15.4	18.0	20.1	23.5
US:							
Mostly FT	33.1	23.4	15.5	21.4	17.5	14.4	12.8
Mixed PT/FT	3.7	4.2	5.5	4.9	5.6	5.9	5.5
Inactive	5.2	14.4	20.9	15.7	18.8	21.8	23.7
West Germany:							
Mostly FT	32.5	22.1	12.1	15.5	11.6	11.7	8.5
Mixed PT/FT	3.3	4.7	6.8	5.7	7.5	6.6	7.0
Inactive	6.3	15.3	23.1	20.8	22.9	23.7	26.5
	42.0	42.0	42.0	42.0	42.0	42.0	42.0

In all three countries, including West Germany, activity rates have increased among more recent cohorts of mothers, though most of this increase has been in part-time or mixed part-time/ full-time employment. In the US and West Germany, there has been a roughly equivalent increase in the activity rates of women who did not have children (not shown here).

Multivariate analysis

This section presents the main findings from our regression analyses, which controls for differences in socio-economic characteristics of older women in order to isolate the ‘effect’ of women’s family histories on their incomes in later life. The regression results are shown with and without controls, though we concentrate on the former in the discussion that follows. We also seek to account for any significant findings in terms of the relationship between women’s family and work histories in each country and an understanding of their welfare regimes.

The first panel in Table 6 investigates the association between different marital histories and incomes in later life, focusing in particular on marriage, divorce, early widowhood and re-marriage. In the UK, never married women have significantly higher personal incomes than other older women, even after controlling for current

marital status (i.e. compared to other single women). In the US and West Germany, never married women are no better off after controlling for education and current marital status. Never married women in the UK have longer work histories and higher private pensions, which more than compensates for not having any derived pension rights. The state pension is predominantly flat-rate, so survivor benefits would be no more generous than the entitlements of never married women, even if never married women earned significantly less than the spouses of married women, whilst their private pension entitlements are significantly greater, on average.⁵

In the US and West Germany, survivor benefits are more valuable than in the UK, leading to the result that never married women are no better off than other older single women, even though their own personal entitlement is substantially greater. In West Germany, this is because survivor benefits are linked to their former husband's earnings and can, for the most part, be claimed on top of their own entitlement. In the US, widows receive 100% of their former husband's state pension, which is earnings-related and, presumably due to the gender pay gap, is generally worth more than the state pensions of never married women.

In the UK, women who divorced and remained single have few derived pension rights, but this is compensated for either by larger pension entitlements of their own (especially for those with more complete work histories) or by non-pension state transfers (including means-tested benefits). Overall, this group are no worse off, or better off, than the reference group.

⁵ Widows typically receive 50% (or less) of their deceased spouse's private pension entitlements, whereas never married women receive the full amount (although they may be less likely to receive a private pension than the husbands of married women).

Table 6: Incomes in later life by marital and fertility history: UK, US and Germany

	<i>No controls</i>			<i>With controls</i>		
	UK	US	West Germany	UK	US	West Germany
Marital history:						
Never married	0.501***	0.211*	0.933***	0.093**	-0.148	0.033
Stayed married	Ref	Ref	Ref	Ref	Ref	Ref
Re-married	0.132***	0.204***	0.456***	0.017	0.041	0.227***
Divorced, stayed single	0.318***	0.343***	0.646***	-0.052	-0.132*	-0.197**
Widowed, stayed single	0.355***	0.303***	0.736***	0.033	-0.022	0.034
Never married	0.440***	0.130	0.797***	0.094**	-0.104	0.069
Married in early 20s	Ref	Ref	Ref	Ref	Ref	Ref
Married in late 20s	0.011	0.183***	0.055	-0.030	0.074	0.057
Married in 30s or later	0.171***	0.185***	0.276***	0.106***	0.189***	0.193***
Fertility history:						
Had child	-0.221***	-0.033	-0.517***	-0.090***	0.031	-0.232***
No children	0.203***	0.079	0.422***	0.084	-0.171*	0.179***
One child	Ref	Ref	Ref	Ref	Ref	Ref
Two children	-0.035	0.020	-0.166***	-0.004	-0.111	-0.098*
Three children	-0.019	-0.057	-0.031	-0.007	-0.115	-0.002
Four + children	-0.009	-0.241***	-0.173**	-0.017	-0.220***	-0.113*
Family history:						
Married in early 20s, children	Ref	Ref	Ref	Ref	Ref	Ref
Married in late 20s, children	0.018	0.187***	0.042	-0.026	0.063	0.052
Married in 30s+, children	0.059	0.158	0.225***	0.025	0.152**	0.142***
Never married	0.438***	0.122	0.819***	0.096**	-0.115	0.092*
Married in 20s, no children	-0.037	-0.072	0.381***	-0.011	-0.086	0.269***
Married in 30s+, no children	0.379***	0.207	0.491***	0.263***	0.220*	0.398***
<i>Observations</i>	<i>11351</i>	<i>3011</i>	<i>11784</i>	<i>11351</i>	<i>3011</i>	<i>11784</i>

Statistical significance: * 10%; ** 5%; *** 1%

In the US and West Germany, by contrast, divorcees who do not re-marry lose all or most of their entitlement to generous survivor benefits and do not receive large enough entitlements of their own to compensate for this, even though they work substantially longer than other “ever married” women - and longer than divorced women in the UK. Consequently, this group is significantly worse off than older women who stayed married all their working lives after controlling for current marital status.

Older women who experienced divorce or early widowhood and re-married are best off in West Germany, because they have much larger pension entitlements of their own in addition to being entitled to survivor benefits from their most recent husband (if subsequently widowed). In the US, women who re-married have longer employment histories than women who married once (and stayed married), which we would expect to be reflected in higher pension entitlements, though the relationship between work histories and later life incomes is substantially weaker than in West Germany (Sefton, Falkingham and Evandrou, 2009). Those who were subsequently widowed also acquire derived pension rights based on their new spouse’s contributions record, but they receive the higher of the two entitlements (rather than the sum of them), which could explain why they are no better off, on average, than other older single women despite spending more time in paid employment.

In all three countries, women who experienced early widowhood and remained single are no worse off, or better off, than women who were married throughout their working lives and were widowed in later life. Most of these women will have widowed late in their working lives when their husbands would have acquired a complete or almost complete contributions record, which they effectively inherit (if this is better than their own record). Only if they were widowed at a much younger age might their derived entitlements be substantially reduced.

Late marriage is associated with significantly higher incomes in the UK, US and West Germany. The small, but growing, group of women who marry in their 30s have more complete work histories and, therefore, greater pension entitlements of their own. They may also be in a better position to accumulate savings while they are still single and have more incentive to do so, which may be reflected in higher investment incomes in later life.

Having children is associated with significantly lower retirement incomes in West Germany and the UK, but not in the US. If work history variables are added to the UK and West German regressions, then the coefficients on having children become small and insignificant (not shown here), indicating that the association between having children and lower retirement incomes operates largely through the impact that looking after children has on women’s employment histories.

For West Germany, there is a strong and negative association between having children and incomes in later life for two main reasons: women who have children work fewer years, on average than in the other study countries (see Table 4 above); and years out

of employment are associated with greater reductions in retirement incomes than elsewhere, because state pensions are more generous and more strongly earnings-related (Sefton, Falkingham and Evandrou, 2009). There is also some evidence that older women who had larger families have significantly lower incomes than those who only had one child.⁶

In the UK, having children is associated with significantly lower incomes in later life, but the association is weaker than in West Germany. This is what we would expect given that the association between work histories and older women's incomes is weaker in the UK.⁷ The *number* of children is not associated with significantly lower incomes in later life, even though women with smaller families generally have more complete (and more full-time) work histories; the pension penalty attached to motherhood is experienced with the first child and subsequent children do not appear to add significantly to this. One possible explanation is that having children may set women onto a different – and, in pension terms, less rewarding – career trajectory, perhaps because it damages their promotion prospects or because they switch to a lower status occupation to fit around their caring responsibilities. In these circumstances, even a relatively short career break could nullify a woman's pension prospects if private pension receipt is dependent on having continuous and stable full-time employment in a higher status job.

The US results are different again. Overall and contrary to expectations, older American women who married and had children do *not* have significantly lower incomes than those who did not have children. Part of the explanation is that American mothers were (and still are) more economically active; this generation spent three years longer in full-time employment than their British or West Germany counterparts (and mothers with one child spent five more years in full-time employment than their European counterparts). However, this does not explain why older women who did not have children have significantly lower incomes than those who had one child (after controlling for other factors) or why their incomes are no higher than women who had two or more children and who worked substantially fewer years.⁸ One plausible, though speculative, explanation is that some of these women may have chosen not to have children, because they had lower earnings potential and felt they could not afford the costs of raising children (for reasons not connected to their level of education, which is controlled for). A self-selection effect of this kind could be masking a negative association between having children and

⁶ The coefficient for women with two children and four children is significantly different (and more negative) than for women with one child, but not so for women with three children.

⁷ There are two main reasons for this. Firstly, state pensions are only weakly related to earnings in the UK and, secondly, work history-related differences in private pension receipts are offset by means-tested benefits at the bottom end of the income distribution (the 'pensions poverty trap').

⁸ This is in spite of the fact that there is a statistically significant association between the number of years employed and later life incomes in the US (Sefton, Evandrou and Falkingham, 2008)

incomes in later life, though it is not clear why such an effect might be present in the US, but not in the other study countries.

Interaction effects

The preceding analysis implicitly assumes that the association between having children and older women's incomes is constant across all women in the sample, whereas there are good reasons for supposing this might vary between specific sub-groups of the population. This assumption is relaxed in this section, which explores the interaction effects between having children and various other characteristics, such as current marital status, birth cohort, and level of education.

In the UK, the association between having children and lower incomes in later life (the 'pension penalty of motherhood') is significantly greater for women who are still married or were never married than it is for widows (the reference group). Most widows are entitled to substantial derived pension rights (or survivor benefits) that are unrelated to their own contributions record and which dilute and, in some cases offset, any income differentials that are due to women's own family and work histories. Many widows also become entitled to means-tested benefits that are set against other sources of income up to the guaranteed minimum and which serve to compress income differentials at the bottom end of the distribution. In West Germany, the pension penalty of motherhood is statistically significant and, unlike in the UK, does not vary significantly by current marital status (though it approaches significance for the still married group). Whilst survivor benefits comprise a substantial share of widows' incomes, these are usually paid in addition to women's own (earned) entitlements, so women's own family and work histories continue to be important for women even if they are widowed. In the US, none of these interaction effects are statistically significant (see Table 7).

Table 7: Interaction effects by fertility history: UK, US and West Germany

	UK	US	West Germany
By marital status:			
Ever had child	-0.005	0.087	-0.201***
Ever had child x divorced	0.109	0.056	0.112
Ever had child x never married	-0.257***	-0.141	-0.066
Ever had child x married	-0.172**	-0.160	-0.179
By birth cohort:			
Ever had child	-0.033	0.061	-0.142*
Ever had child x post-1924	-0.110*	-0.105	-0.139
By marital status and birth cohort:			
Ever had child	-0.036	0.108	-0.075
Ever had child x single, post-1924	-0.026	-0.107	-0.125
Ever had child x married, pre-1924	-0.031	-0.176	-0.328**
Ever had child x married, post-1924	-0.185*	-0.221	-0.300**
By education:			
Ever had child	-0.085**	0.031	-0.178*
Ever had child x high qualifications	-0.045	0.007	-0.132
<i>Observations</i>	<i>11351</i>	<i>3011</i>	<i>11784</i>

Statistical significance: * 10%; ** 5%; *** 1%

In West Germany, the association between having children and later life incomes does not differ significantly between birth cohorts, whereas in the UK, this association is only significant for younger cohorts of pensioners. So, why might the pension penalty of motherhood be increasing over time in the UK, as this analysis appears to indicate – and why is the same trend not evident in the US and West Germany?

The proximate cause is that the association between older women's work histories and incomes is also stronger among younger cohorts of British pensioners (i.e. work history matters more for younger cohorts of pensioners). Various reasons for this can be postulated, including the expansion in private pensions, which are more strongly related to work histories than other income sources, and the introduction of an earnings-related component into the public pension system from the late 1970s, which

was of greatest benefit to recent retirees (and was of no benefit to those who retired prior to 1980).

At the same time, rising employment rates, especially among women with children, mean that younger cohorts of female pensioners have more complete work histories than older cohorts. Other things being equal, we might have expected this to reduce the pension penalty of motherhood. However, most of the increase in women's employment has been, and continues to be, in part-time employment, whereas only full-time employment is associated with significantly higher pensioner incomes in the UK. Again, this can (at least in part) be attributed to the role of private pensions within the British pension system, which until recently have provided little protection for part-time employees.

Together, the strengthening association between work histories and pension incomes and the muted impact of rising employment rates in the UK would help to account for a rise in the pension penalty of motherhood. That this has happened in the UK, but not in West Germany, is also consistent with the predictions of Ginn and Arber (1999) who argued that "*the shift towards greater private pension provision is likely 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*". On the other hand, a static comparison between the UK and West Germany shows that the pension penalty of motherhood is greatest in the country where social insurance is dominant and private pensions are marginal – and might lead one to precisely the opposite conclusion. We return to this issue in the concluding section.

The final interaction effect we look at is by level of education. Our earlier study suggested that work history matters more for more educated women in the UK, but not so in the US or West Germany⁹ (Sefton, Falkingham and Evandrou, 2009). We might, therefore, have expected the pension penalty of having children to be greater for more educated women in the UK. Although the interaction term is negative, it is not statistically significant. Nor is this interaction term significant for the US or West Germany.

Discussion

The foregoing analysis has demonstrated that women's marital and fertility histories are associated with significant differences in later life incomes, and that there are some important variations between countries, reflecting both differences in work histories but also important disparities in the pension system. For example, the impact of early divorce is markedly different from early widowhood in the US and Germany.

⁹ Less educated women in the UK are less likely to have a private pension even if they have worked most of their working lives and even if they do receive one, part or all of the additional income may be deducted from means-tested benefits.

In these countries, women who divorced and remained single have significantly lower incomes in later life than other older single women, because they have little or no entitlement to survivor benefits. By contrast, women who were widowed (pre-60) and remained single do not have significantly lower retirement incomes than women who were widowed later in life, because the rights to their former spouses' pensions are protected. However, in the UK, there is no significant association between divorce or widowhood and women's retirement incomes, after controlling for current marital status. Although divorced women lose most of their entitlement to their former spouses' pensions, as in other countries, these rights are less valuable than elsewhere (being largely flat-rate) and are offset by greater entitlements of their own.

Similarly, the impact of having children on incomes in later life is by far the greatest in West Germany. Controlling for marital events, having children is associated with a reduction of nearly 30 per cent in retirement incomes. This is due to two factors; firstly, West German mothers have worked fewer years, on average, than their counterparts elsewhere. Secondly, and more importantly, retirement incomes in West Germany are much more strongly earnings-related than in the US or UK. There is also some evidence that pension penalty of motherhood is greater amongst younger cohorts of pensioners *within* UK women, again reflecting the increasing importance of earnings-related pensions.

The results highlight the importance of the interaction between pension systems and family histories in determining women's personal incomes in later life. One clear result is that differentials in income in later life by family history are greatest where work histories and retirement incomes are most strongly related and where survivors' benefits for certain groups are privileged over those of others. Reforms that increase the role of private pensions in overall pension provision are therefore likely to result in greater inequality amongst women with different work and family histories.

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Table A1: Personal incomes of older women in the UK, US and West Germany by marital history and income source

	% of sample	Total income	Private pension		Other private		Public pension		Other public	
			% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
United Kingdom:										
Stayed married, still married	36.3	8720	33	1730	68	1830	98	4510	18	660
Re-married, still married	4.0	9080	34	1390	60	1850	96	5120	18	720
Stayed married, now single	28.7	13160	53	2290	62	1100	96	7690	53	2070
Re-married, now single	5.7	14120	55	2630	60	1050	97	7640	61	2800
Widowed, still single	13.9	13630	50	2740	57	1080	95	7430	52	2380
Divorced, still single	4.1	13520	49	2380	53	1550	94	7030	57	2560
Never married	7.3	16340	56	5310	75	1790	98	7490	43	1750
United States:										
Stayed married, still married	37.1	10780	18	1460	35	2900	97	6390	1	20
Re-married, still married	7.2	16950	23	1840	45	8310	97	6750	0	50
Stayed married, now single	23.1	19220	37	3440	70	6010	96	9320	9	450
Re-married, now single	9.6	18990	40	3130	68	6250	96	8930	16	670

			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
Widowed, still single	12.7	19340	48	4890	59	5230	93	8460	18	750
Divorced, still single	7.2	22340	54	5660	66	8430	92	8000	13	250
Never married	3.0	19360	48	7470	52	3540	90	8160	9	190
West Germany:										
Stayed married, still married	34.7	7420	10	320	89	1640	87	5320	7	140
Re-married, still married	4.1	10240	21	1080	91	1750	88	6990	7	420
Stayed married, now single	27.1	15850	19	830	79	1480	98	13310	11	240
Re-married, now single	5.7	15430	15	550	72	790	97	13660	20	430
Widowed, still single	16.7	15630	15	740	80	1100	98	13530	14	250
Divorced, still single	5.1	13760	21	980	69	1420	91	10660	28	690
Never married	6.5	19200	28	1620	84	2000	99	15110	15	470

Table A2: Personal incomes of older women in the UK, US and West Germany by fertility history and income source

	% of sample	Total income	Private pension		Other private		Public pension		Other public	
			% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
United Kingdom:										
No children	18.1	13850	53	3790	73	1790	97	6920	36	1350
One child	20.0	11360	45	2100	65	1240	96	6370	39	1640
Two children	29.4	11280	46	2270	68	1620	97	6080	35	1310
Three children	17.7	11290	40	1950	61	1400	98	6330	39	1600
Four + children	14.9	11200	39	1590	45	1100	95	6200	47	2300
All older women	100.0	11750	45	2360	64	1460	97	6350	38	1580
United States:										
No children	12.5	16600	41	5050	49	3100	94	8160	6	290
One child	10.9	19540	34	4280	51	7120	96	7930	8	210
Two children	24.9	17310	35	2870	60	5930	96	8290	6	220
Three children	20.1	16070	33	2830	52	5230	97	7880	4	130
Four + children	31.6	13960	27	2060	50	4310	95	7090	12	500
All older women	100.0	16160	32	3030	53	5050	96	7770	8	300
West Germany:										
No children	15.5	17090	23	1110	84	1830	96	13910	7	250
One child	23.4	12410	13	480	84	1240	93	10470	9	220
Two children	30.5	11570	14	700	84	1490	91	9110	13	270
Three children	16.4	12450	16	670	85	1530	94	10110	8	140
Four + children	14.2	11490	14	680	74	1360	93	8970	19	470
All older women	100.0	12750	16	710	83	1470	93	10310	12	260

Table A3: Personal incomes of older women in the UK, US and West Germany by family history and income source

	% of sample	Total income	Private pension		Other private		Public pension		Other public	
			% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
United Kingdom:										
Never married	7.4	16200	56	5240	75	1770	98	7480	42	1710
Married in 20s, no children	7.4	10680	43	1920	68	1430	97	6190	32	1150
Married in 30s or later, no children	3.7	15320	66	4310	76	2350	99	7310	35	1350
Married in early 20s, had children	55.8	11210	44	2030	59	1210	96	6180	41	1780
Married in late 20s, had children	18.7	11320	40	1950	68	1860	97	6240	34	1270
Married in 30s or later, had children	7.0	11760	49	2400	69	1560	96	6500	31	1300
All older women	100.0	11750	45	2360	64	1460	97	6350	38	1580
United States:										
Never married	3.0	19360	48	7470	52	3540	90	8160	9	190
Married in 20s, no children	6.6	15380	37	4860	48	2360	95	7820	6	340
Married in 30s or later, no children	3.2	15890	41	2910	49	4110	95	8460	8	410
Married in early 20s, had children	71.1	15580	31	2710	54	5060	96	7520	8	290
Married in late 20s, had children	12.4	18550	32	2460	51	7100	96	8680	6	300
Married in 30s or later, had children	3.6	18240	38	4410	46	4920	95	8550	10	360

	% of sample	Total income	Private pension		Other private		Public pension		Other public	
			% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value	% in receipt	Mean value
All older women	100.0	16160	32	3030	53	5050	96	7770	8	300
West Germany:										
Never married	6.6	19170	28	1610	84	1990	99	15100	14	470
Married in 20s, no children	6.7	14540	18	510	84	1700	96	12220	5	120
Married in 30s or later, no children	3.6	17510	26	1230	78	1260	93	14980	5	40
Married in early 20s, had children	48.2	11660	13	560	82	1390	92	9410	14	300
Married in late 20s, had children	26.2	12210	16	800	85	1510	93	9700	9	200
Married in 30s or later, had children	8.7	12270	14	500	74	1340	95	10130	12	300
All older women	100.0	12750	16	710	83	1470	93	10310	12	260

Table B1: Women’s employment by birth cohort and by whether had child
Average number of years by employment status, aged 18-59

	No children		Had children	
	Born pre-1924	Born post-1924	Born pre-1924	Born post-1924
UK:				
Mostly full-time	27.0	26.6	11.7	13.8
Part-time/ mixed	5.1	6.1	9.3	12.3
Inactive	9.9	9.3	21.0	15.9
US:				
Mostly full-time	27.0	23.1	14.1	16.8
Part-time/ mixed	2.7	6.6	4.0	6.8
Inactive	12.3	12.3	23.9	18.4
West Germany:				
Mostly full-time	22.7	28.8	11.9	13.0
Part-time/ mixed	3.9	4.5	5.3	7.7
Inactive	15.4	8.7	24.8	21.2

1. Weighted using cross-sectional weights provided in each data set

Table B2: Women’s employment by education and by whether had child*Average number of years by employment status, aged 18-59*

	No children		Had children	
	High qualifications	Low qualifications	High qualifications	Low qualifications
UK:				
Mostly full-time	28.1	26.2	14.2	12.1
Part-time/ mixed	5.1	5.7	11.6	10.4
Inactive	8.8	10.1	16.2	19.5
US:				
Mostly full-time	26.1	25.3	17.2	15.0
Part-time/ mixed	5.0	3.5	7.1	5.0
Inactive	10.9	13.1	17.7	21.9
West Germany:				
Mostly full-time	28.4	19.5	14.8	10.2
Part-time/ mixed	3.9	4.8	6.5	6.8
Inactive	9.7	17.7	20.7	25.0

1. In the UK and West Germany, “high qualifications” comprises women with any qualifications. In the US, “high qualifications” comprises women with more than High School education (i.e. more than 12 years of completed education).
2. Weighted using cross-sectional weights provided in each data set