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Mapping the Incomes of older people in the UK, US and Germany

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Mapping the Incomes of Older People in the UK, US and Germany

I. Introduction

This paper examines the material well-being of older people in the UK, Germany, and US using longitudinal data for the period 1991-2001. There are many studies comparing the material well-being of older people in different countries using various summary indicators, such as the ratio of older people's incomes to the population average or poverty rates among older people (Atkinson et al, 1995; Whiteford and Kennedy, 1995; Tsakloglou, 1996; Hauser, 1997; Forster and Pellizari, 2000; Disney and Whitehouse, 2001; Disney and Whitehouse, 2002). Whilst the results of these studies vary according to the methodology and data sets used, together they paint a fairly consistent picture of the UK's ranking on these different measures. Typically, the relative incomes of older people in the UK are lower and poverty rates higher than in many other OECD countries, though not dramatically so. Some of these studies look in more detail at the distribution and composition of older people's incomes in the UK and other countries and offer some possible explanations for the observed differences between countries. But, given the number of countries typically covered in these analyses, it is difficult to account for many of these differences beyond making some broad generalisations based on the structures of different pensions systems.

The purpose of this analysis is to provide a more in-depth comparative analysis of older people's incomes in three countries – the UK, US, and Germany. By restricting the analysis to these countries, we are able to look beyond the standard summary indicators of material well-being, though at the expense of losing some of the breadth of previous comparative studies. Whilst we cannot provide definitive reasons for the differences we observe between these countries, we can use our data and a more detailed understanding of their pensions systems to explore this more closely than is generally the case in papers of this kind.

The selection of countries is partly dictated by the availability of suitable data. All three countries are part of the Cross National Equivalent File (CNEF) project, which provides a consistent set of variables using large-scale longitudinal data sets for each country. The advantage of using longitudinal data is that we can examine changes in people's income over time, including pre- and post- retirement, as well as comparing different groups at a particular point in time (as in most comparative studies).

Using the US and Germany as comparators is also informative, because these two countries lie either side of the UK both in terms of most of the main indicators used to summarise the incomes of older people and in terms of the classification of welfare regimes (Esping-Anderson, 1990). The US has higher levels of pensioner poverty and inequality than the UK, whilst Germany has lower levels. The US welfare system is more liberal on nearly every dimension than the UK's, whilst the German system is more generous and places much less emphasis on private pension provision than either the UK or the US. Thus, in helping to account for differences in the distribution of incomes among older people, there is plenty of scope for attributing varying outcomes to differences in pensions systems, whilst recognising the importance of other factors, such as differences in life course patterns.

2. Research questions

This paper examines the changes in the income distribution that occur as people move into old age, focusing on the impact of different welfare systems on the distribution of older people's incomes. To what extent do inequalities in old age simply mirror inequalities in people's working lives? Individuals with higher lifetime earnings will tend to enjoy higher incomes in old age, but how close is the association between pre- and post-retirement incomes and does this vary between countries? How far do the pensions systems in these countries have a significant equalising (or dis-equalising) impact on the income distribution in later life? Is there any evidence, for example, that systems with more generous public pensions, as in Germany, help to compress the distribution of incomes in later life?

We also look at whether the pensions systems in these countries have a differential impact on specific groups of individuals on other dimensions than income (e.g. by gender, marital status, and disability status)? Is it the case, for example, that certain groups fare comparatively well or poorly in these countries? If so, how far can this be attributed to differences in the design of the welfare systems, differences in life-course patterns, and/or the interaction between the two?

Though the incomes of pensioners are generally more stable than among the rest of the population, many older people experience significant changes in their incomes within retirement (e.g. Zaidi et al, 2004). So, it is also important to consider how effective different welfare systems are at maintaining people's incomes *within* old age, as well as during the transition into old age.

The final section examines the composition of incomes of older people in the US, UK, and Germany, focusing in particular on the split between public and private sources of income and their relative contribution to alleviating poverty in old age.

3. Approach

The analysis in this paper is based on data from the British Household Panel Survey (BHPS) for the UK, the Panel Study of Income Dynamics (PSID) for the US, and the Germany Socio-Economic Panel (GSOEP) for Germany. We use the subset of derived variables incorporated in the Cross National Equivalent File (CNEF) data sets. This includes a set of income variables that are, as far as possible, defined and derived on a consistent basis.

The BHPS is the shortest of these panel data sets, covering the period 1991-2001. (At the time the data analysis was carried out, more recent years of BHPS had not yet been added to the CNEF.) Data for the UK is compared with US and German data over the same period (1992-2002 in the case of Germany, since GSOEP only includes a fully representative sample of East Germany from 1992 onwards.) Our initial analysis is confined to the sub-set of CNEF variables, so some important comparisons are not possible. For example, we are unable to examine differences in older people's incomes by tenure.

Older people are defined as all individuals aged 65 and over at the time of interview, which is the definition used in most comparative studies and corresponds to the current state pensionable age in these countries, with the exception of British women. Comparisons are made with the younger population (aged under 65) and also between different sub-groups of the older population: by age, gender, race (US only), household composition, economic status, and disability status. An alternative approach (and one used in some of our analyses) is to focus on retirees, given that retirement is the event that is most strongly associated with changes in incomes in later life and that (in financial terms, at least) most clearly distinguishes the older population from the younger adult population.

For point-in-time analyses, data is pooled over the period 1999-2001 (and labelled as circa 2000) in order to increase the sample size and smooth out short-term variations in incomes. This covers three waves of data for the UK and Germany and two waves for the US (as PSID became a biennial survey from 1997 onwards.) Analyses of trends over time are based on comparisons between the early 1990s (1991-1993) and circa 2000 (1999-2001). Longitudinal data is also used to compare the incomes of older people pre- and post-retirement for those who are observed to retire during the period covered by our analysis.

One of the limitations of cross-sectional analyses in this context is that older people are compared with younger people *from a different age cohort*. Older people tend to have lower incomes, on average than the rest of the population, because the pensions system does not protect them fully against a drop in their income when they retire, but also because younger generations are generally better off than older generations (in line with rising living standards in most OECD countries). Longitudinal data makes it possible to disentangle these age and cohort effects, by examining changes in the incomes of a given age cohort over time, as well as differences between age cohorts (Burkhauser *et al*, 1999).

The measure of income we use is current net household equivalised income. This aggregates cash income from all household members, including earnings, private and public pensions, other state benefits, and other private sources of income, less direct taxes. Incomes are equivalised using the Buhmann scale with a value of 0.5 (i.e. the squared root of household size) in line with many other comparative studies in this field. The results are quite sensitive the choice of equivalence scale, especially in relation to head-count poverty rates. This mostly affects the relative position of older people *within* countries (for example, comparisons between single pensioners and pensioner couples), rather than comparisons of older people (or sub-groups of older people) *between* countries.

Extensive use is made of Kernel Density Plots (or smoothed histograms), because these provide a more a more complete representation of the income distribution than do summary indicators, such as Gini coefficients or poverty rates (though the latter are also used). We compare the distribution of older people's incomes with the income distribution of a 'pre-retirement' age group (aged 55-64). This analysis is carried out using both cross-sectional data (i.e. comparing those aged 55-64 in circa 2000 with those aged 65-74 in circa 2000) and longitudinal data (i.e. comparing the cohort aged 55-64 in the early 1990s with the same individuals aged 65-74 in circa 2000).

4. Description of pensions systems

The purpose of this section is to set the context for the empirical analysis that follows, by providing a description of the major components of the pension systems in the UK, US, and Germany. This material is used in subsequent sections to help explain some of the observed differences in the income distribution among older people in these three countries and draws on existing reviews of pension systems in different countries (Eardley *et al*, 1996a; Eardley *et al*, 1996b; EC, 2003; PPI, 2003; PPI, 2004; Pension Commission, 2004; OECD 2005; SSA, 2005a; SSA, 2005b). We focus on the design of systems as they currently operate, though of course the economic well-being of today's older people depends largely on the rules of the pensions system in the past. Some changes to the system can take several decades to have their full impact on pensioners' incomes (e.g. changes to the rules concerning the accumulation of pension rights), so recent reforms may have little, if any, relevance for today's pensioners. Other changes can have an impact even in the short-term (e.g. an increase in the level of means-tested social assistance for pensioners). This needs to be borne in mind in assessing the impact of the pension system on today's pensioners. Though we do not attempt to track the evolution of these systems as they will have affected the incomes of older people in our sample, we would argue that significant continuities exist – and, therefore, that the basic form of national pension systems, and the redistributive structure they embody, will have changed only gradually over time.

Pension systems have two primary objectives: the first is to redistribute incomes to towards low income pensioners who would otherwise be at risk of poverty; the second is to help individuals maintain living standards during retirement by replacing earnings from work at an adequate level (and, in some cases, rewarding unpaid work). Countries vary in terms of the emphasis they place on these two objectives, the ways in which the system is structured to achieve them, and their effectiveness in doing so.

In common with other OECD countries, the UK, US, and Germany all have safety-nets in place to mitigate poverty in old age. The UK has a contributory-based flat-rate state pension with a system of credits which ensures that in practice the majority of older people qualify for the Basic State Pension (BSP), though around 10 per cent of men and 50 per cent of women are not entitled to the full amount. The level of the BSP is relatively low and has fallen considerably over the previous 25 years in relation to earnings, since it was indexed to price during the 1980s and much of the 1990s. The value of the BSP for a single pensioner was worth £3,770 a year in 2001 (equivalent to around 30 per cent of median equivalised income in that year). For those older people without additional sources of income, means-tested social assistance is available at a level that is now significantly above the level of the BSP and at a higher level than the equivalent levels of support for younger adults. The Minimum Income Guarantee, since replaced by the Pension Credit, was worth £4,792 a year for a single pensioner in 2001 (equivalent to nearly 40 per cent of median equivalised income). Just under 17 per cent of the older population (aged 60 and over) were receiving the Minimum Income Guarantee in 2001. Non take-up of means-tested benefits among pensioners is a particular problem; according to the latest estimates (for 2002/03), between 26 per cent and 37 per cent of pensioners were entitled to, but not receiving the MIG, compared with between 5 per cent and 15 per cent of non-pensioners who were not claiming their entitlement to Income Support. Low income pensioners are in addition eligible for other (largely) means-tested benefits to help

cover housing and fuel-related expenses and various non-means-tested disability benefits.

The US provides means-tested social assistance for people aged over 65 and for disabled persons. Supplementary Security Income (SSI) is only available to those with limited income and very limited assets. The maximum benefit payable is $6,372 (£3,823) a year for a single pensioner (equivalent to around 25 per cent of median equivalised income). All but nine states supplement the federal payment by varying amounts, though most benefits almost everywhere leave families below the official US poverty line, which itself is low by international poverty standards. Benefits are up-rated annually in line with price inflation, so will decline over time in relation to average incomes. Estimates of the proportion of pensioners receiving means-tested SSI payments range from 6 to 10 per cent. As in the UK, estimated non take-up is relatively high at around 40 per cent, though stigma has been reduced by federalising the scheme (in 1974) under the management of the Social Security Administration, who also administer the main social insurance scheme. Other cash benefits and services are available to older people on low incomes, including food stamps and basic medical services, though on a smaller-scale than in the UK. Unlike the UK and Germany, there is no national housing assistance scheme (though there are discretionary state and local housing subsidies in some areas).

Germany differs from the other two countries in not having a specific safety net aimed at older people. Those not entitled to sufficient public or private pensions are referred to the national welfare system (Sozialhilfe), which is also available to working age adults, though older people (aged 65 or over) are entitled to a 20 per cent supplement. Whilst the level of means-tested social assistance is relatively low by European standards (and varies somewhat between Lander), social assistance plays only a subordinate role in the German welfare system ("the safety net beneath the safety net"), because even relatively low earnings of 30 per cent of average earnings are sufficient to provide a public pension above social assistance levels. Only 1.4 per cent of older people were in receipt of Sozialhilfe at the end of 2000. People claiming social assistance usually receive extra amounts to cover their housing costs, including rents and mortgage payments, as long as these are considered reasonable. There are some concerns about low take-up of social assistance among older people and restrictions to entitlement of non-German citizens, in particular asylum seekers.

In addition to providing a safety net for older people on low incomes, all three countries operate a public earnings-related scheme, although the scale and design of these systems varies considerably. The earnings-related component of the UK system is the least generous and only weakly linked to previous earnings (even less so under the new system). SERPS was introduced in 1978 and originally designed to provide a pension of 25 per cent of band earnings (between a floor or around 16 per cent and a ceiling of 130 per cent of average earnings) to supplement the flat-rate state pension (then worth around 25 per cent of average earnings). Various changes have been implemented since to reduce the future value of SERPS and allow employees the option of contracting out to a suitable private alternative. Current retirees are among the first to benefit in full from the introduction of SERPS, which was initially based on the highest 20 years of earnings (from 1978 onwards). The State Second Pension, which replaced SERPS in 2002, credits higher earnings to low earners and those unable to work due to caring responsibilities or disability, introducing a much stronger

element of redistribution into the system (though the sample of older people in our analysis will not have been affected by the recent reforms).

The US operates an earnings-related public pension (OASDI), which is mandatory and nearly universal. The benefit formula is quite strongly progressive, replacing a higher proportion of earnings for those with the lowest lifetime earnings. Up to around a quarter of average earnings, the replacement rate is set at 90 per cent, falling to 32 per cent up to a high earnings threshold (set at around 130 per cent of average earnings) and 15 per cent up to the upper earnings ceiling (at around 250 per cent of average earnings). The net pension is higher as a proportion of earnings than the combined value of the flat-rate and earnings-related state pension in the UK for someone on above average earnings, but lower for someone on below average earnings (because the progressive formula of OASDI has less of a redistributive effect than the flat-rate BSP within the UK package).

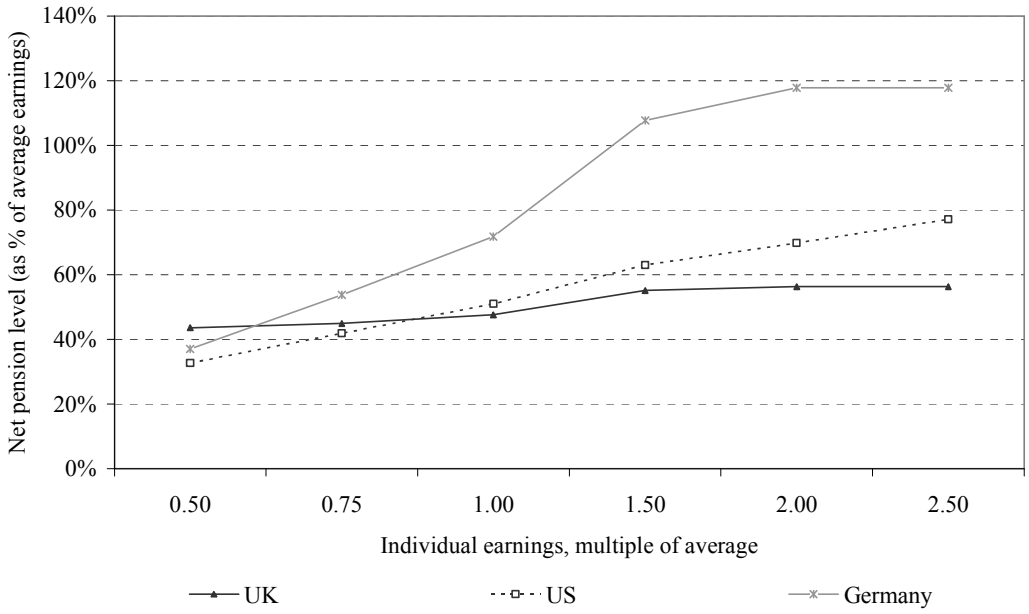
The German system is the most generous of the three countries and also the most closely linked to prior earnings. Up to a ceiling of approximately 170 per of average earnings, the pension payable is more or less proportional to average lifetime earnings. For someone with lifetime average earnings, the net pension is worth just over 70 per cent of previous earnings, compared to around 50 per cent in the UK and the US. Particularly favourable tax treatment of pensioners also contributes to the overall generosity of the German system. Civil servants have their own, even more generous pension system, which is financed through general taxation.

Figure 1 models the net (post-tax) value of the public pensions in the three countries[1] for someone with a full contributions record on different levels of lifetime earnings and living their entire lives under the current system. This shows very clearly the differences in the overall structure of these systems and their redistributive impact. And, as we see later, this matches quite closely the pattern in the *average* receipt of social transfers by income group.

However, Figure 1 does not adequately represent the experience of certain sub-groups of the older population, who do not fit the standard assumptions of the model: those with interrupted work histories and/or variable earnings (due to unemployment, disability, and/or caring responsibilities). These 'special' cases are effectively ignored in this type of (hypothetical) modelling, which assumes a full contributions record at a constant level of earnings. Also, the unit of analysis is the individual, whereas many women, in particular, are heavily reliant on their rights to the pension of a former or deceased spouse.

[1] Including the mandatory element of private pensions in the UK (for those who have opted out of SERPS or S2P)

Figure 1: Net pension levels at different earnings levels



All three pension systems offer some protection against the adverse financial effects of specific life events, such as the birth of a child, the onset of disability, and widowhood but there are differences in the generosity and completeness of these provisions, particularly in the rules as they applied to today's pensioners. Older women have typically spent more time out of the labour market raising children and caring for older relatives and their earnings, when in work, are lower on average, so they are less likely to have accumulated their own pension rights. This is only partially compensated for in these countries' public pension systems and some of these changes were introduced too late to benefit many of the older people in our sample. This has particular implications for divorced women and widows, whose financial situation then depends crucially on the rules that determine their entitlement to their former or deceased spouse's pension (both public and private). This is discussed in more detail later in the paper in seeking to explain why certain groups of older people (e.g. divorced women) fare comparatively poorly in these countries.

In countries with less generous and more flat-rate public pensions, such as the UK and the US, private pensions play a correspondingly more important role in income replacement for those with moderate incomes and above. By contrast, occupational pensions in Germany are generally modest and largely restricted to those near the top of the income distribution. Though private personal pensions are becoming much more prevalent among younger workers, only around one in five male pensioners and one in ten female pensioners receive any private pension benefits.

Overall, the public and private systems combined produce a transfer of resources to pensioners in the UK and the US that, according to OECD estimates, is comparable to that delivered by countries with much more generous state systems, like Germany (OECD, 2001). However, the private/public mix of pensions is not distributionally-neutral. Private pensions may systematically favour certain groups and may act to

reinforce existing inequalities, even compared with closely earnings-related public pension schemes for some of the following reasons (Behrendt, 1999; Willmore and Bertucci, 1999; Ginn, 2000).

Firstly, coverage of occupational and personal pension schemes can be patchy and tend to be concentrated on the 'core' workforce, whilst part-time or temporary workers are often not covered. In the UK, it is estimated that around half the working age population are not contributing to a private pension scheme, most of whom do not have a partner contributing either; furthermore, coverage has been declining slightly in recent years. The non-contributors include a disproportionate share of self-employed people, employees of small firms, women, and low earners. Participation rates also vary widely by sector (McKay *et al*, 1999; Pensions Commission, 2004).

Secondly, private pension schemes do not usually compensate individuals for low levels of participation in the labour market, low wages, or periods of non-employment, which will reduce their redistributive impact compared with most public pension schemes, which provide at least some protection for those with interrupted work histories (Behrendt, 1999; Ginn and Arber, 1999). Though some private pension schemes provide for survivor benefits, these entitlements are usually much lower than pensions in one's own right and may be lost in the case of divorce, which disadvantages women who are more likely to be dependent on survivor's benefits.

Thirdly, Defined Benefit schemes, which are the most prevalent type of occupational pension among current retirees in the UK and US, deliver very high replacement rates to some mainly high earners, but entail a significant redistribution from early leavers to long-term employees and from those with flat to those with rising earnings profiles. Occupational pensions are often contingent upon a minimal duration of employment with the same employer and are often linked to final salaries, disproportionately benefiting highly qualified white-collar workers and blue-collar workers with permanent work. The generosity of occupational pension schemes also varies considerably within sectors and between employers, at least in the UK, creating what one recent study referred to as a "pensions lottery" (Bridgen and Meyer, 2005). Thus, there may be an element of 'random' variation in the distribution of benefits, in addition to the systematic variation discussed above.

Finally, the recent (and rapid) shift from Defined Benefit to Defined Contribution schemes entails a major shift in risk from the state and employers to individuals, as well as reduction in the generosity of these schemes. As a result, individuals will increasingly be forced to choose between accepting higher equity risks or lower-risk, but also lower-return investment strategies. Whilst these affects only a minority of current retirees (with personal pension schemes and DC occupational schemes), it will affect a growing proportion of future pensioners.

Thus, there are considerable cross-subsidies in occupational pension schemes, generally towards those who are already advantaged in the labour market: principally married men in non-manual occupations. There are also problems with incomplete coverage, variable levels of provision between and within sectors, and (in DC schemes) greater risk. A greater reliance on private pensions is, therefore, likely to have important distributional implications, some of which we might expect to observe

in our comparisons of the income distribution among older people in the UK and the US, on the one hand, and Germany, on the other.

5. Empirical results

5.1 Summary indicators of material well-being

Table 1 presents some of the standard measures used to assess the material well-being of older people. These results are consistent with previous comparative studies using different data sets for earlier time periods. By comparison with the rest of the population, the average income of older people in the UK is found to be lower than in either the US or Germany. The first row of figures shown is based on comparing the median income of older people (aged 65 and over) with the median income for the population as a whole. On this basis, the average income of older people in the UK is 76 per cent of the population average, compared with 87 per cent in Germany and 92 per cent in the US.

Table 1: Relative well-being of older people in the UK, US, and Germany, circa 2000

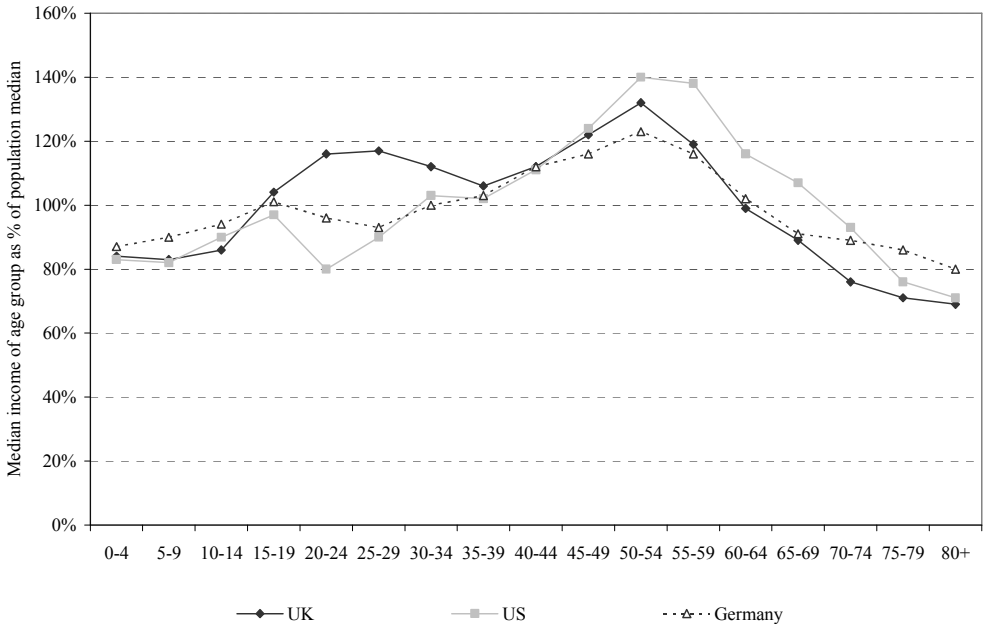
	Older people:			Non-elderly:		
	UK	**US**	**Germany**	**UK**	**US**	**Germany**
Relative incomes:						
65+ vs. whole population[1]	76%	92%	87%	-	-	-
65-75 vs. 55-64[2]	75%	79%	83%	-	-	-
Poverty rates[3]:						
40 % of median	8%	14%	4%	7%	12%	5%
50% of median	17%	22%	10%	11%	18%	9%
60% of median	29%	28%	17%	17%	24%	13%
Inequality :						
90/10 ratio[4]	3.64	6.38	3.14	4.20	6.19	3.48
Gini coefficient	0.30	0.42	0.26	0.31	0.40	0.27
Quintile ratio[5]	4.48	9.25	3.71	5.28	8.76	4.15

1. Median (equivalised) household income of the older population as a percentage of the median income for the whole population.
2. Mean (equivalised) household income of those aged 65-74 as a percentage of the mean income of those aged 55-64.
3. Proportion of individuals with (equivalised) household incomes below 40, 50, or 60 per cent of the median for the whole population.
4. Ratio of (equivalised) household incomes at the 90th percentile and 10th percentiles of the income distribution.
5. Share of total incomes received by the richest fifth of individuals as a percentage of the share received by the bottom fifth.

The differential is smaller if instead we compare the relative incomes of those 65-74 and those aged 55-64 (either side of our threshold for defining older people). This is because the pre-retirement age group in the US have relatively high incomes by comparison with other countries, so the drop in income as people move into old age is almost as great in the US as in the UK (even though the incomes of older Americans

are only marginally lower than the incomes of the non-elderly population as a whole). This is part of a more general pattern whereby changes in relative incomes over the life cycle are more pronounced in the US than in the UK or Germany (see Figure 2).

Figure 2: Relative incomes over the life cycle, circa 2000



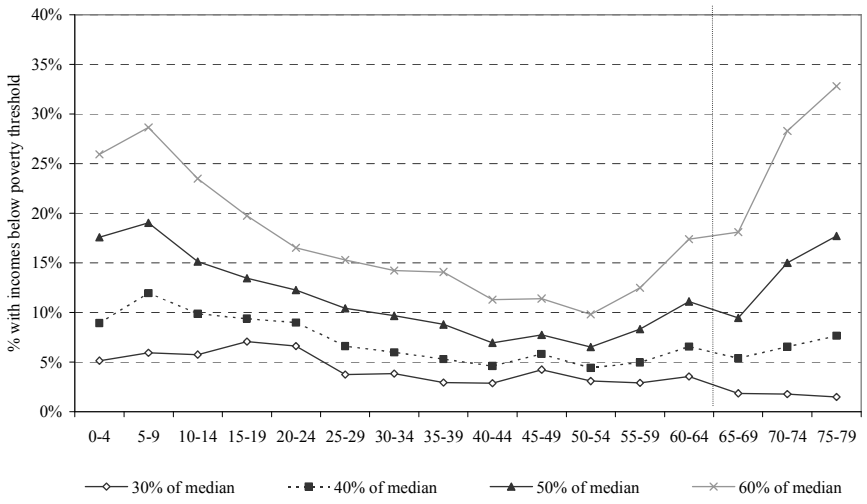
Focusing on the bottom of the income distribution, poverty rates among older people in the UK are higher than among the non-elderly population and higher than in Germany, though about the same as the US (using the 60% of median threshold). The difference in the US is that poverty rates among older people are only slightly higher than among the population at large. These results are particularly sensitive to the choice of poverty threshold and the equivalence scale used to adjust incomes for differences in household composition. As older people's incomes are concentrated around the thresholds commonly used to define poverty, these assumptions can have a significant impact on poverty rates, especially in the UK.[2] When a lower threshold is used, poverty rates are lower in all three countries, but the impact is greatest in the UK. In each case, however, poverty rates are substantially lower in Germany than in either the UK or the US.

Figure 3 shows how poverty rates vary over the whole life cycle at four different poverty thresholds. Using the 50% or 60% of median thresholds, there is a U-shaped pattern in all three countries. Poverty is relatively high among children and young adults, falls among middle-aged adults, and then rises again in old age. At the lower poverty thresholds, however, poverty remains relatively low – or even falls slightly - among older people in the UK and Germany, but not in the US. Thus, the UK system appears to be quite effect at alleviating extreme poverty among its older population, though rates of 'moderate' poverty are relatively high and rising in old age.

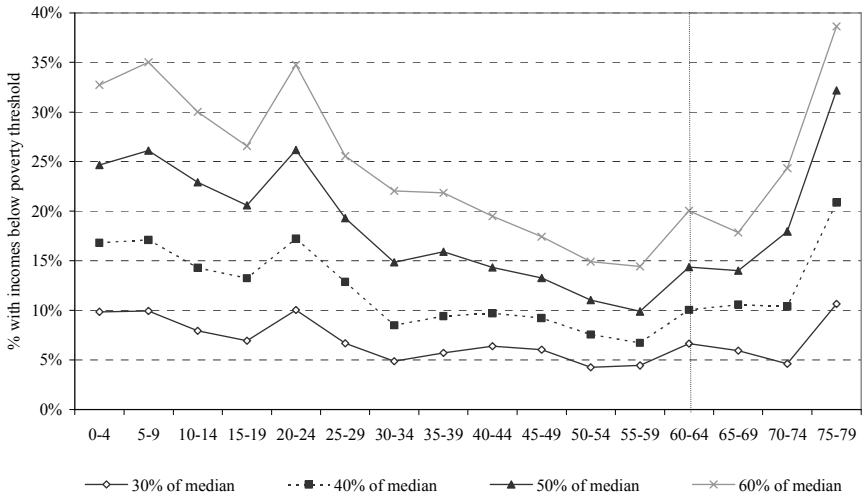
[2] This also helps to explain why our estimates are much higher than the official UK estimates, which use a different equivalence scale (but one used infrequently in international comparisons).

Figure 3: Poverty rates over the life cycle

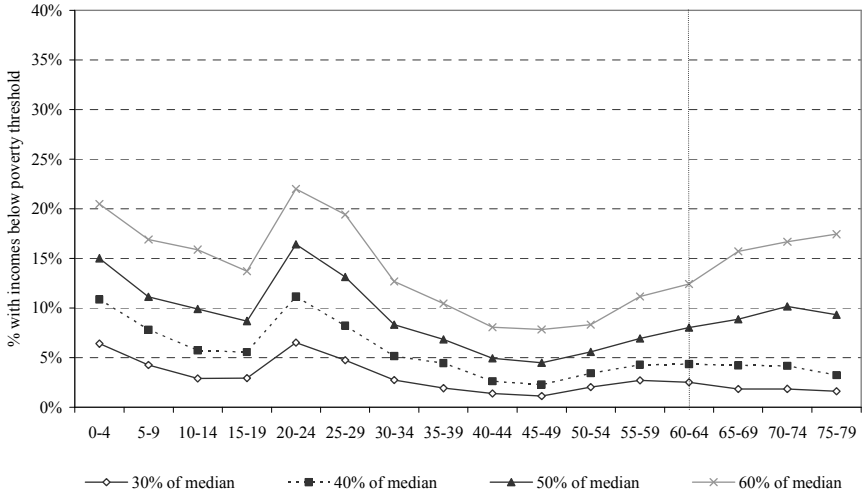
UK



US



Germany



The third main indicator is the 90/10 ratio which measures the spread of incomes among older people between those near the top and bottom of the income distribution. According to this measure (and other standard measures of inequality), inequality is higher in the UK than in Germany and substantially lower than in the US, both among the older and non-elderly populations. The US is also unusual in not having lower inequality among its older population than among the rest of the population.

The level of inequality is substantially lower in the UK than in the US throughout the entire life cycle – and lower still in Germany (see Figure 4). The 90:10 ratio can be broken down into the 90:50 and 50:10 ratios, measuring the level of inequality in the top and bottom halves of the income distribution, respectively. Whilst both the 90:50 and 50:10 ratios are both higher in the US than elsewhere, the differences are greater in the bottom half of the income distribution.

The high level of inequality among older people in the US accounts for the co-existence of high relative incomes (on average) and high poverty rates among its older population. Older Americans are more likely to be very well-off than their counterparts in the UK or Germany, but they are also more likely to have very low incomes.

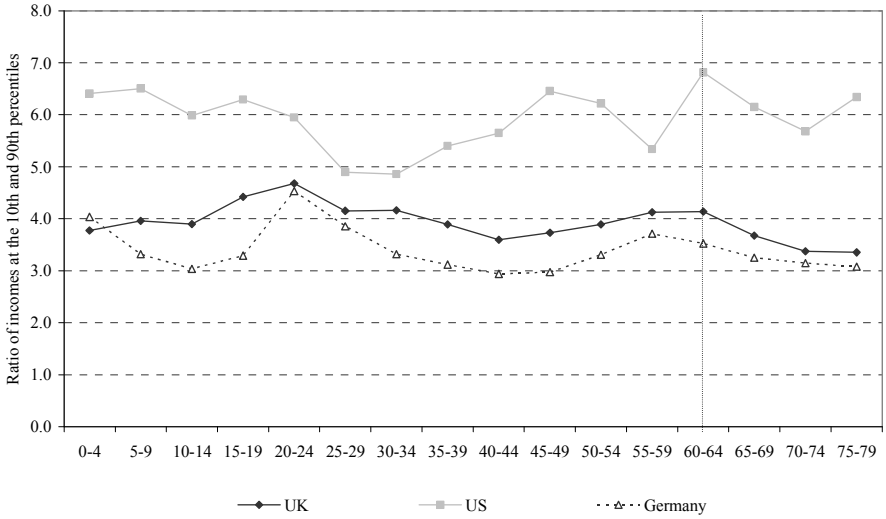
The story so far is a familiar one – and consistent with earlier comparative studies of older people's incomes. The remainder of this paper extends this analysis by presenting the data in different ways, differentiating between sub-groups of the older population, and exploiting the longitudinal component of our data sets. This more detailed analysis is used to help explain some of the differences between countries, alongside an appreciation of the pensions systems that are, at least in part, responsible for these differences in outcomes.

5.2 Overall distribution of incomes

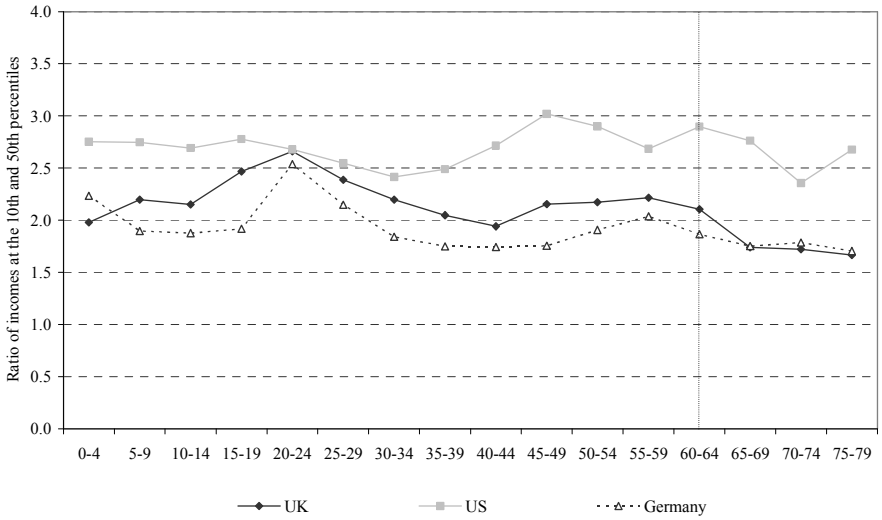
This section examines the overall distribution of incomes among older people in these three countries and how this differs to that of the non-elderly population, using both cross-sectional and longitudinal data. The main purpose of this analysis is to explore the relationship between income inequality among the working age population and inequality among the older (mostly retired) population. Does the income distribution among older people closely mirror that among the non-elderly population or do the pension systems in these countries have a significant equalising (or dis-equalising) impact on the distribution of incomes in old age?

Figure 4: Inequality over the life cycle

90/10 ratio



50/10 ratio



90/50 ratio

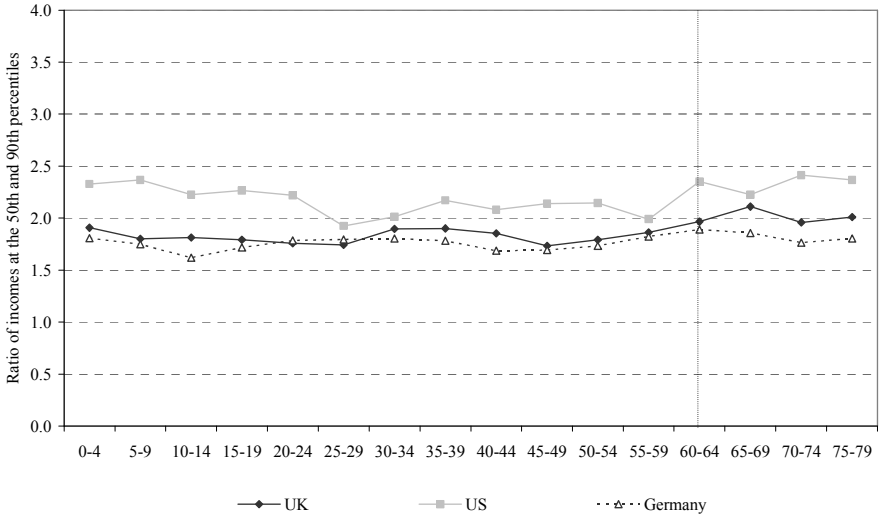


Figure 5 compares the income distribution of the older and non-elderly populations in each of the three countries using cross-sectional data for late 1990s and early 2000s. This analysis focuses on three successive ten-year age groups (aged 55-64, 65-74, and 75-84) in order to examine how the distribution of incomes changes as people move into old age. The same data is presented in two ways to highlight differences in the income distributions between countries by age group (the top panel) and differences in the income distributions between age groups by country (the bottom panel). Incomes are measured as a percentage of the median (equivalised) income for the whole population of each country so that comparisons can be made on a common cale. The vertical line at 60% of the median represents a commonly used poverty threshold.

Looking first at the top panel, greater inequality among the working age population does appear to feed through into greater inequality among the older population. The US, which has the most unequal distribution of incomes among the group aged 55-64, also has the most unequal distribution among the older age groups - with a higher proportion of individuals on very low and very high incomes and fewer concentrated around the middle of the income distribution. This is not surprising given that individuals' ability to accumulate rights to an earnings-related public or private pension scheme is very dependent upon their incomes during their working lives.

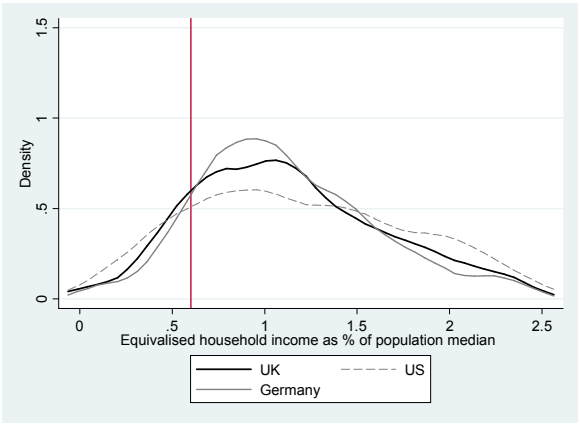
At the same time, as the bottom panel of Figure 5 shows, there are significant differences within countries in the income distribution among these age groups. In all three countries, the incomes of older age groups are more strongly skewed towards the lower end of the overall income distribution, reflecting the decline in relative incomes in old age. Thus, compared with the group aged 55-64, a higher proportion of older people have incomes below the 60% of median poverty threshold.

But, there are also some significant differences between countries, most notably at the lower tail of the income distribution. In the UK and Germany, the very bottom of the income distribution is almost flat for the two older age groups, which suggests that their pension systems are effective in providing a floor on incomes in old age, albeit at a relatively low level (around 30% of the median income). In the US, by contrast, there does not appear to be a floor on incomes in old age and, as a consequence, there is more extreme poverty among older Americans. Whilst this difference is already evident among the younger age group, it becomes even more marked among the older age groups.

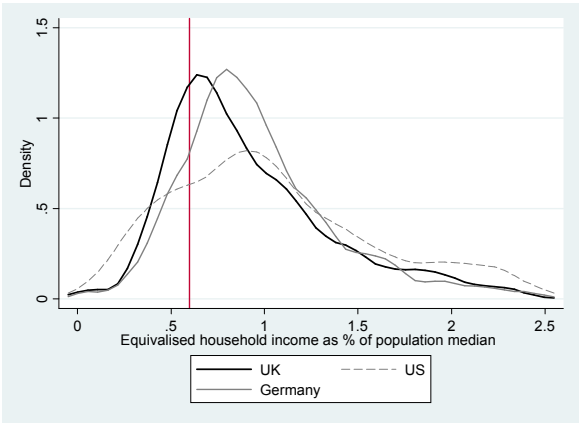
However, the UK system is not very effective in preventing 'moderate' poverty. The concentration of individuals below the 60% of median poverty line increases with age to a greater extent than in Germany (as reflected in the steepening of the curve below the mode). Whilst both the UK and German systems protect older people at the very bottom of the income distribution, the German system is better at maintaining the incomes of those on low/moderate incomes as they move into old age.

Figure 5: Income distributions of pre- and post-retirement age groups in the UK, US, and Germany, 1999-2001

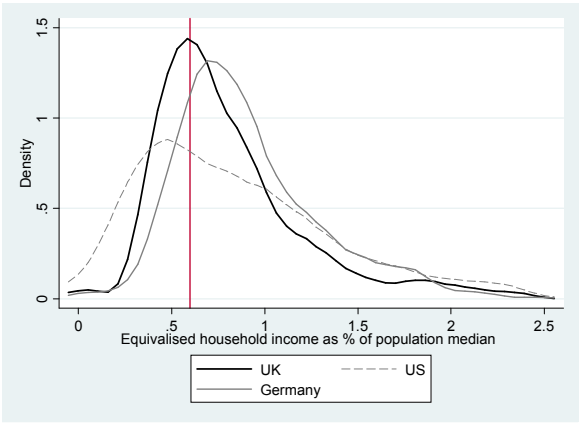
Aged 55-64



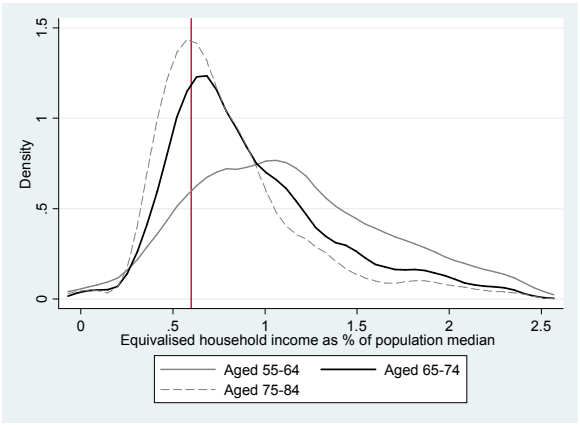
Aged 65-74



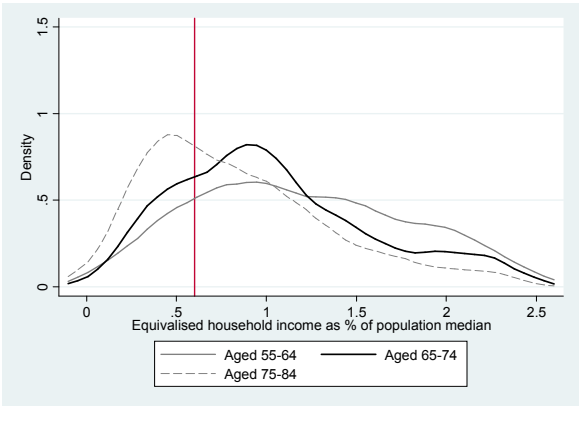
Aged 75-84



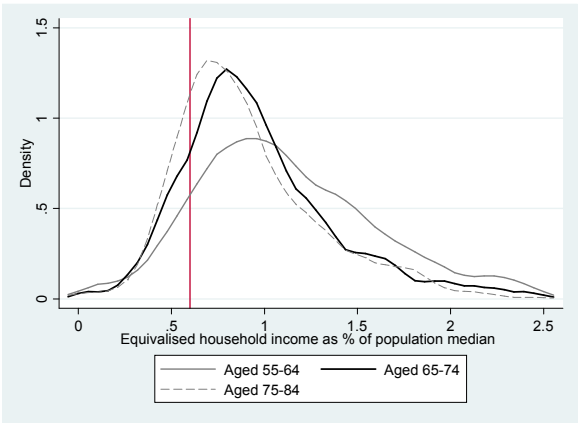
UK



US



Germany



The above analysis can be replicated using longitudinal data, by following a particular age cohort as it moves into old age. The advantage of using longitudinal data in this context is that it is possible to examine directly changes in incomes as individuals grow older, rather than having to infer this by comparing the incomes of different age groups at a given point in time. This ensures that changes in income with age ("age effects") are not confused with differences in incomes between age cohorts ("cohort" effects), as may have been the case in the previous analysis.

We focus on the cohort aged 55-64 in 1991 and 65-74 in 2001. None of these individuals were old at the beginning of the period, according to our definition of older people, and all of them were old by the end of the period; so, we effectively capture the impact of becoming old (as defined for the purposes of this paper). We include in our analysis only those individuals who appear in the data set both at the beginning and end of the period, excluding those who die during the period or drop out of the sample for other reasons. This ensures the results are not biased by differential attrition over time; we know, for example, that respondents from lower income groups are more likely to attrite, so including them in earlier (but not later) waves would create a downward bias in incomes at the start of the period and thereby under-state the reduction in incomes over the period. Incomes are measured in relation to the contemporary median income in each country, which is equivalent to adjusting incomes for earnings growth over time.

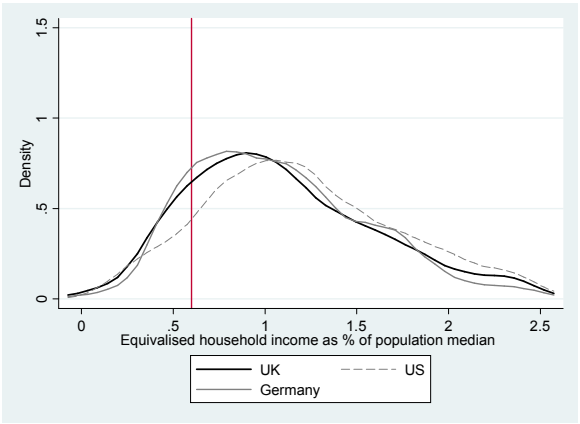
The results of this longitudinal analysis are similar to the findings from the cross-sectional analysis. (As the longitudinal analysis covers a ten year period, the relevant comparison is with the groups aged 55-64 and 65-74 in Figure 5.) As in the cross-sectional analysis, the UK and German systems appear to be more effective than the US system in alleviating extreme poverty among older people, by providing a more effective, though relatively low, floor on incomes in old age. This can be seen most clearly in the bottom panel of Figure 6, which shows that the risk of being in extreme poverty rises as this cohort ages in the US, but not in the UK or Germany.

The German system is also more successful than the UK system in alleviating less extreme poverty, by replacing a higher proportion of incomes for those on moderate incomes. In Germany, there is virtually no increase in the proportion of individuals with low incomes as this cohort ages up to around 50 per cent of the median income, in contrast to the UK and the US. The cross-country comparisons (in the top panel) show that the income distribution for this age cohort is very similar in the UK and Germany at the beginning of this period, but that by the middle and end of the period, a significantly higher concentration of the British cohort have incomes below the poverty line.

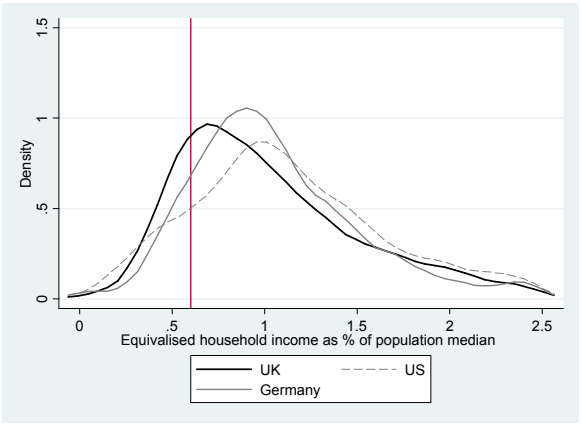
One way of quantifying changes in the income distribution in old age is to calculate (quasi-)replacement rates, based on comparing the incomes of pre- and post-retirement age groups. As above, we focus on the cohort aged 55-64 at the beginning of the period (in the early 1990s), all of whom are aged 65 or over by the end of the period (in circa 2000). The quasi-replacement rate at the 50^{th} percentile point (or median) is equal to the median income of this cohort at the end the period as a percentage of their median income at the beginning of the period. (Quasi)-replacement rates are calculated at each decile point in the respective income distributions.

Figure 6: Changing income distribution of cohort aged 55-64 in 1991

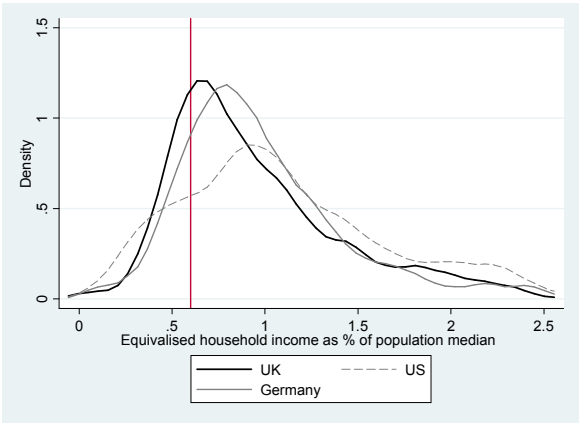
Early 1990s



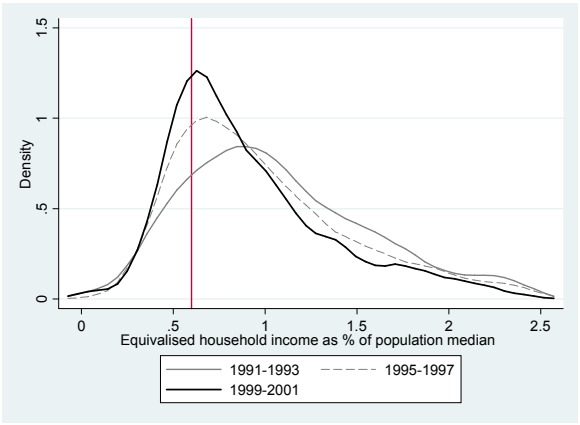
Mid 1990s



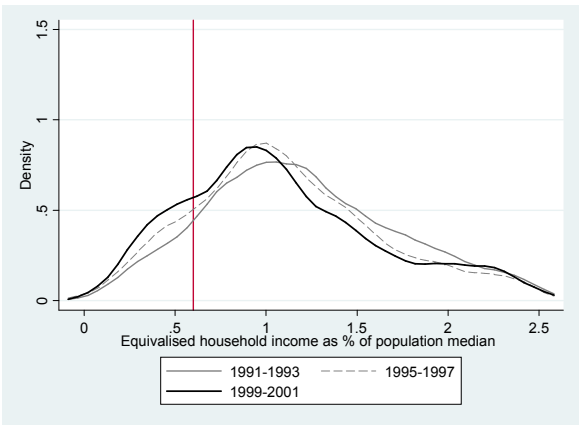
Circa 2000



UK



US



Germany

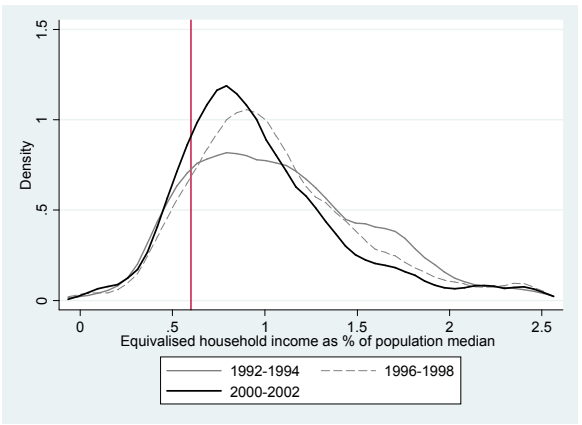


Table 2: Relative incomes at different points in the income distribution among the pre- and post-retirement age groups[1]

	Percentiles:								
	10th	**20th**	**30th**	**40th**	**50th (Median)**	**60th**	**70th**	**80th**	**90th**
Aged 55-64 (in early 90s):									
UK	48.9	66.2	79.5	92.3	105.4	119.0	138.0	163.7	204.0
US	57.7	79.3	95.3	110.4	126.5	145.5	172.6	216.6	286.8
Germany	51.5	66.7	78.5	91.7	105.2	119.5	136.6	160.9	192.0
Aged 65-74 (in circa 2000):									
UK	48.5	58.6	66.0	74.9	84.3	96.8	112.3	136.8	179.5
US	42.7	64.5	81.3	94.3	104.8	122.4	147.0	186.6	246.3
Germany	51.6	63.9	72.1	80.9	89.5	100.0	113.5	130.8	168.6
Quasi-replacement rate[3]:									
UK	0.99	0.89	0.83	0.81	0.80	0.81	0.81	0.84	0.88
US	0.74	0.81	0.85	0.83	0.83	0.84	0.85	0.86	0.86
Germany	1.00	0.96	0.92	0.88	0.85	0.84	0.83	0.81	0.88

1. Incomes are measured as net equivalised household incomes. Figures presented here are incomes at different points of the income distribution (for the pre- and post-retirement age groups) as a percentage of the median income for the whole population.
2. Based on cross-sectional analysis of all individuals aged either 55-64 or 65-74 in circa 2000 (1999-2001).
3. This is equal to the relative income of 65-74 year olds divided by the relative income of 55-64 year olds (at different points in the respective income distributions).
4. Based on longitudinal analysis of all individuals aged 55-64 in the early 1990s and 65-74 in circa 2000.

The results, which are shown in Table 2, confirm our earlier findings. The quasi-replacement at the 10th percentile (i.e. nearest to the bottom of the income distribution) is significantly higher in the UK (99 per cent) and Germany (100 per cent) than in the US (74 per cent) – and higher also than at any other point in the income distribution. When aged 55-64, the poorest Americans are significantly better off (in relative terms) than the poorest British or Germans, but ten years later this group are significantly worse off than their counterparts in the UK or Germany. On this basis, it seems that UK and German welfare systems are more effective at maintaining the incomes of those at the bottom of the income distribution. This is the effect of the floor on older people's incomes discussed above.

However, the quasi-replacement rates in the UK are significantly lower at the 20th, 30th, and 40th percentile points than in Germany. This is likely to be due to individuals who for whatever reason have fallen through the gaps in private pension provision. The state pension and other social transfers provide a safety net for these individuals, protecting them from extreme poverty, but does less well in terms of the other objective of pension systems, which is to 'replace' an adequate share of their pre-retirement incomes. In Germany, individuals in a similar position benefit from the more strongly earnings-related public pension schemes, so they are much less dependent on private sources of maintain their incomes in old age.

Differences in the top half of the respective income distributions are harder to discern. Quasi-replacement rates in these countries appear to converge towards the top of the

income distribution. At the 90th percentile, the quasi-replacement rates are virtually identical in the UK, US, and Germany. For higher income groups, the level of public pension provision does not seem to have much impact on their material well-being in old age. As economic theory would predict, it appears that better-off pensioners in the UK and US compensate for less generous public pensions than in Germany by making greater private provision for their old age in order to achieve about the same replacement rate.

More detailed analysis shows that the level of inequality in the top half of the income distribution changes only slightly as this cohort moves into old age. In all three countries, the income differential between the richest individuals and the median individual remains broadly the same over this period (though at a higher level in the US and UK than in Germany). This contrasts with the changes that occur within the bottom half of the income distribution. The 50/10 ratio falls significantly in the UK and Germany, but rises in the US (see Table 3).

Table 3: Changes in inequality during the transition into old age[1]

	UK	US	Germany
Top half of distribution (90:50 ratio)			
Early 1990s[2]	1.94	2.27	1.82
Mid-1990s[2]	2.09	2.37	1.84
Circa 2000[2]	2.13	2.35	1.88
% change	***9.8%***	***3.5%***	***3.3%***
Bottom half of distribution (50:10 ratio)			
Early 1990s	2.16	2.19	2.04
Mid-1990s	1.93	2.30	1.82
Circa 2000	1.74	2.45	1.73
% change	***-19.4%***	***11.9%***	***-15.2%***

1. Based on sample of individuals aged 55-64 in 1991 and 65-74 in 2001. Analysis is restricted to individuals who are present at the start and end of the analysis period. Figures shown here are the 90:50 and 50:10 ratios for the income distributions of this age cohort at the beginning, middle, and of the period.
2. Data for early 1990s covers the period 1991-93 (1992-94 for Germany); data for mid-1990s covers the period 1995-97 (1996-98 for Germany); and data for circa 2000 covers the period 1999-2001 (2000-2002 for Germany).

An influential OECD report argued that very different pension systems produce comparable outcomes in terms of the relative incomes of older people. This conclusion is based on a comparison of the average incomes of the older population and the (older) working age population. Our analysis here suggests that the impact of different systems is broadly equivalent for those in the top half of the income distribution, but that this does not hold for the lower part of the income distribution. Some of the reasons for this are discussed in the concluding section.

5.3 Individual income trajectories

The preceding section examined aggregate changes in the income distribution with age. This section looks at individuals' income trajectories as they grow older, focusing on the relationship between pre- and post-retirement incomes. Is it the case, for example, that individuals broadly maintain their position in the income distribution or is there a lot of movement up and down the income distribution as people move into old age? Our analysis focuses on those individuals who retired during the period covered by our analysis, because retirement is the event most strongly associated with changes in income in old age. Post-retirement income trajectories are generally more stable, though of course significant reductions and increases in incomes can occur within retirement. As the age at which people retire varies between individuals and, on average, between countries, this approach was preferred to examining changes in incomes immediately before and after turning 65.

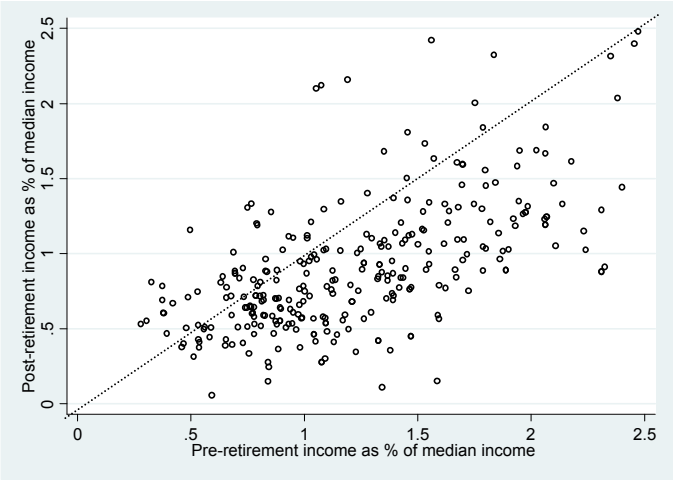
Our sample consists of all individuals who retired during the 1990s: 1994-1999 for the UK, 1990-95 for the US, and 1995-2000 for Germany. The US analysis cannot be carried out for later years, because the survey went biennial from 1997 onwards (and our analysis requires data for six consecutive years). An individuals' retirement status is based on their self-reported employment status: someone is retired if they are reported to be working for three consecutive years and then not working for three consecutive years and are aged 55 and over at the point of retirement. Pre- and post-retirement incomes are averaged over the second and third year immediately preceding or proceeding retirement to avoid counting their income in the year in which they retire and to smooth some of the variation in incomes around retirement.

This analysis may exaggerate the amount of movement up and down the income distribution, because part of the variation in replacement rates is due to the way we have measured pre- and post-retirement incomes, focusing on the years immediately before and after the point of full retirement. For example, individuals who phase their retirement over time (e.g. moving from full- to part-time employment before fully retiring) will experience a smaller drop in their income than individuals who retire more abruptly. Similarly, individuals who retire at the same time as their partner will experience a sharper drop in their (household) income in the years immediately surrounding their retirement than if their partners stagger their retirement. More generally, people's incomes in the three year period prior to their retirement may not be representative of their pre-retirement incomes and nor are their incomes in the three years following their retirement necessarily representative of their income throughout their retirement.

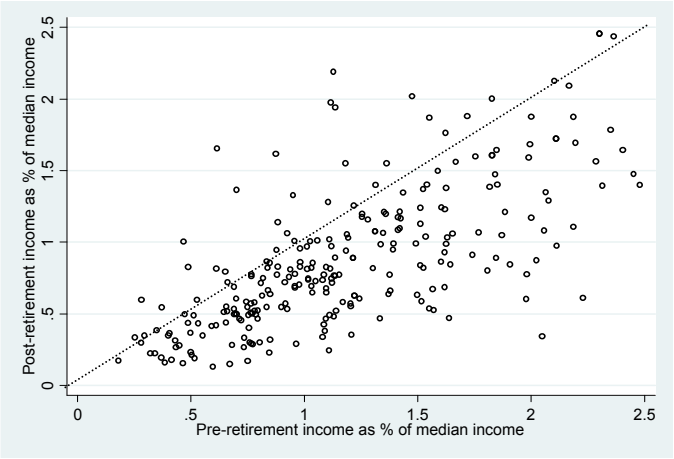
Figure 7 plots pre- and post-retirement incomes (as a proportion of the median income of all households over the same period). The diagonal line corresponds to a replacement rate of 100% (i.e. post-retirement income equal to pre-retirement income). This shows that, as we might expect, most people have a replacement rate below 100%, often substantially so. The median replacement rate is very similar in all three countries - 79% in the UK and Germany and 74% in the US. As discussed earlier, average incomes in the US peak when people are in their late fifties and at a higher level than elsewhere, so the drop upon retirement is at least as large as in the UK, even though US retirees are, on average, better off relative to the whole population than their British counterparts.

Figure 7: Changes in the income distribution pre- and post-retirement

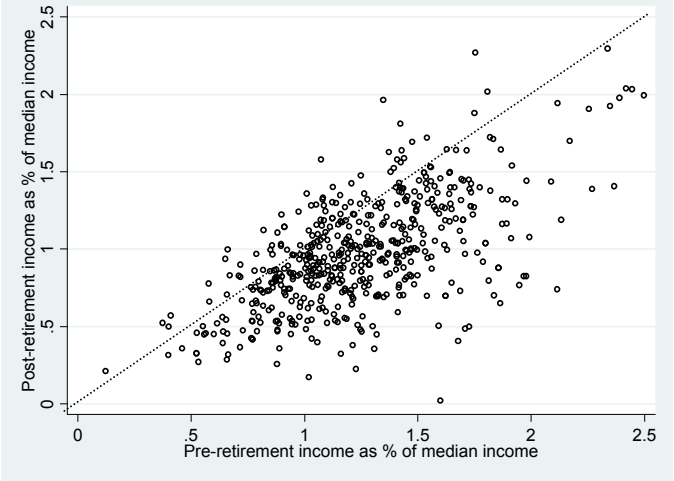
UK



US



Germany



Whilst pre- and post-retirement incomes are quite closely correlated in all three countries, there is still a substantial amount of variation in replacement rates across the income distribution. Individuals with similar pre-retirement incomes often have very different post-retirement incomes, though (as already noted) part of this variation may be due to the way pre- and post-retirement incomes are measured.

Previous analyses for the UK have found that replacement rates are generally higher for those with the lowest pre-retirement incomes (e.g. Blundell and Turner, 1999). Our results are consistent with this evidence; median replacement rates in the UK range from 97 per cent for the bottom quartile to 70 per cent for the top quartile. The replacement rate is also relatively low for those in the second quartile with low/ moderate pre-retirement incomes (see Table 4). There is much less variation in replacement rates across income groups in the US and Germany, implying that their pension systems are not as strongly redistributive. This is in line with expectations based an understanding of the different welfare systems. The US social security system does have a redistributive formula for calculating people's entitlement to retirement benefits, but the system is less redistributive than the largely flat-rate pension system in the UK and less redistributive than an initial assessment of the formula might suggest (Gustman and Steinmeier, 2000; Liebman, 2002). The state pension in Germany is the most closely linked to prior earnings and, therefore, the least redistributive of the three systems (though, paradoxically, the most effective in alleviating poverty).

Table 4: Median replacement rates by income group

Incomes two and three years post-retirement compared with two and three years pre-retirement (by pre-retirement income group)

	UK (mid/late 1990s)	**US (early 1990s)**	**Germany (mid/late 1990s)**	**Sweden**
Income quartile pre-retirement:				
Bottom	97%	79%	79%	
2nd	73%	74%	82%	
3rd	77%	74%	74%	
Top	70%	69%	79%	
All retirees	**79%**	**74%**	**79%**	

Our sample of retirees is too small to carry out a more detailed analysis of the characteristics of retirees that are associated with higher or lower replacement rates. (Just over 300 individuals in the UK sample meet our criteria for retirement over the period covered by our analysis). It is possible, however, to look at the characteristics that are associated with higher or lower incomes among the older population as a whole (including those who are not observed to retire during the panel period). It is to this that we turn in the next section. As well as being of interest in its own right, this may help to shed further light on the differential impact of the British, American, and German welfare regimes.

5.4 Distribution of incomes within the older population

This section examines the distribution of incomes within the older population, focusing on differences between specific sub-groups of the older population, including by age, gender, and marital status. We are particularly interested in whether certain groups of older people fare relatively better or worse in these countries.

Our analysis focuses on relative incomes as a measure of material well-being. Relative incomes are measured as the median income for each sub-group as a proportion of the median income for the population as a whole. This analysis was repeated using poverty rates as an alternative measure of material well-being and the pattern of results was found to be very similar. Sub-groups with higher relative incomes have lower poverty rates and vice-versa. The main similarities and differences between the study countries are as follows (see Table 5):

- Within the elderly population, relative incomes are significantly lower and poverty rates higher among women (see Table 5). The gender differential is present in all three countries, but is greatest in the US (17 percentage points) than in the Germany (12 percentage points) or the UK (11 percentage points);

- Relative incomes decline with age in each of the countries, but the decline with age is much steeper in the US than in the UK and, in particular, Germany;

- Relative incomes are also closely associated with marital status. Married couples have the highest relative incomes, whilst divorcees have the lowest relative incomes. These differences are greatest in the US. Whilst divorcees comprise a relatively small proportion of the current retired population, this is forecast to rise sharply in future years. According to one US estimate, the proportion of women divorcees is expected to increase from 6% in 1991 to 19% in 2020 – and the same trend is evident in many other rich western countries (Smeeding and Williamson, 2001);

- In all three countries, older couples who are living alone are significantly better off than single men and single women are the worst off. In Germany, single men are only marginally worse off than married men, whereas in the UK and the US, single men are also significantly poorer than married men.

- Not surprisingly, relative incomes are highest among older people who are working or living in a household where at least one household member is in work. This group comprises a significantly higher proportion of older people in the US (25%) than in the UK (15%) or Germany (11%);

- In the US and, to a lesser extent, the UK, older disabled persons have substantially lower incomes than older non-disabled persons. The converse is true in Germany, though disability is defined very differently in their survey (and, it would seem, more narrowly).[3]

[3] 28% of older Germans are disabled, according to their definition, compared to 38% in the US and 48% in the UK.

Table 5: Relative incomes of older populations by sub-group[1]
(Median income of sub-groups as a percentage of whole population median)

	UK (c2000)	US (c2000)	Germany (c2000)
All older people	**76**	**92**	**87**
Age:			
Aged 65-74	83	100	90
Aged 75+	70	75	84
Gender:			
Men	83	102	95
Women	72	85	83
Race:			
White	-	96	-
Non-white	-	58	-
Marital status:			
Married	87	108	94
Single	73	78	81
Widowed	66	67	80
Divorced/separated	62	65	70
Household type:			
Single female	61	67	72
Single male	67	91	89
Couple living alone	83	112	93
Living with others	103	67	108
Economic status:			
Working	113	120	119
Not working	71	86	84
Health status:			
Not disabled	78	98	86
Disabled	72	80	90
Observations[2]	*4,851*	*2,467*	*9,279*
Respondents	*1,683*	*1,396*	*3,840*

1. UK and Germany data is for 1999, 2000, and 2001. US data is for 1999 and 2001.
2. Number of observations with non-missing incomes and non-zero weights.

- In the UK and Germany, older people who are living with others (usually younger relatives) are a relatively small, but well off, sub-group of older people: they have the highest relative incomes and lowest poverty rates of all the household types (on the assumption that they share equally in the incomes of the whole household). By contrast, this group is much larger and much poorer in the US. One reason is that living with relatives is much more prevalent among minority ethnic groups, who are much more likely to be in poverty (see below). But, even among older white people, incomes are relatively low among those who are living with other (non-elderly) persons;

- Older people from minority ethnic groups have substantially lower relative incomes than their white counterparts in the US (around 40 percentage points lower) and substantially higher poverty rates (49% versus 22%). The sample is too small in the UK and data is not available for Germany, so no comparisons are possible.

One of the reasons that older women have lower incomes, on average, than older men is they have a longer life expectancy and so are more likely to be very old and living alone, both of which are associated with lower relative incomes and higher poverty in old age (Smeeding and Williamson, 2001; Smeeding and Sandstrom, 2004). To examine this issue more closely, Table 6 provides a more detailed breakdown of some of the categories, including by age and gender and by marital status and gender. Within each age group and within each marital status category, women consistently have lower incomes than men. So, the gender differential cannot be explained solely in terms of men being younger, on average, or predominantly married, although this is clearly part of the explanation.

Table 6 also highlights the contrasting experiences of single older men and women. In Germany, in particular, single men, including widowers and divorcees, are at least as well off, on average, as married men, whereas widows and divorced women are considerably worse off. In the US and the UK, single men have lower incomes than married men, but higher relative incomes than single women (with the exception of the "never-married"). Previous research on the UK has found that both these events impact differentially (and more favourably) on men than on women, but on this evidence at least, the differences are substantially smaller than in Germany or the US.

Once marital status is taken into account, there is no decline in relative incomes with age in Germany. Older couples have around the same income, on average, as younger couples and the same is true for single men and single women. So, any decline in incomes with age in Germany is accounted for solely by changes in marital status – more specifically, the impact of widowhood. In the US, by contrast, there are significant differences in relative incomes by age across all marital status categories, in particular between younger and older couples. Part of the explanation is that couples aged 65-74 are more likely to have someone still in work than their counterparts in Germany or the UK, but there is a decline in incomes with age even among non-working American couples.

Table 6: Relative incomes of older populations by sub-group[1]
(Median income of sub-groups as a percentage of whole population median)

	UK (late 1990s)	US (late 1990s)	Germany (late 1990s)
All older people	**75**	**90**	**87**
Gender and age:			
Male aged 65-74	89	110	95
Female aged 65-74	78	94	86
Male aged 75+	75	84	94
Female aged 75+	67	68	78
Marital status and gender:			
Married male	87	108	94
Married female	83	103	93
Never-married male	71	76	94
Never-married female	73	75	83
Widowed male	72	82	98
Widowed female	62	63	77
Divorced male	64	85	109
Divorced female	60	57	60
Household type and age:			
Single female, 65-74	62	66	75
Single female, 75+	58	61	73
Single male, 65-74	67	89	86
Single male, 75+	64	81	86
Couple living alone, 65-74	87	116	93
Couple living alone, 75+	78	92	92
Couple + others, 65-74	102	81	110
Couple + others, 75+	101	50	110
Economic status and age:			
Working, 65-74	114	122	122
Working, 75+	111	88	117
Not working, 65-74	74	92	87
Not working, 75+	66	73	80

1. Data is for 1996-2001inclusive. There is no US data for 1998 and 2000 (as survey went biennial from 1997 onwards).

These findings are supported by previous research our own analysis of the longitudinal data, which show that the decline in relative incomes with age is greater in the US than in UK and in particular Germany (e.g. Hungerford, 2003). As noted earlier, the advantage of using longitudinal data is that it removes any possible cohort

effects. In the US, the cohort aged 65-74 at the beginning of the 1990s experienced a 30 per cent decline in median income over a ten year period relative to the population as a whole. The decline was around 11 per cent in the UK and just 3 per cent in Germany. In real terms (i.e. adjusting for price inflation only), the incomes of this age cohort rose in the UK and Germany, but fell by nearly 10 per cent in the US (see Table 7). Furthermore, a more detailed analysis shows that the gap between the poorest and richest older people widens in the US as this cohort ages: the fall in relative incomes is 40 per cent at the 25th percentile, 30 per cent at the median, and 20 per cent at the 75th percentile. The implication is that it is the poorest Americans who are least well-protected against a continuing fall in their incomes in old age. The converse is true in the UK and Germany, where the gap between the richest and poorest older people narrows slightly as this cohort grows older. The implication seems to be that the American welfare system is less effective than the German and UK systems in preventing older people's incomes from declining in old age, particularly for those at the bottom end of the income distribution.

Table 7: Changes in relative incomes in old age: cohort aged 65-74 in early 1990s
(Changes in median incomes of older people with age)

	UK (1990s)	**US (1990s)**	**Germany (1990s)**
Index of relative incomes:			
Base year	**100**	**100**	**100**
Year 1	103	98	97
Year 2	104	88	95
Year 3	97	85	104
Year 4	98	86	100
Year 5	97	82	101
Year 6	95	83	107
Year 7	95	-	103
Year 8	96	73	101
Year 9	92	-	99
Year 10	89	70	97
Index of real incomes:			
Base year	**100**	**100**	**100**
Year 1	102	99	99
Year 2	100	91	97
Year 3	95	85	104
Year 4	99	86	102
Year 5	100	84	104
Year 6	102	89	104
Year 7	102	-	107
Year 8	104	83	108
Year 9	109	-	107
Year 10	112	92	106
Observations	*573*	*350*	*493*

1. Balanced sample of older people who appear in the base year sample and in subsequent waves.
2. Base year is 1991 for UK and the US and 1992 for Germany.
3. No data for the US for 1998 and 2000, as PSID went biannual from 1997 onwards.

Thus, with a few exceptions, the same sub-groups of older people have relatively low or high incomes in all three countries. However, the differentials between groups (e.g. between older men and older women, between single and married older persons, and between younger and older pensioners) are consistently larger in the US than in the UK or Germany. In addition, certain specific sub-groups of older people appear to fare relatively poorly in some countries. Widows and divorced women are comparatively worse off in Germany and the US, whilst older disabled persons fare poorly in the US. One of the aims of this paper is to try to account for these differences (and similarities) in outcomes between sub-groups in terms of differences in welfare systems or in life-course patterns across these countries. In practice, the reasons are complex and reflect a combination of factors that interact with one another to produce the observed outcomes.

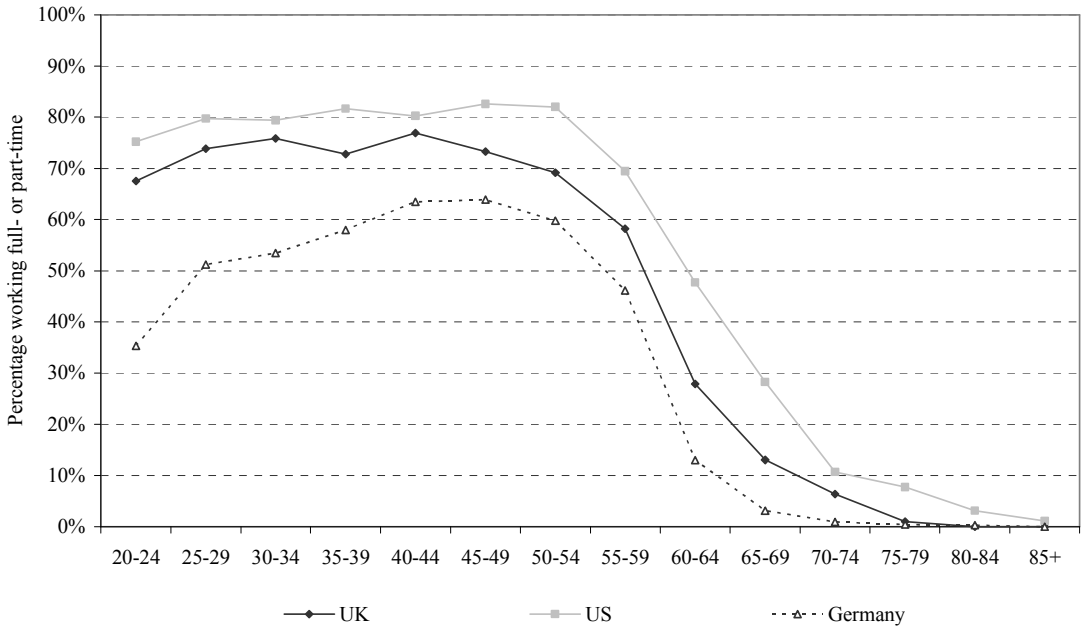
The German system is better at maintaining older people's incomes through retirement at least in part due to the indexation of public pensions with average (net) earnings, as opposed to prices as in the US and, until recently, the UK. Another significant factor is that most people have already retired by the time they reach 65, so there is not the same decline in earnings as in the US. In the UK, the welfare system appears to provide a more effective floor, helping to maintain (or the cushion the decline in) the relative incomes of the poorest pensioners. The same does not seem to happen under the US system, which fails to prevent incomes from falling in real terms (as well as relative terms) and, in this respect, provides even less protection for those towards the bottom of the income distribution.

Two factors seem to account for the relatively low incomes of older disabled persons in the US. Firstly, older Americans are more reliant on earnings as a source of income in old age, so having a work-limited disability is likely to impose a greater penalty than it does in countries like Germany, where most non-disabled older persons are not working either. Secondly, the US system places much greater emphasis on private pensions and, unlike public pensions, these do not generally provide much protection for those who are disabled. So, older people in the US who have experienced periods of disability during their working lives may be penalised to a greater extent than in countries like Germany where the main source of income in retirement is the public pension. Whilst the UK pensions system also relies quite heavily on private sources of income in retirement, there are a number of additional disability-related state benefits that help (albeit partially) to compensate people for the extra costs associated with being disabled, reducing the gap between older disabled and non-disabled persons.

The group that do comparatively least well in the German system are widows and divorced women (though these groups have relatively low incomes in all three countries), whilst single men do comparatively well. This suggests that the pension rights of older people in Germany are even more strongly concentrated on men than in the UK or the US. Employment rates among women are substantially lower in Germany at any given age than in either the UK or the US (see Figure 8).[4]

[4] The figures presented in Figure 8 show employment rates among the current population (i.e. those currently aged 20-24, 25-29, etc). In understanding the financial position of older women today, we would ideally want to examine their own employment histories, rather than the employment rates of younger cohorts in the current sample (as in Figure 8). If, as seems likely, countries like Germany are 'catching up' with the US, then the cross-country differences in female employment rates are likely to have been even greater among the current retired population.

Figure 8: Female employment rates by age, circa 2000



As a result, older women in Germany are generally more dependent on the incomes of their spouse, which fits the description of the German system as a 'bread-winner' welfare model. This would be less of a problem if the welfare system provided adequate protection in the event of widowhood or divorce. Though there are protective mechanisms within their system, these do not appear to be very successful in preventing the potentially adverse financial consequences of these events, at least for this generation of older people.

In the UK and the US, widows can claim in full their deceased spouse's entitlement to the retirement benefits if this is better than their own (including both the flat-rate and earnings-related components in the UK). This offers basic protection for those largely dependent on the state pension, but many private pension schemes do not offer the same degree of protection (and these play a much more prominent role in the UK and US system even for couples on relatively modest incomes). In Germany, the surviving spouse receives 55 per cent of their deceased spouse's benefit (60 per cent until 2001), though can in most cases continue to claim their own insurance pension if they have one. The German system seems to favour widows who have their own pension and are able to supplement this with a survivor's pension, but disadvantages the significant minority of older women (22 per cent in West Germany) who are not entitled to a pension of their own and would only be entitled to part of their deceased spouse's pension.

Divorced women generally receive even less protection than widows, though are perhaps more likely to have built up an entitlement to their own pension (depending on their age at divorce). In the UK, divorcees (who have not re-married) can use the contributions of a former spouse to replace their own contributions for the years they

were married, but this only applies to the Basic State Pension and not the earnings-related component. In the US, a divorced spouse is entitled to retirement benefits on their former partner's record provided the marriage lasted at least ten years. In Germany, pension rights are split in the event of divorce.

Various changes have been made to these countries' systems to improve the rights of women to their own pension, by awarding pension credits for time spent looking after children (in Germany) or by deducting the number of year spent caring from the number of years required to secure a full state pension (in the UK). But, like all pensions reforms, these changes take many years to work their way through into more generous public pensions for women and will not have benefited most of the older women in our sample.

5.5 Composition of incomes in old age

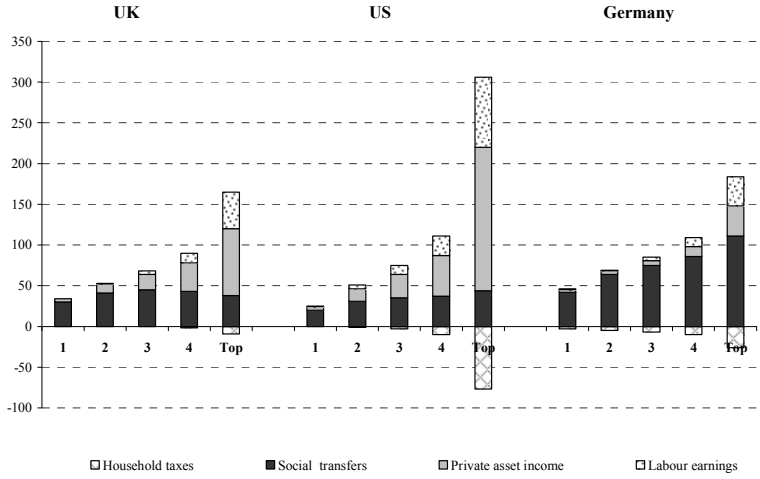
This final section looks at the composition of incomes of older people in the US, UK, and Germany, focusing in particular on the split between public and private sources of income and their relative contribution to alleviating poverty in old age. The overall share of total income provided by (gross) social transfers, which cover public pensions and other state benefits, ranges from 30 per cent in the US to 48 per cent in the UK and 77 per cent in Germany.

The first set of figures examines the composition of incomes by income group, where the older population is divided into quintiles based on their net equivalised household income (see Figure 9a-c). In all three countries, higher income groups receive a greater share of their income from private sources, including labour earnings and private pensions. In Germany, though, the public pension is more strongly earnings-related, so it continues to provide a large share of the income of richest older people (around 60% for the top quintile). In the UK and the US, by contrast, social transfers comprise only around a fifth or less of the income of the richest quintile. The difference by made up for by higher levels of private asset income and earnings, especially in the US. Lower income groups are dependent on social transfers for the majority of their income, but again the contribution from private sources of income is greatest in the US and greater in the UK than in Germany.

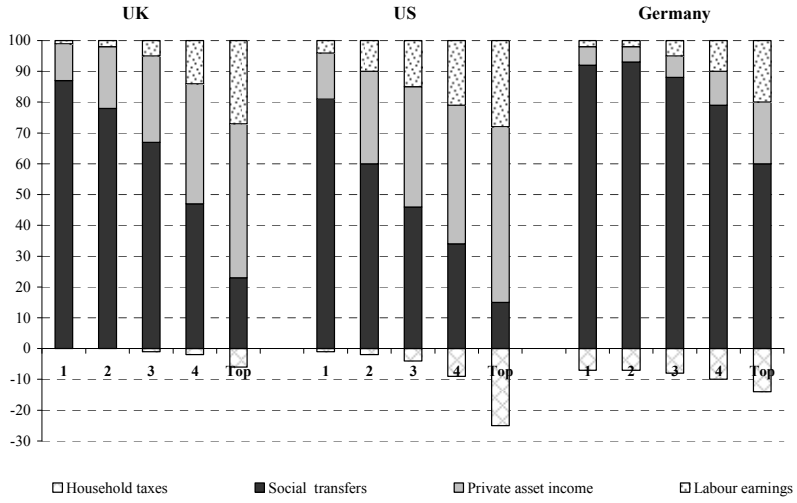
Figure 9c shows most clearly the differences between the three systems. The German system is the most strongly-earnings related, but also the most generous for those in the bottom income group, who receive the equivalent of 40 per cent of the mean income (for the whole population), compared to 30 per cent of the mean in the UK and 20 per cent of the mean in the US. The UK system is slightly more generous, on average, than the US system and is only weakly earnings-related: the lowest income group in the UK receives significantly more than in the US, but the highest income group receives less (as a proportion of the mean income for the whole population).

Figure 9: Composition of older people's incomes by income group

a) All sources of income as % of mean income for whole population



b) All sources of income as % of total income



c) Social transfers as % of mean income for whole population and as % of total income

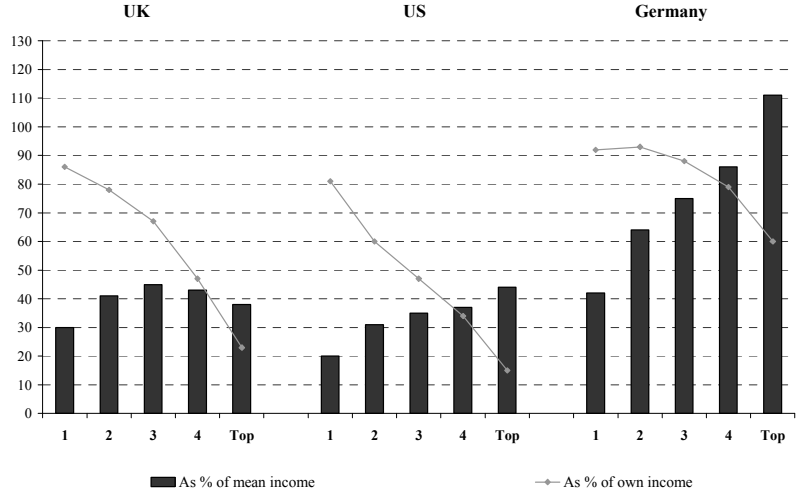
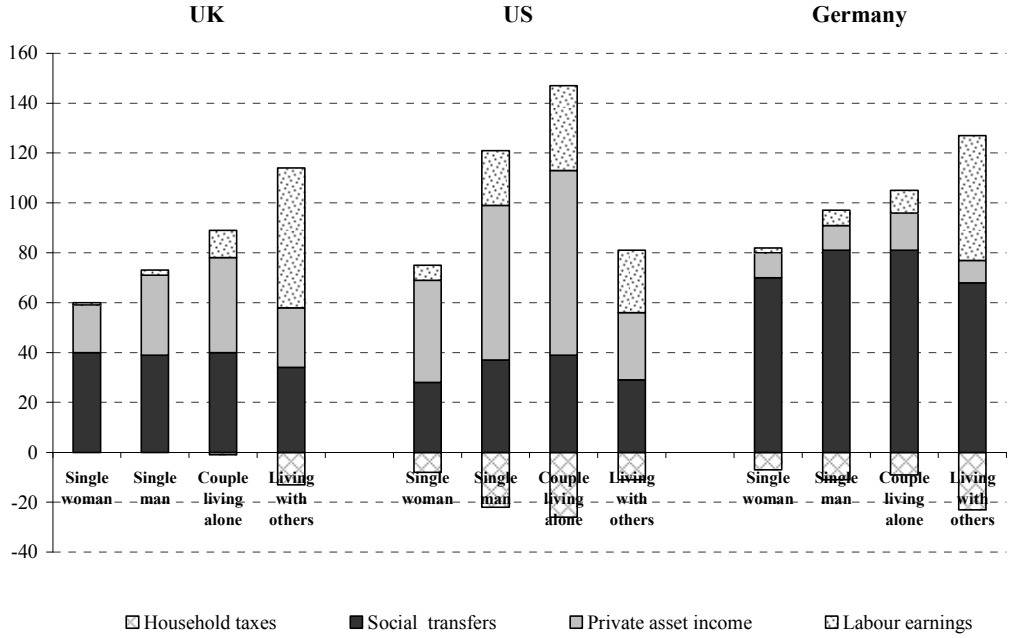


Figure 10 reproduces the same analysis as in Figure 9a by family type. As noted previously, single women have lower relative incomes (and higher poverty rates) than other older family types in all three countries. In the UK, the (equivalised) value of social transfers is virtually identical across the three main family types and, therefore, the gender differential is entirely accounted for by differences in private sources of income. Single older women have lower labour earnings at least in part because the state retirement age for women is lower; they also have lower incomes from private assets, including occupational pensions, because it is harder to accumulate wealth or private pension rights when they spend more time out of the labour market and their earnings are generally lower when in work.

Figure 10: Composition of older people's incomes by family type

All sources of income as % of mean income for whole population



In Germany, the gender differential between older single men and women is largely accounted for by differences in the value of social transfers, because the public pension is more closely related to lifetime earnings than in the UK (although the average value of social transfers is substantially greater for all family types). Older women in the US receive less income from both private and public sources; they are also older than average and are, therefore, more adversely affected by the steeper decline in relative incomes in old age (see Table 7 above).

5.6 Impact of different income sources in alleviating poverty

In countries like Germany, with a predominantly public pensions system, we would expect social transfers to make a greater contribution to alleviating poverty than in the UK or the US. One way of assessing the relative anti-poverty effectiveness of different income sources is to look at how much poverty rates would increase if

specific sources of income were deducted from household incomes. What proportion of the older population would be poor if, for example, they were entirely dependent on the social transfers they are currently receiving?

As expected, Germany's public pension system provides the greatest protection against poverty, even when poverty threshold is set at a relatively high level. In the absence of all private sources of income (the bottom row in Table 8), 30% of older Germans would have an income below the 60% of median threshold. The corresponding figures for the UK and US are 85% and 87%, respectively. In other words, most older people in the UK and US are dependent on private sources of income to avoid being in 'moderate' poverty.

The UK and US systems are more effective at preventing extreme poverty, but still nearly half of all older people would have an income below 40% of the median if they were solely reliant on the social transfers they are currently receiving. (This does not allow for any increase in income-related transfers that would in practice help to compensate in part for a reduction in private income.) The UK system is only really effective at preventing very extreme poverty – incomes below 30% of the median – and only at this level is it significantly more effective than the US system (see Table 8 and Figure 10).

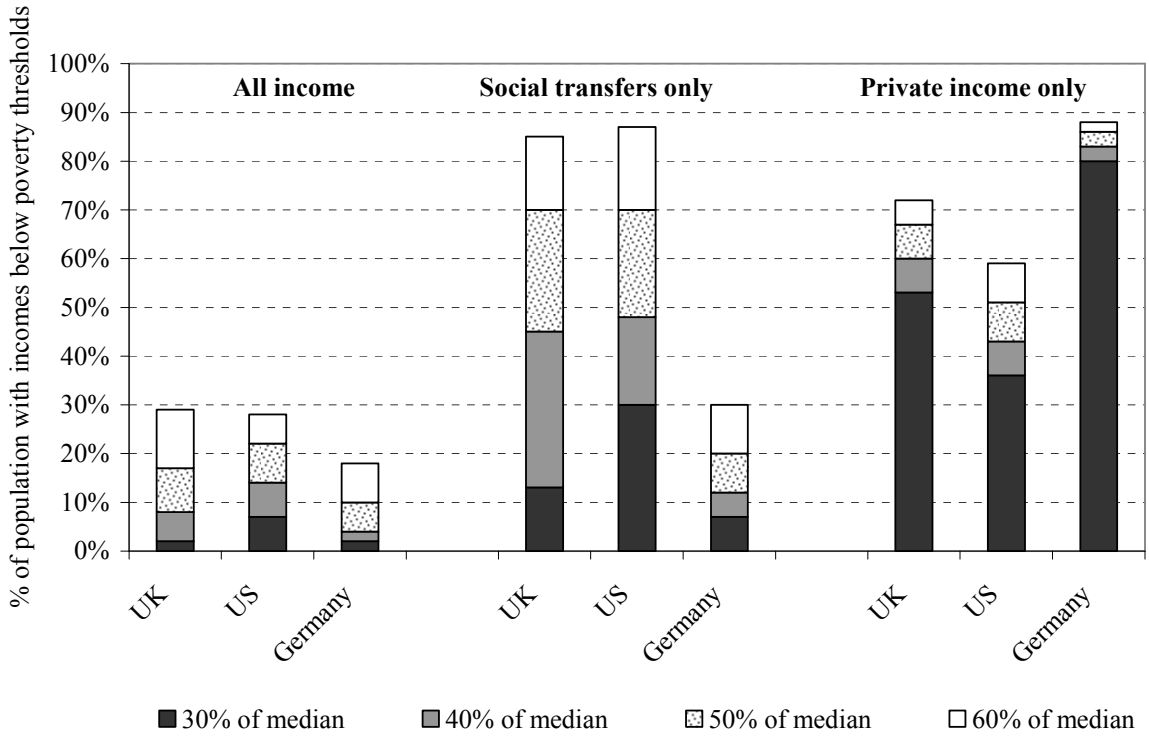
Table 8: Importance of different income sources in alleviating poverty, UK

(Percentage in poverty when different sources of income are deducted)

	Poverty thresholds (as % of population median):											
	30%			**40%**			**50%**			**60%**		
	UK	US	D	UK	US	D	UK	US	D	UK	US	D
Baseline (unadjusted)	**2**	**7**	**2**	**8**	**14**	**4**	**17**	**22**	**10**	**29**	**28**	**18**
less social security	40	35	78	51	43	82	60	51	84	67	58	87
less social assistance	5	8	3	20	15	5	33	22	11	44	29	19
less all social transfers	**53**	**36**	**80**	**60**	**43**	**83**	**67**	**51**	**86**	**72**	**59**	**88**
less labour earnings	5	13	5	13	22	8	24	32	15	38	40	24
less private pension	4	13	3	20	24	5	41	34	11	58	44	20
less private asset income	3	9	3	11	17	6	21	27	12	35	36	20
less all private non-labour income[1]	6	19	4	33	35	7	56	53	14	71	67	23
less all private income	**13**	**30**	**7**	**45**	**48**	**12**	**70**	**70**	**20**	**85**	**87**	**30**

1. Including other private transfers (not listed here)

Figure 10: Poverty rates with and without social and private sources of income



Another notable difference is in the role of means-tested social assistance. In the US and Germany, social assistance appears to have virtually no impact in alleviating poverty, even extreme poverty. All the role of reducing poverty is done by the social security system. By contrast, means-tested benefits in the UK have a significant complementary role in reducing pensioner poverty, alongside the social security system. In the absence of all means-tested benefits, 44 per cent of older people in the UK would have incomes below 60% of the median, compared with the actual figure of 29%. Social assistance has less impact on very extreme poverty, because the basic state pension is sufficient to lift people above this threshold, but it provides an important supplement for many older persons, helping to reduce levels of moderate poverty, though it is far from being completely successful in this respect.

The effectiveness of the UK system in mitigating extreme poverty is generally attributed to the impact of means-tested benefits, which are received by a larger proportion of the older population in the UK and in larger amounts than in the US or Germany (Shaver, 1998; Behrendt, 2000; Nelson, 2004). Our analysis suggests that for most UK pensioners non means-tested benefits are sufficient to mitigate extreme poverty and that means-tested benefits have a greater impact in terms of reducing moderate poverty, by topping up the incomes of some, but by no means all, low income pensioners. In the absence of all social assistance payments, the proportion of older people in the UK with incomes below 30% of the median would rise from 2% to 5%, whilst the proportion with incomes below 60% of the median would rise from 29% to 44% (see Table 8).

Not surprisingly, given the greater importance of public pensions within the German system, having to depend on private sources of income alone would leave most German pensioners in poverty: 80% of older Germans have private income (from private pensions, savings, or earnings) that is worth less than 30% of the median income. Most Germans are almost entirely dependent on the public pension – but, as we have seen, this is sufficient for most of them to avoid poverty in their old age (though not for a significant minority).

Perhaps more surprisingly, many older people in the UK and the US also receive relatively small amounts of private income, particularly in the UK. Over half of older people in the UK and over a third of older people in the US have a private income that is worth less than 30% of the median. These individuals rely on a combination of a relatively low public pension, means-tested benefits (in the UK), and small amounts of private income to avoid poverty – and for many of them, this is insufficient.

Table 9 provides a more detailed breakdown of the proportion of households with varying amounts of social and private transfers (expressed as a percentage of the median income). This exposes the differences between the UK and US. In the US, a greater proportion of older people have very low social transfers, whereas in the UK the amounts of social transfers are concentrated in the range of 30-50% of median income. Furthermore, those in receipt of the highest social transfers in the UK tend to be those with little or no private sources of income. These are predominantly older people who are receiving large amounts of means-tested or disability-related benefits in addition to the state pension. In the US, however, those with the highest social transfers also have the highest private transfers. This is due to the more strongly earnings-related element of their public pension, whilst poorer pensioners do not benefit from the same level of means-tested social assistance as in the UK.

6. Summary

Previous studies have argued that there is no systematic relationship between the structure of the mandatory pension system and standard measures of economic well-being among older people (e.g. Forssell *et al*, 1999; OECD, 2001). In countries, such as the UK and US, where the statutory system provides relatively low replacement rates, on average, the gap is filled by private arrangements. Hence, there appears to be much less variation in retirement outcomes than structural differences in pensions systems might imply – what the OECD refers to as "convergent outcomes, divergent means" (OECD, 2001).

However, the main indicator on which this conclusion is based is the average income of older people in different countries (relative to a pre-retirement age group), whereas this paper is principally concerned with the distribution of incomes around the average, including the differential impact of welfare systems on various sub-groups of the older population. Our analysis of the UK, US, and Germany exposes some important differences in the distribution of incomes among older people in countries with very different pension systems. Whilst the evidence suggests that different systems produce similar outcomes for those in the top half of the income distribution, this does not hold for those in the lower part of the income distribution.

Table 9: Value of social transfers and private income among older population

(As % of median equivalised household income)

UK

	Private transfers:							
	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60%+	**Total**
Social transfers:								
0-10%	0.8%	0.2%	0.0%	0.1%	0.1%	0.1%	0.9%	**2.1%**
10-20%	0.3%	0.1%	0.2%	0.1%	0.1%	0.1%	2.6%	**3.5%**
20-30%	1.2%	0.5%	0.5%	0.3%	0.4%	0.5%	4.0%	**7.3%**
30-40%	6.8%	3.4%	3.6%	3.0%	3.0%	1.8%	10.3%	**31.8%**
40-50%	7.1%	3.6%	2.4%	1.8%	1.8%	1.4%	7.0%	**25.0%**
50-60%	6.3%	2.1%	1.8%	1.3%	1.0%	0.6%	2.1%	**15.1%**
60%+	9.9%	1.2%	1.2%	0.9%	0.5%	0.3%	1.3%	**15.2%**
Total:	**32.4%**	**11.0%**	**9.6%**	**7.4%**	**6.8%**	**4.7%**	**28.1%**	**100.0%**

US

	Private transfers:							
	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60%+	**Total**
Social transfers:								
0-10%	1.1%	0.3%	0.5%	0.8%	0.5%	1.0%	6.2%	**10.4%**
10-20%	1.9%	0.6%	0.3%	0.3%	0.3%	0.4%	3.2%	**6.9%**
20-30%	3.7%	1.2%	0.8%	0.3%	0.9%	0.8%	4.5%	**12.3%**
30-40%	5.8%	1.5%	0.8%	1.0%	1.1%	1.4%	6.9%	**18.6%**
40-50%	4.6%	1.4%	2.2%	1.6%	2.3%	1.6%	8.2%	**21.9%**
50-60%	1.8%	1.7%	1.2%	2.2%	1.6%	1.4%	7.1%	**17.1%**
60%+	2.1%	0.6%	1.5%	0.8%	1.6%	0.7%	5.5%	**12.9%**
Total:	**21.1%**	**7.3%**	**7.4%**	**7.0%**	**8.3%**	**7.4%**	**41.6%**	**100.0%**

Germany

	Private transfers:							
	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60%+	**Total**
Social transfers:								
0-10%	0.6%	0.0%	0.0%	0.2%	0.2%	0.2%	1.4%	**2.6%**
10-20%	0.2%	0.1%	0.1%	0.1%	0.0%	0.1%	0.9%	**1.4%**
20-30%	1.1%	0.3%	0.2%	0.1%	0.1%	0.2%	1.3%	**3.3%**
30-40%	2.3%	0.3%	0.2%	0.2%	0.1%	0.2%	1.3%	**4.6%**
40-50%	5.6%	0.6%	0.3%	0.3%	0.2%	0.3%	1.2%	**8.5%**
50-60%	6.9%	0.6%	0.4%	0.2%	0.2%	0.3%	1.3%	**9.8%**
60%+	47.9%	7.4%	4.9%	2.2%	1.8%	1.3%	4.4%	**69.9%**
Total:	**64.6%**	**9.3%**	**6.0%**	**3.2%**	**2.7%**	**2.4%**	**11.8%**	**100.0%**

In summary, the UK system seems to provide a relatively effective floor on the incomes in old age, though at a relatively low level, and so does quite well in preventing extreme poverty among its older population, but is less effective than the German system in preventing moderate poverty. Quasi-replacement rates for those on low/moderate incomes are significantly lower in UK. Unless this group has significant income from private sources – and many do not – they are likely to experience a substantial drop in income upon their retirement with only the protection of a relatively low safety net and weakly earnings-related state pension to cushion their fall. As a result, moderate poverty (using a poverty threshold of 50% or 60% of the population median) is substantially higher among older age groups.

That the distribution of incomes among older people is more equal than among the non-elderly population is due largely to a levelling down of incomes among those in the lower/ middle part of the income distribution, rather than a levelling up of those near the bottom. Those older people who are already in poverty are largely protected from any further decline in their income by a combination of the basic state pension and means-tested social assistance – and a few may experience a small increase in their income as they become eligible for new or higher benefits targeted at pensioners. But, this group are joined by a significant proportion of older people who experience a substantial decline in income upon retirement or within retirement (e.g. as a result of widowhood) and who become almost entirely dependent on social transfers that are insufficient to keep them out of poverty. These findings are consistent with previous studies that have found that the UK system does reasonably well in minimising extreme poverty (those with incomes below 30% or 40% of the median equivalised income), but does less well in terms of alleviating moderate poverty (those with incomes below 50% or 60% of the median). As Nelson (2004) argues, the modest performance of non-means-tested entitlements in the UK creates a greater demand for means-tested benefits as a safeguard against poverty. But, the anti-poverty effects of targeted systems, like the UK, decrease sharply at higher poverty thresholds by comparison with systems that offer more generous non-means-tested public pensions.

The lack of a more generous earnings-related pension would make less difference if, as economic theory predicts, individuals compensated for this with greater private provision. However, the UK Pensions Commission has highlighted the large savings gap among large sections of the working age population: individuals who are not currently saving enough to achieve a reasonable level of income replacement in their retirement (Pensions Commission, 2004; Pensions Commission, 2005). The analysis in this paper reveals the impact of 'under-saving' among past generations of workers. Among the current retired population, its effects appear to be concentrated among those in the lower/middle part of the income distribution (whilst those higher up the income distribution appear to achieve comparable replacement rates to those in Germany). Many in this group will fall between two stools: their incomes being too high to rely on state transfers (without experiencing a substantial drop in their income), but too low to be able to build up adequate private sources of income for their retirement. The latter problem is exacerbated by gaps in the coverage, and the variable generosity, of occupational pension schemes.

Germany has less poverty and inequality among its older population, in part because incomes among its working age population are distributed more equally than in the UK. But, another important factor is that their more generous and more strongly

earnings-related public pension scheme provides better protection for those on low/ moderate incomes who are less likely (and less able) to make their own private provision. For those in the bottom half of the income distribution, the public pension provides nearly all their income in retirement at a level that is sufficient to keep most older people out of poverty. The German social insurance system is the most closely linked to prior earnings and, therefore, the least redistributive of the three systems though, paradoxically, the most effective in alleviating poverty. This concurs with previous studies which have found that social insurance schemes that provide a high level of income security for middle and higher income groups, as in Germany, also tend to provide greater protection for individuals in lower income groups (e.g. Korpi and Palme, 1998; Nelson, 2004). Even for people with relatively low earnings, the earnings-related component of these programmes is substantially more generous than the level of social transfers to lower income groups in the UK.

The German welfare state is also better at maintaining people's incomes within retirement, so fewer old people fall into poverty in later life. But, not everyone does quite so well under the German system. The two groups that do comparatively least well are widows and divorced women (though these groups have relatively low incomes in all three countries), whilst single men do comparatively well. This suggests that the pension rights of older people in Germany are even more strongly concentrated on men than in the UK or the US. Employment rates among women are substantially lower and, as a result, older women in Germany are generally more dependent on the incomes of their spouse, which fits the description of the German system as a 'bread-winner' welfare model. This would be less of a problem if the welfare system provided adequate protection in the event of widowhood or divorce, but the system does not appear to be very successful in mitigating the potentially adverse financial consequences of these events, at least for this generation of older people.

More so than in the UK or Germany, the US system re-produces (or even exacerbates) the inequalities present among its working age population. The redistributive formula within their social insurance system does not seem to be very effective in reducing inequality in retirement, even at very bottom end of the income distribution. There are several possible explanations. Firstly, individuals near the bottom of the income distribution are more likely to have an incomplete contributions record and are not covered for time spent caring or unemployed or (for recent immigrants) for that part of their lives spent outside the US. Secondly, the level of benefits are relatively low even for someone with a full contributions record, so even low-middle income groups are quite heavily reliant on alternative (private) sources of income to avoid poverty, unlike in Germany. Thirdly, the benefit formula is not as progressive as it is often thought to be and much of the intra-cohort redistribution is unrelated to incomes. Spouse benefits, for example, favour couples with one high earner. Last, but not least, the level of social assistance is too low to prevent older people falling into extreme poverty for those without an adequate public pension.

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