

This PDF is a selection from a published volume from the National Bureau of Economic Research

Volume Title: Social Security Programs and Retirement around the World: Working Longer

Volume Authors/Editors: Courtney C. Coile, Kevin Milligan, and David A. Wise, editors

Volume Publisher: University of Chicago Press

Volume ISBNs: 978-0-226-61929-3 (cloth); 978-0-226-61932-3 (electronic)

Volume URL:

<https://www.nber.org/books-and-chapters/social-security-programs-and-retirement-around-world-working-longer>

Conference Date:

Publication Date: December 2019

Chapter Title: Long-Run Trends in the Economic Activity of Older People in the United Kingdom

Chapter Author(s): James Banks, Carl Emmerson, Gemma Tetlow

Chapter URL:

<https://www.nber.org/books-and-chapters/social-security-programs-and-retirement-around-world-working-longer/long-run-trends-economic-activity-older-people-united-kingdom>

Chapter pages in book: (p. 267 – 297)

Long-Run Trends in the Economic Activity of Older People in the United Kingdom

James Banks, Carl Emmerson, and Gemma Tetlow

11.1 Introduction

Between the mid-1970s and the mid-1990s, the employment rate of men approaching and just above age 65, the state pension age for men at the time, fell dramatically. Since then, these employment rates have recovered somewhat, but they still remain somewhat below the levels seen 40 years earlier. Employment rates of older women were relatively stable over the second half of the 1970s and the first half of the 1980s but have risen sharply since then and are now at record levels. The net effect of these two offsetting trends has been that aggregate employment rates of 55–74-year-olds are only now broadly comparable to the levels observed in the mid-1970s, albeit with a somewhat different composition across age and sex groups and having displayed a marked U-shaped trend in the intervening period.

In this chapter, we present and examine these trends in employment rates

James Banks is professor of economics at the University of Manchester and a deputy research director of the Institute for Fiscal Studies (IFS).

Carl Emmerson is deputy director of the IFS.

Gemma Tetlow is the chief economist at the Institute for Government.

This chapter is part of the National Bureau of Economic Research's International Social Security (ISS) project, which is supported by the National Institute on Aging (grant P01 AG012810). The authors are grateful to the other participants of the project for useful comments and advice. We are grateful for funding from the Economic and Social Research Council (ESRC) through the "More Years, Better Lives" Joint Programming Initiative (project: "Policies for Longer Working Lives: Understanding Interactions with Health and Care Responsibilities") and through the ESRC Centre for the Microeconomic Analysis of Public Policy (grant reference ES/M010147/1). We are also grateful to Richard Blundell for useful comments. Data from the Labour Force Survey (LFS) were made available by the UK Data Archive. Responsibility for the interpretation of the data, as well as for any errors, is the authors' alone. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see <https://www.nber.org/chapters/c14051.ack>.

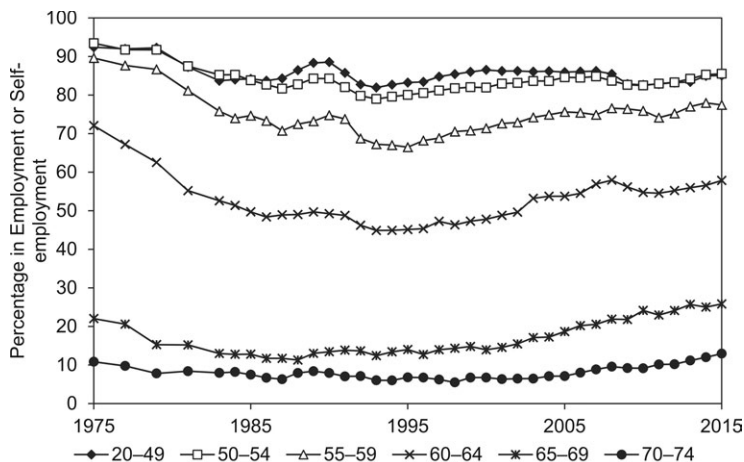


Fig. 11.1 Employment rates of men by age band, 1975–2015

Source: LFS.

of men and women in detail. We document the extent to which they are associated with changes in education levels—as opposed to changes in employment rates within education level—and how they relate to changing employment rates at younger ages of successive birth cohorts, with these also broken down by education level. For the period since the mid-1990s, we compare trends in the employment of older men and women in different occupations to those seen among younger men and women and also describe how wage growth among older older workers has, on average, compared to that seen among younger workers.

All the data in this chapter are taken from the UK's LFS. We have data biennially from 1975 to 1981 (inclusive) and then for each single year from 1983 to 2015 (inclusive). These data cover England, Scotland, Wales, and Northern Ireland. The questionnaire contains extensive detail on the labor market activity of respondents, and for a household survey, it has a large sample size; an average of just below 400,000 individuals is observed per year (with a smaller sample size prior to 1992 and a larger sample size from 1992 onward). The key information we use are age, sex, employment status, occupation, and wages.

The headline trends in employment rates, by age, over the 40 years from 1975 are shown for men in figure 11.1 and for women in figure 11.2. Looking first at men, employment rates fell for all age groups between 1975 and the mid-1990s and rose thereafter, with the U shape in employment rates among men aged 50 and older—in particular, those aged between 55 and 69—being more noticeable than that of younger men. By 2015, while the employment rates of 65–74-year-old men were greater than they were 40 years earlier,

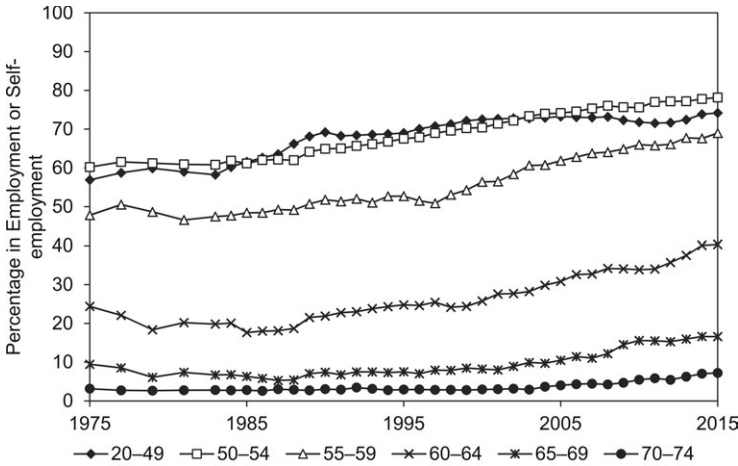


Fig. 11.2 Employment rates of women by age band, 1975–2015

Source: LFS.

among younger age groups, they were still below their mid-1970s level, with this being especially true of men aged 55–59 and 60–64.

A very different pattern over time is seen among women in figure 11.2. Between 1975 and the mid-1980s, employment rates within each age group were generally relatively stable, although there was a fall among women aged 60–69. Since then, employment rates of women have grown strongly, and by 2015, the employment rate within each age group was higher than at any point in the previous 40 years. Indeed, in 2015, the employment rates among women aged 55–59 and 60–64 are considerably higher than those seen at any point previously.

In part, the growth in the employment rates of older men and women over the 20 years since the mid-1990s has occurred alongside growth in the employment rate of younger individuals. But the growth in the employment rates of older individuals has been stronger than that of younger individuals over this period. This is in contrast to the 20 years from the mid-1970s to the mid-1990s (and the first decade of this period in particular), where employment growth was lower among older individuals than younger individuals.

This relative employment growth of older to younger ages is shown in table 11.1. In 1975, the employment rate of men aged 50–64 was 93 percent of the employment rate of men aged 20–49, while the equivalent figure for women was 78 percent. By 1995, these ratios had fallen to 78 percent and 72 percent, respectively. These ratios for both men and women grew over the subsequent 20 years, such that for men the employment rate of the older group reached 88 percent of that of the younger group, whereas among women the employment rate of the older group reached 86 percent of that

Table 11.1 Employment rate of 50–64 year olds compared to that of 20–49 year olds, by sex, for selected years

	Men			Women		
	Employment rate		Ratio	Employment rate		Ratio
	20 to 49	50 to 64		20 to 49	50 to 64	
1975	92.4	85.5	0.93	56.9	44.5	0.78
1985	84.2	69.5	0.83	61.5	41.8	0.68
1995	83.2	65.0	0.78	69.0	49.5	0.72
2005	85.9	72.4	0.84	73.3	56.9	0.78
2015	85.0	74.8	0.88	74.2	64.0	0.86

Source: LFS.

of the younger group. Overall, this means that by 2015, the employment rate of older men—relative to that of younger men—was still lower than it had been 40 years earlier in 1975. In contrast, the employment rate of older women—relative to that of younger women—was greater than it was 40 years earlier. A further consequence of this difference between trends for each gender is that for the first time, the relative employment rates of older to younger adults are now comparable for men and women.

11.2 Background Context

This section sets out some of the background context relating to the employment rates of older individuals that were presented in the previous section. We begin by discussing economic factors—both the macroeconomic situation and changes in the policy environment. We then turn to brief discussions of trends in the education and health of those approaching, or around, retirement age. The combination of these three sets of trends has led to secular cohort effects in terms of the characteristics of those at retirement age, and such trends are important to consider when we look at employment rates by age among different birth cohorts. It also motivates our analysis of cohort trends split by education, which follows in section 11.3.

11.2.1 Macroeconomic and Microeconomic Policy Background

One key factor to bear in mind throughout is the performance of the UK economy over this period. Deep recessions were experienced in the mid-1970s, early 1980s, early 1990s, and late 2000s. In contrast, the second half of the 1980s was a period of very strong growth (with the four years from 1985q1 to 1989q1 seeing average annual growth of 4.5 percent), while the period from the start of 1993 through to the start of 2008 (the eve of the financial crisis) was one of strong and stable growth (averaging 2.9 percent per year from 1993q1 to 2008q1). These ups and downs of economic perfor-

mance were reflected in the employment rates shown in the previous section: for example, among 20–49-year-old men (figure 11.1), the employment rate fell during the recession of the early 1980s, grew strongly during the boom of the late 1980s, and fell again in the early 1990s recession. It then climbed throughout the period from 1993 through to the end of the 1990s before falling again during the Great Recession of the late 2000s.

In addition to these macroeconomic trends and cycles, however, the UK has been characterized by a huge amount of policy reform. The key sources of income, other than earnings, for older individuals are state pensions, other state benefits targeted at those with lower incomes or those in poor health, and private sources of income including private pensions. Eligibility—or potential eligibility—for many of these can affect incentives to retire. And these sources of income have been subject to many reforms. In some cases, reform has been announcements of future policies to be gradually phased in, and in others, reforms have taken effect immediately. Much has directly affected the incentives to work for those who qualify for the various benefit programs, and in many cases, this was by design. In what follows, we briefly describe the evolving policy context, focusing just on reforms that might be expected to have had impacts on the labor market outcomes of older individuals. The timeline for these reforms is summarized in table 11.2, but further details in each dimension are given in the subsections below (a fully comprehensive description of state pension reforms over the 1948–2010 period can be found in Bozio, Crawford, and Tetlow [2010], while Crawford, Keynes, and Tetlow [2013] discuss more recent changes).

11.2.1.1 *State Pensions*

In terms of marginal financial incentives to retire, the key reform to state pensions was the abolition of the earnings test in 1989.¹ Prior to that date, receipt of the state pension could be reduced if the individual was also earning, whereas since then, individuals could continue with paid work and still receive an unreduced state pension. Some may also find that remaining in paid work up to the state pension age boosts the value of their accrued state pension, with this effect likely to be stronger among women in the past, when more years of contributions were required to qualify for a full state pension and when fewer activities other than being in paid work were counted as a contribution.

The age at which individuals can receive their state pension—the state pension age—may also affect retirement behavior if, for example, it provides a signal about the appropriate age to leave the labor market. Between 1948 and April 2010, this was 65 for men and 60 for women. Since April 2010, the state pension age for women has been rising, reaching male state pension age of 65 in November 2018. Since then, the state pension ages of men and

1. For details—and an assessment—see Disney and Smith (2002).

Table 11.2 Key reform dates for policies affecting labor market incentives for older workers

Year	State pensions	Other state benefits	Private retirement income
1975	Increasing generosity		
1981	Indexing made less generous		
1986	Declining generosity		
1988			Introduction of private personal pensions (DC)
1989	Removal of earnings test		
1995	Declining generosity	Reduced generosity, increased stringency	
1999		Other benefits for women over SPA made more generous	
2001		Reduced generosity, increased stringency	
2002	Increasing generosity		
2003		Means-tested pensioner benefits made more generous	
2006			DB plans less restrictive in terms of drawing income while continuing to work
2008		Reduced generosity, increased incentives to move back into work	
2010	Rise in female SPA begins; increasing coverage for some; indexation made more generous		
2016	New state pension introduced: more generous in near term, less generous in long run		

women are being increased together so that they reach age 66 in October 2020. Cribb, Emmerson, and Tetlow (2016) showed that the rise in the female state pension age from 60 to 62, which occurred between April 2010 and April 2014, boosted employment rates among women aged 60 and 61 by 6.3 percentage points (ppt). Some descriptive evidence of this is provided in section 11.3 below.

State pension reforms in 1975 and 2000 made the state pension system significantly more generous, while intermediate reforms—in 1986 and 1995—made it substantially less generous. These changes have generated differences in the state pension entitlements across years of birth, which, in turn, may have affected retirement ages. There has also been variation within individuals born in the same year: the state pension system has been increasingly generous to low earners and some groups not in paid work in more recent years, while the generosity of the system to higher earners peaked among those reaching state pension age around 2000. More recent changes—that came into effect in April 2016—will make the state pension more generous for many individuals (such as the self-employed) but less generous for most individuals over the longer term.

11.2.1.2 Other State Benefits

Other state benefits may also affect retirement behavior, with potentially the most important being out-of-work disability benefits for those deemed to be in poor health. The amount paid to individuals is flat rate—that is, it does not vary with past earnings—and for those who do not meet the contribution requirements, it is means-tested. Thus, for those who could otherwise earn average or above average amounts, the financial incentive to leave paid work in order to receive these disability benefits is relatively weak. But lower earners whose health allows them to qualify for these benefits if they are out of work may face a relatively strong financial incentive to leave the labor market (Banks, Emmerson, and Tetlow 2016).

There have been several reforms to these benefits—in particular, in 1995, 2001, and 2008—all with the intention of reducing the numbers receiving them. The first two of these reforms focused on reducing the inflow to these benefits, while the third also strived to increase the shift from benefits into paid work. Trends in the receipt of benefits are documented in Banks, Blundell, and Emmerson (2015), who show that receipt is less related to age and more related to education levels than it was 20 years ago.

Other out-of-work benefits, which are targeted toward those on lower incomes, also reduce the financial incentive to remain in paid work, with this again being particularly true of lower-wage workers. These are more generous to those who are older than the female state pension age—and those who have a partner older than the female state pension age (regardless of gender)—than they are to younger individuals. For example, in 2015–16, the maximum award of pension credit (for a single person without any dis-

abilities) was £151.20 per week, whereas for a single person older than 25, the maximum rate of Jobseeker's Allowance was £73.10 per week. In addition, the latter would require the recipient to seek work and attend work-focused interviews, whereas pension credit is paid unconditionally. For those older than the female state pension age, these benefits have also been made relatively more generous over time, in particular in 1999 and in 2003.

11.2.1.3 Private Income

By far, the most important source of private income in retirement comes from private pensions: the relatively low level of the state pension (particularly for those “contracted out” of the state earnings-related pension system) has meant that private pensions have always played an important role in providing retirement income. Since 1988, defined-contribution pensions have become more prevalent among private-sector employees, as coverage of defined-benefit pensions has declined sharply. In contrast, among public-sector workers, defined-benefit pension coverage remains very high.

These different types of pensions typically have very different incentives to start drawing at different ages. Defined-contribution pensions would typically be expected to rise in value. Defined-benefit pensions, in contrast, typically provide a strong incentive to draw the pension at the normal pension age, as they often impose an actuarial reduction if they are drawn before this age but do not offer an actuarial increase for delayed drawing. Historically, the normal pension age is 60 for public-sector employees and 65 for private-sector employees (and for many who joined public-sector schemes after 2005).

In individually arranged defined-contribution pensions, any incentive to draw the pension at a particular point in time would not translate into an incentive to leave paid work. In contrast, up until April 2006, for those in employer-provided private pensions, any incentive to draw a private pension translated into an incentive to leave paid work (or at very least to move employers), since up until that point, it was not possible to draw a private pension from an employer and continue to work for that employer. But since April 2006, this restriction has been lifted, and if they wish, employees can draw a pension and continue to work for that same employer.

11.2.1.4 Other

Two other important reforms, which do not fit naturally into table 11.2 or the subsections above, also took place over this period. First, compulsory retirement ages younger than 65 were outlawed in October 2006, and then any compulsory retirement ages regardless of age were outlawed in October 2011. Second, public service pensions have been reformed. The normal pension age in public-sector plans has been increased (often from 60 to 65), with this first affecting new entrants to these schemes in the mid to late 2000s (with the exact date varying from scheme to scheme). Further increases, which were also applied to many existing members, will align it

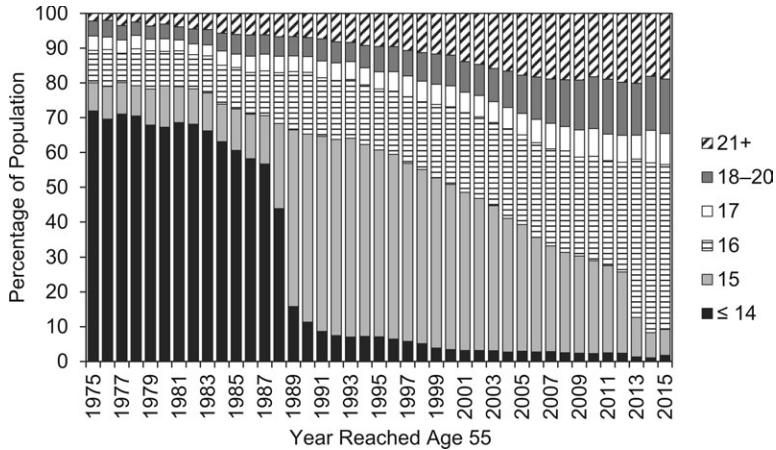


Fig. 11.3 Distribution of age of leaving full-time education by cohort, men
Source: Based on a sample of all individuals aged 55–64 observed in the LFS (1984–2015).

with the state pension age from the mid-2010s (though not for those already within 10 years of their existing normal retirement age). Since April 2011, for deferred members and those receiving these pensions, the indexation has been made less generous, while from the mid-2010s, they were moved from operating on a final salary basis to a career earnings basis (which changes how earnings were uprated and the accrual rate at the same time, with the exact changes varying from scheme to scheme).

11.2.2 Trends in Education

Regardless of how it is measured, education levels in the United Kingdom have been increasing across successive birth cohorts, and this has been particularly true for those cohorts reaching the retirement age over the period since 1999. This section documents two possible measures of education levels—years of school and qualifications received—before documenting trends in employment rates among older individuals split by a measure of education and shown separately for men and women. In each case, we have somewhat incomplete data over the full course of our period. Questions on the age he or she left full-time education were only introduced to the LFS from 1984 onward, and even then, they were included only for those younger than the state pension age or for those still working if older than the state pension age. By choosing a reference age of 55, we are able to get data on years of education back to 1975 for men but only back to 1980 for women. Data on qualifications was introduced to the survey even later, so in that dimension, our series can only go back to 1983 and 1988, respectively.

The evolution of the distribution of school-leaving ages over successive birth cohorts is shown for men in figure 11.3 and for women in figure 11.4. We choose to present these by the age at which the cohort reached age 55

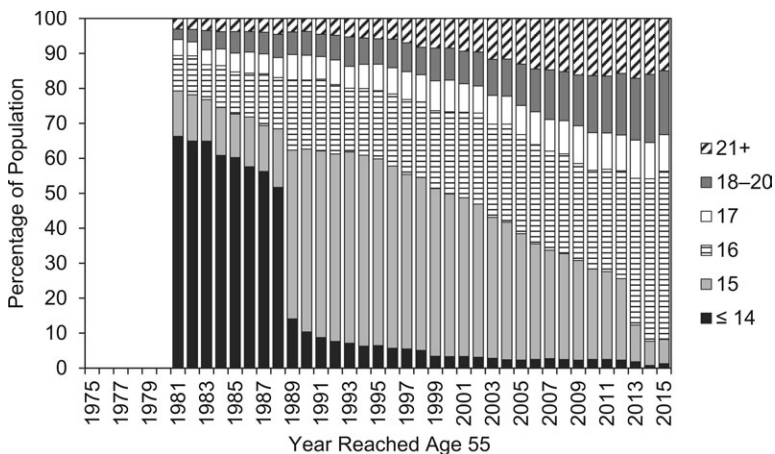


Fig. 11.4 Distribution of age of leaving full-time education by cohort, women

Source: Based on a sample of all individuals aged 55–59 observed in the LFS (1984–2015).

in order to provide a scale that is relevant to the consideration of the group entering the retirement window. In both figures, it is very clear that those reaching age 55 in 1989 were much more likely to have remained in school beyond age 14 than those reaching age 55 a year earlier. This is due to a policy reform: the 1944 Education Act increased the school-leaving age to 15 in April 1947. Those aged 55 in 1989 were born in 1934 and therefore turned age 14 in 1948 and were unable to leave school at that point.² In a similar vein, those reaching age 55 in 2013 are much less likely to have left school at age 15 than those reaching age 55 one year earlier. This was driven by the school-leaving age increasing to age 16 in September 1972, and those aged 55 in 2013 were born in 1958 and therefore were aged 15 in 1973 and (typically) unable to leave school at that point.

More generally, there is a noticeable increase in the number of years of full-time education across cohorts over the period, with a general decline in the share of men and women leaving school at or before age 15 and a general increase in the proportion leaving school after age 15. The shares leaving full-time education at ages 18–20 or at ages 21 and older have also increased substantially.

An alternative measure of educational attainment is to look at the qualifications received rather than the years of education attended. Trends in qualifications can be looked at using the LFS, which has recorded these on a consistent basis since 1992. For this analysis, we again look at men aged

2. A small fraction of children can still leave while one year “younger” than the compulsory school-leaving age since the school year ends in July, but it is age on September 1 that determines whether you need to start the next school year.

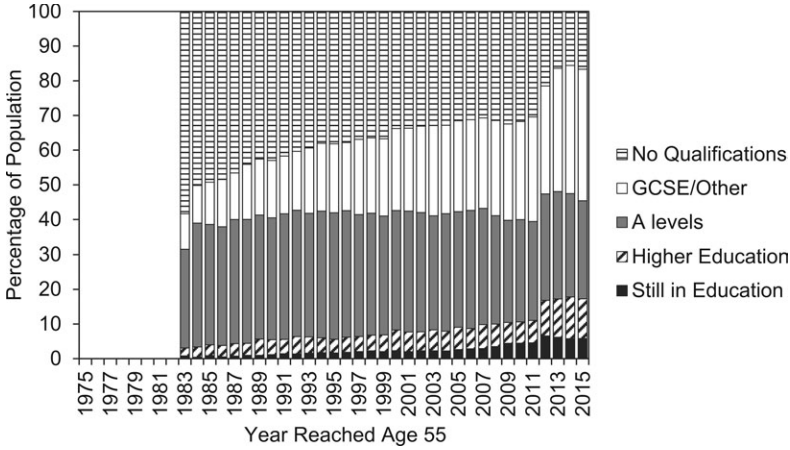


Fig. 11.5 Distribution of qualification among men classified as having “low” education by cohort

Source: Based on a sample of all individuals aged 55–64 observed in the LFS (1992–2015).

between 55 and 64 and women aged between 55 and 59—that is, the same age ranges covered in the previous two figures that examined school-leaving ages (although the data started in 1992 rather than 1984). We then take just the group who left school at or younger than the compulsory school-leaving age—which we can think of as a “low” education group—and show how their levels of qualifications achieved have varied over time. This group is of particular interest, as it is, by definition, the group whose qualifications are more likely to be affected by increases in the school-leaving age. It may also be the group where obtaining some kind of further qualification after leaving formal education may be most prevalent.

The results are shown for men in figure 11.5 and for women in figure 11.6. Several things are apparent from the two figures. First, among this group of “low education” men, there has always been a sizeable group that reports achieving the equivalent of A-level qualifications or greater—that is, qualifications equivalent to those that could typically be attained at age 18 among those who remained in school—despite the fact that these individuals reported leaving school at age 16 at the latest. Indeed, among men who turned age 55 in 1983, the data show that around 30 percent have the equivalent of A-level qualifications or greater despite them having first left school at age 14 (or earlier).

Second, increases in the compulsory school-leaving age did lead to a greater proportion of men and women receiving formal qualifications. This can be seen by the fall in the proportion of men with no qualification between those who were age 55 in 1983 and those who reached age 55 one year later, which coincided with those affected by the compulsory school-

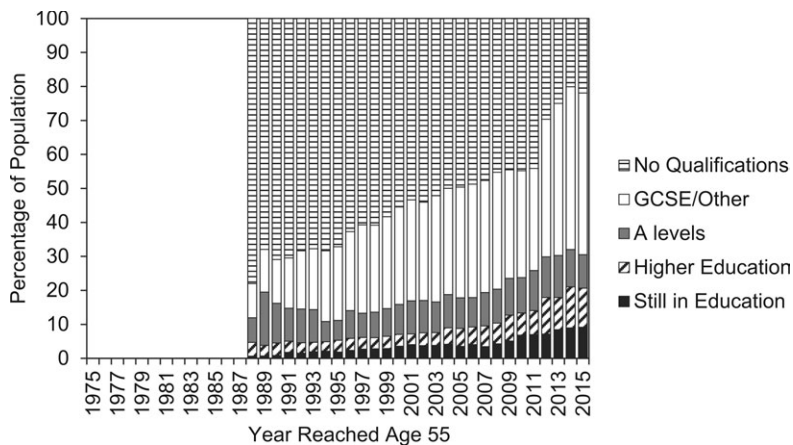


Fig. 11.6 Distribution of qualifications among women classified as having “low” education by cohort

Source: Based on a sample of all individuals aged 55–59 observed in the LFS (1992–2015).

leaving age rising from age 14 to 15. Similarly, a clear effect of the increase in the compulsory school-leaving age from age 15 to 16 on qualifications can be seen in the proportion of both men and women with no qualifications, which fell between those reaching age 55 in 2011 and those reaching age 55 one year later.

Finally, of those who left school at the compulsory school-leaving age, a much larger proportion of women than men have no formal qualifications, although the gap between the two has been falling sharply over time. Between those reaching age 55 in 1988 and those reaching age 55 in 2011 (a period in which the compulsory school-leaving age was 15 throughout), the proportion of men with no formal qualifications fell from 44 percent to 30 percent, while over the same period, the proportion of women with no formal qualifications fell from 78 percent to 44 percent. So the gap between the two genders fell from 34 percentage points to 14 percentage points.

In the remainder of our analysis, we present employment rates for a “low education” group, defined as those who left continuous education at or below the compulsory school-leaving age, and a “high education” group, or those who left continuous education at age 21 or older. (A middle group, comprising those who stayed in continuous education beyond the compulsory school-leaving age but not until age 21 will be omitted from these splits.) The resulting education distribution, as defined by this method, among men aged 55–64 and women aged 55–59, is shown for 1985, 1995, 2005, and 2015 in figure 11.7. This shows that under our classification, the proportion of men and women who are “high education” has been increasing, while the proportion of people who are “low education” has been falling. For men,

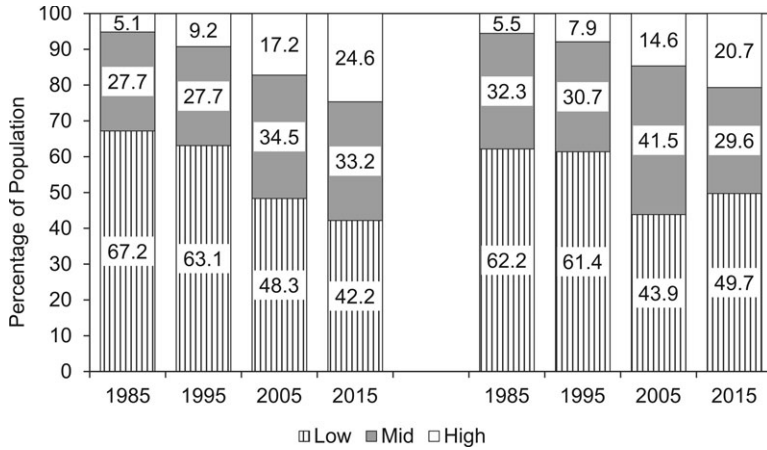


Fig. 11.7 Rising education levels of men aged 55 to 64 and women aged 55 to 59
 Source: LFS.

this change is observed between all the years shown in figure 11.7, whereas among women the big shift occurred between 1985 and 1995.

This categorization of education by years of schooling is fairly common in the United Kingdom, particularly in studies that involve analysis alongside other countries, since qualifications are not so easily comparable internationally. Broadly speaking, although the number of years of education may differ, the categorization corresponds conceptually to the split of high school graduates, some college, and college graduates that is frequently used in US analysis. And it has the advantage, when using LFS data, of allowing us to cover the period from 1984 onward. But there are some potential issues with this choice. First, the direct impact of increasing the compulsory school-leaving age for our cohorts will be to increase the proportion of individuals classified as having “low education” within our sample. Second, as the proportion in the “high education” has increased, it is possible that the meaning of “high education” in terms of the labor market could be changing over time. Third, as we have already shown, there is a not-inconsiderable (and increasing) proportion in the “low education” group that has some qualifications. A years-of-education-based split is somewhat crude and cannot capture the changing skills and qualifications of each group conditional on their years of schooling nor any postschooling qualifications (or changes in the rate at which these have been acquired by successive cohorts). On this last point, it is also worth noting that immigration, recall bias, changes to the survey, and differential mortality would be additional reasons the qualifications of a cohort observed at later ages may differ from the degree to which that cohort reports their school-leaving age. These effects may not be negligible and would, again, lead to a qualifications measure (subject to

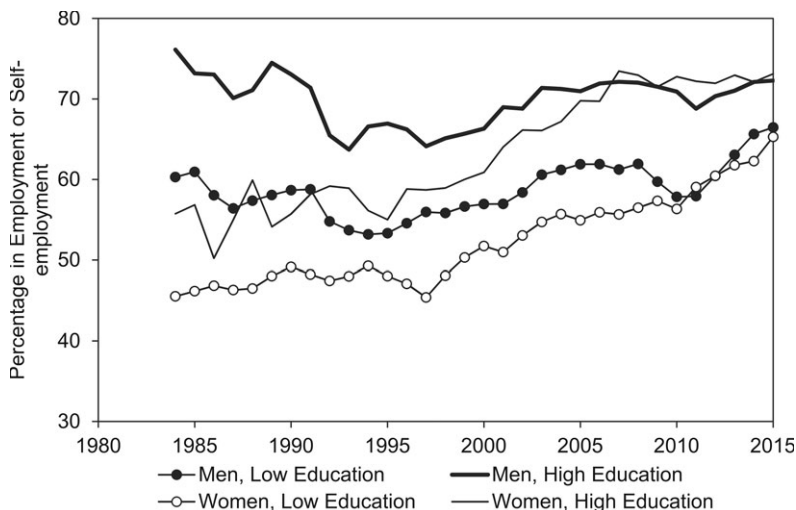


Fig. 11.8 Employment rate among men aged 55 to 64 and women aged 55 to 59 by education

Source: LFS.

sufficient reporting quality) that is superior in terms of corresponding to how the labor market and the technological skills of the cohort may have been changing.

With these caveats in mind, figure 11.8 presents the employment rates of the “low education” and “high education” groups of older men and women over time. Among men, employment rates of both education groups fell between 1984 and the mid-1990s and then rose over the subsequent 20 years. Despite this increase, by 2015, the employment rate of “high education” older men was still below its level in 1984, while the employment rate of “low education” older men was some way above its mid-1980s level. So among men aged 55–64, the education gradient in employment is now less steep than it used to be. Among women aged 55–59, employment rates of those with “high education” and those with “low education” have increased between 1984 and 2015, such that among each group, their employment rates are now at the same level as those seen among men aged 55–64 in the same education category.

The LFS data allow us to carry out a simple shift-share analysis to decompose growth in employment among older individuals over the 20 years from 1995 and 2015, specifying how much is explained by greater levels of education (since, as shown in figure 11.8, individuals with greater levels of education are more likely to be employed and, as shown in figure 11.7, education levels have been increasing over time) and how much is explained by rising levels of employment within each education group.

Among men aged 55–64, employment rates rose by 11.9 percentage points between 1995 and 2015, 2.3 percentage points of which would have occurred had employment rates conditional on education levels (as measured by years of schooling) remained unchanged at their 1995 rates. Among women aged 55–59, employment rates rose by 17.3 percentage points between 1995 and 2015, only 0.8 percentage points of which would have occurred had employment rates conditional on education levels remained unchanged at their 1995 rates. This relatively small effect of rising education levels for women is in part because the increase in education—at least on our measure—has not been as great over this period, and in addition, the gradient in employment by education in the mid-1990s was less steep for women than for men (as shown in figure 11.8).

If we look at the evolution of employment rates among older men and women and instead split the data by our measure of qualifications received (rather than years of schooling), then the decomposition comes out rather differently. Among men, 3.1 percentage points of the 11.9 percentage point increase in employment between 1995 and 2015 would have occurred just from the composition shift if employment rates conditional on qualifications had remained unchanged at their 1995 rates. This is slightly above the 2.3 percentage points reported above when doing the decomposition using years of schooling. Among women, of the 17.3 percentage points increase in employment over the 20 years from 1995, 6.2 percentage points would have occurred had employment rates conditional on qualifications remained at the 1995 rates. This is much larger than the 0.8 percentage points reported above when doing the decomposition using years of schooling. This large difference is due to the proportion of women aged 55 with no qualifications falling sharply over this period (as shown in figure 11.6) and the fact that employment rates among older women with no qualifications are much lower than employment rates among women with some qualifications.

11.2.3 Trends in Health

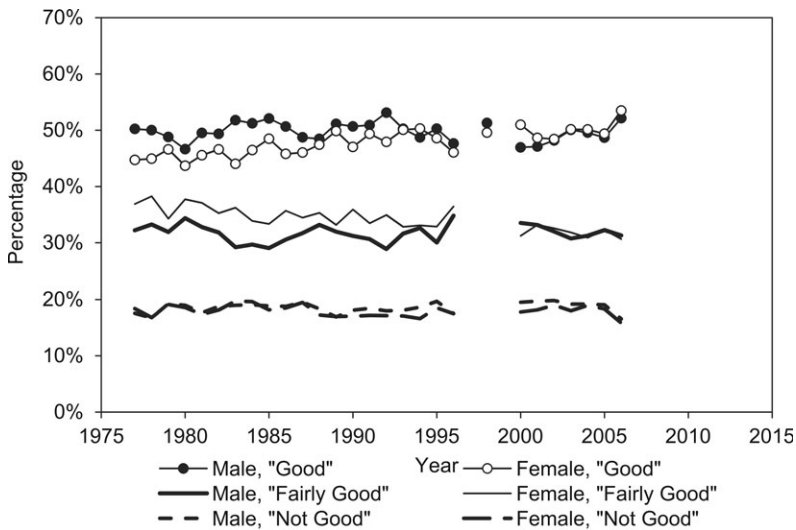
Perhaps the other obvious secular trend occurring across cohorts in the last 40 years that might be affecting labor market participation has been improvements in health and reductions in mortality. Consistently measured health data over our 40-year period do not exist in the United Kingdom, so we are unable to document this in much detail. What is well known is that life expectancy at older ages has increased rapidly, even more so for males than for females, over the period. While such a trend can be documented in many ways, each telling the same story, a simple indicator of the magnitude of this effect is given in table 11.3, which presents life expectancy at age 60, showing how it has risen by seven years for males and five years for females.

In previous work, we documented these late-life longevity and mortality trends in terms of the underlying one-year mortality probabilities at each age between 50 and 75 (Banks, Emmerson, and Tetlow 2017) and the large

Table 11.3 Additional years life expectancy at age 60 (period basis) for England and Wales

	1970–72	1980–82	1990–92	2000–2002	2010–12
Male	15.4	16.4	17.9	19.9	22.4
Female	20.0	20.9	22.1	23.3	25.2

Source: Office for National Statistics, 2015, English Life Tables No. 17, <http://www.ons.gov.uk/ons/rel/lifetables/decennial-life-tables/english-life-tables—no-17—2010-12/stb-elt17.html>.

**Fig. 11.9** Self-assessed health among 55–69-year-olds, 1975–2015

Source: General Household Survey.

and rapid changes over the period were immediately apparent. Taking the state pension age as a reference point, for example, these fell by a factor of three for a 65-year-old male, from 3.4 percent in 1970 to 1.1 percent in 2015, and they fell by more than a factor of two for a 60-year-old woman, from 2 percent to 0.8 percent.

When it comes to understanding health as opposed to life expectancy, the data in the United Kingdom are considerably more patchy, particularly before the mid-1990s and the advent of the Health Survey for England. Surveys with measures of population prevalence of disease or disability do not exist on a consistent basis over the period since 1975; the best information available comes from crude, self-reported summary health measures of the type available in many general purpose social surveys around the world. Figure 11.9, calculated using data from the General Household Survey, shows that such data only demonstrate a very mild improvement in health over

the period, and even this is only really apparent for women, who show an increase in the proportion reporting health as “good” and a reduction in the proportion reporting health as “fairly good.” Similar trends would be observed in the Health Survey for England, which measures self-reported health on a more conventional five-point scale over the 1991–2015 period.

Such a trend, or lack of a trend, in self-reported health might seem at odds with such large and rapid improvements in life expectancy and reductions in mortality rates for older working-age cohorts over the period. The measurement of health and disability trends across cohorts is a huge field of research, and it uses various data and methodologies to try to investigate such issues. While there is no consensus to date on exact trends in the United Kingdom, it seems clear that at least some of the extension in longevity has been healthy, but at the same time, there has probably also been some increase in the length of life spent with disease and disability (particularly at older ages). For example, a recent paper calculated that, of the 2.1-year increase in life expectancy of men aged 65 that has occurred over the period from 2000–2002 to 2009–11, 1.2 years has been an increase in years of “good” health and 0.9 years has been an increase in years spent with “not good” health (Government Office for Science 2016).

In order to try to examine the consequences of this for employment rates, in previous work, we looked at various methods aiming to compute the health capacity to work and how it might have changed over time (Banks, Emmerson, and Tetlow 2016), using either time-series variation in mortality or cross-sectional variation in health conditions and disability indicators as a basis for the calculations. In summary, this suggested that there was a substantial capacity to work among the 55–69-year-old population if one was willing to measure capacity to work purely in health terms. Without more definitive data to summarize or quantify this further, we leave the issue here, other than to say that, whatever the cohort trends in health have been, it seems unlikely that they have been a constraint that has been driving employment rates. One caveat to that is that most analysis has looked at health trends on average or rates of health conditions and disabilities calculated for the population of older workers as a whole. If the focus were just on the low educated (as some of our analysis will be in what follows), given what we know about the education health gradient, it might be more important to factor in any education-group-specific trends for health and disability. This is left as a topic for future research.

So far, we have seen that for men, retirement ages are lower than they used to be, while longevity has increased and the number of years of schooling has also increased. Such trends have an immediately apparent impact on the proportion of life individuals spend in the labor market. Banks and Smith (2006) compared men born in 1900 to those born in 1935 and showed that average school-leaving ages rose by 1.8 years, median retirement ages fell by 4 years, and life expectancy at age 55 rose by 2.2 years. As a result, the

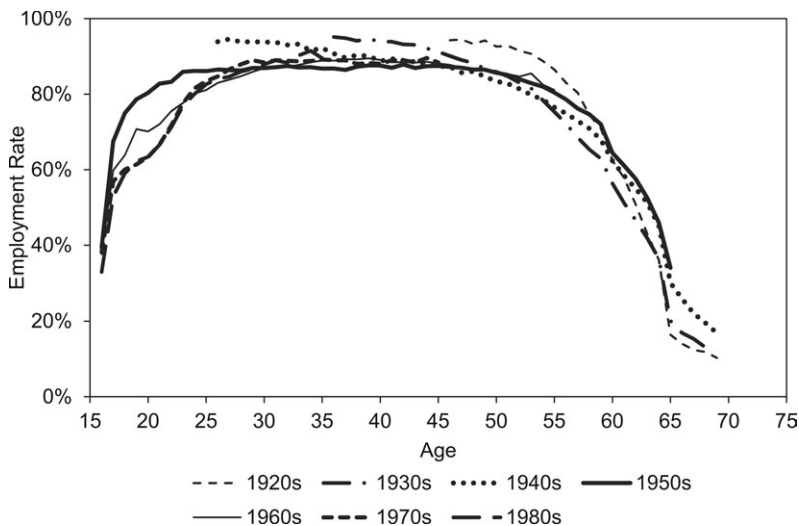


Fig. 11.10 Employment among successive cohorts of men

Source: LFS.

proportion of life spent not working (as a result of either school or retirement) increased from 30 percent to 40 percent. Despite increased retirement ages across later cohorts, the continued increases in schooling and longevity suggest this is unlikely to have been reversed and may well have increased further.

11.3 Trends in Detail

So far, we have documented the trends in employment rates of men and women over time and shown how this varied across different age groups and the extent to which, for those approaching the state pension age, the story changes when accounting for rising levels of education over time among those approaching retirement. In this section, we examine these trends in more detail.

We start by describing differences in employment rates by age for different birth cohorts. Again, we do this separately for men and women. We then turn to examine how these have varied for those with relatively low or high levels of education. Finally, we describe differences in trends in employment for different occupations and how growth in wages has varied between different age groups. Throughout, we highlight policy reforms and other changes to financial incentives to retire, which may help explain the trends that we see.

11.3.1 Trends in Employment: A Birth Cohort Analysis

Differences in male employment rates are shown in figure 11.10 by age and decade of birth. At older ages, two clear differences in employment rates

between the different birth cohorts can be seen. First, as expected, there is a much greater rate of employment between ages 50 and 59 among those born in the 1920s (with the bulk of these data relating to the late 1970s and the early 1980s) than for those born in the 1930s, 1940s, 1950s, and—as far as can be seen in the available data so far—1960s. Second, while male employment rates decline sharply with age as individuals move through their late 50s and early 60s, this decline was much sharper among those born in the 1920s and (albeit to a lesser extent) the 1930s than it was among those born in later decades. The combination of these two features means that while those men born during the 1940s were less likely to have paid employment when they were aged between 50 and 59 than those born in the 1920s or 1930s, they were more likely to have paid employment during their late 60s than those born in the previous two decades.

Finally, the figure also shows that employment rates at younger ages fell dramatically for those born between the 1950s and the 1970s, with the main counterpart to this being the expansion of higher education over this period. While not relevant for this study, given that those with higher levels of education are currently more likely to have paid work at older ages than those with lower levels of education (as shown in the previous section), this might be expected to boost the employment rates of older men in the future.

This shift to a more gradual decline in employment rates by age among older men is likely to have been brought about, in part, by policy reforms and other changes affecting the financial incentives to retire at particular ages faced by older workers. Most obviously, the abolition of the earnings test on the state pension in the late 1980s has been found to have increased the labor supply of men aged 65–69 (Disney and Smith 2002). The shift among private-sector employers to providing defined-contribution rather than defined-benefit pensions will also have reduced the financial incentive to retire at a normal pension age rather than at earlier or later ages (Blundell, Meghir, and Smith 2002). Finally, the shift from invalidity benefit (IVB) to incapacity benefit (IB), from April 1995, was designed to reduce the flow to IBs and may have improved financial incentives to work among many of those who might otherwise have been able to qualify for IVB.

The equivalent data for women are presented in figure 11.11. This also shows that there has been a big shift in employment rates at older ages across some successive birth cohorts and also a significant difference in how employment rates vary between, roughly, age 20 and age 35.

First, looking at employment rates of women in their early 50s, these were much higher among those born in the 1950s than the 1940s, 1930s, or 1920s. Rather than leading to a faster drop in employment rates at later ages, this appears largely to have fed into larger employment rates among women from more recent birth cohorts in their late 50s and early 60s. So this suggests that a big part of the rise in employment rates at these older ages is explained by women reaching older working ages with greater attachment to the labor market. So reforms—and other changes—affecting financial incentives to

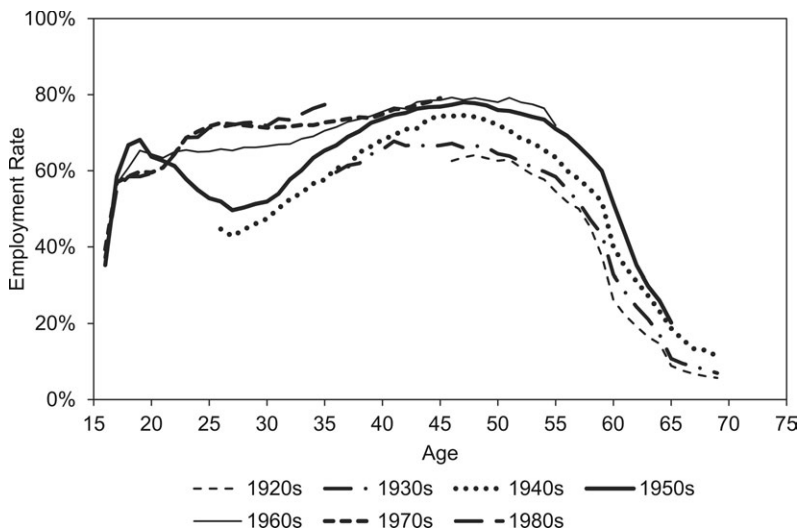


Fig. 11.11 Employment among successive cohorts of women

Source: LFS.

retire are most likely a smaller part of the overall story for women than for men. Looking forward, women born in the 1960s appear to have had slightly higher employment rates in their early 50s than those born in the 1950s did at the same ages. This might suggest we can expect a further increase—albeit slight relative to the large increases seen recently—in the employment of women in their late 50s over the next few years.

The other big difference between the employment rates of women from different birth cohorts can be seen during childbearing ages. For those born in the 1950s, employment rates of women fell from two-thirds during their late teens to half at age 27 before rising again so that they had returned to two-thirds by age 37. In contrast, there was no noticeable dip in the employment rates of women during their 20s among those born in the 1960s and 1970s. This may well have implications for the employment outcomes of older women in the future. As noted above, the employment rate of women in their early 50s who were born in the 1960s is only slightly above what it was for women at the same age who were born in the 1950s, potentially suggesting only a relatively limited increase in employment rates going forward. But because they were more likely to have had paid work through their 20s and 30s, these women will, on average, have a greater amount of accumulated labor market experience than previous generations of women at the same ages. This might help boost their employment prospects at older ages—in terms of not just their employment rate but potentially their hours of work and their hourly wage. While not directly related to the retirement analysis



Fig. 11.12 Employment rate among women by single year of age as state pension age rises

Source: LFS.

here, Blundell et al. (2016) provide a detailed analysis and structural modeling of female life-cycle labor market participation and its relationship to education choices, childbearing, and the incentives in the welfare system.

One policy reform that clearly affected retirement behavior is the rise in the state pension age for women from age 60, which began in April 2010. This increases the age at which women can (and, in the vast majority of cases, do) receive a state pension, although it does not, at least overall, lead to an obvious change in financial incentives to maintain paid work because there is no requirement to retire in order to claim a state pension and no ability to draw a state pension before the state pension age. Exploiting the fact that the state pension age has been increased gradually—and therefore in any time period, there is variation in the state pension age between women born not that far apart—Cribb, Emmerson, and Tetlow (2016) find that increasing this age led to a 6.3 percentage point increase in the rate of employment between the old and new state pension age. Descriptive evidence of this—using the same data as Cribb et al.—is presented in figure 11.12, which shows the employment rate by a single year of age among women aged 56–63 over time. Employment rates are generally higher for younger women than older women and, prior to 2010, tended to increase gradually over time among women of all ages. Marked in black are the employment rates over the window where the state pension age was increased from one age to the next. It is clear from the figure that these periods were associated with particularly rapid increases in employment, relative to what happened among women of that same age both before and after the reform was implemented and also

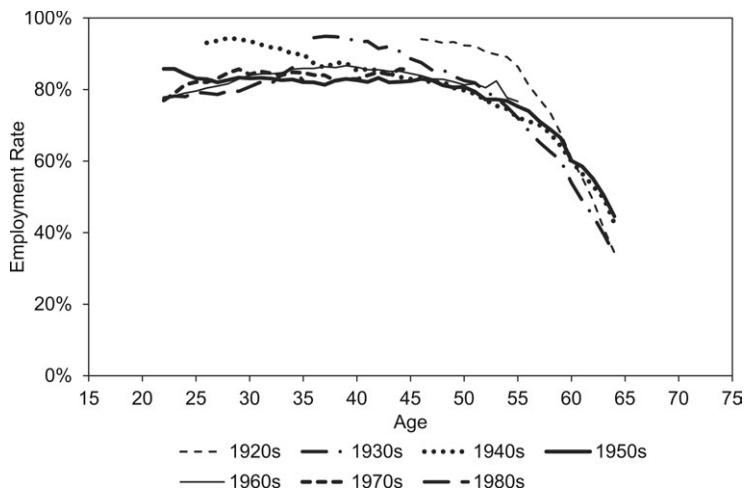


Fig. 11.13 Employment among successive cohorts of low-educated men
 Source: LFS.

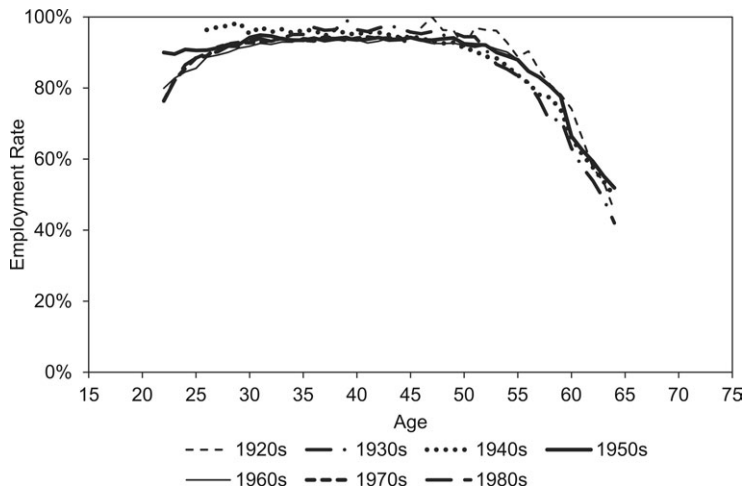


Fig. 11.14 Employment among successive cohorts of high-educated men
 Source: LFS.

when compared to what was happening to the employment rate of younger and older women at the same point in time.

Finally, we show how employment rates by age for different birth cohorts have varied by the level of education. This analysis is carried out using the same “high” and “low” education groups (i.e., excluding the “mid” education group) as defined in the previous section. Figures 11.13 and 11.14

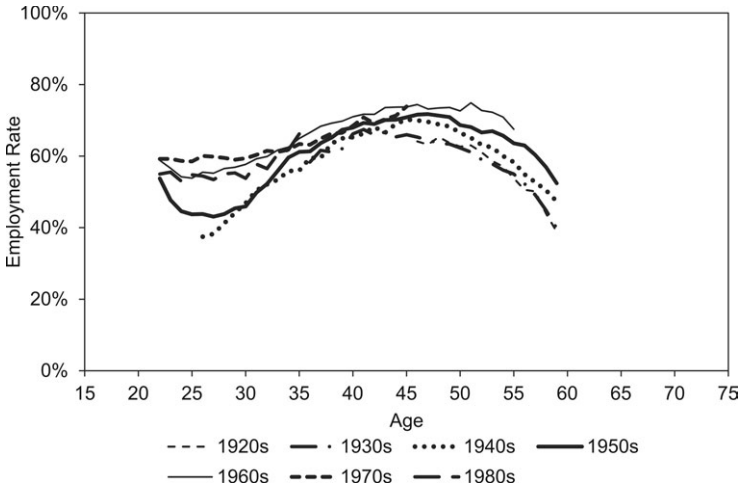


Fig. 11.15 Employment among successive cohorts of low-educated women

Source: LFS.

present the data for men with low and high education, respectively. The two features seen in the aggregate male cohort profiles above—that employment rates during ages 50–59 have fallen sharply from those experienced by those born in the 1920s and that the employment rate of older men now declines more gradually at older ages than it did for those born in the 1920s—are particularly pronounced for those with low levels of education and less visible for those with high levels of education. So these two features of the aggregate profile are not consequences of increasing levels of education over the period and are mainly driven by changes across birth cohorts among those with lower levels of education. This suggests the investigation of institutional explanations for such changes in employment at older ages (as opposed to economic explanations, such as wealth effects or changes in employer demand for certain types of skills) might focus initially on looking at programs or retirement institutions where changes have impacted differentially on different education groups. Examples might be the changing incentives in disability benefits or perhaps the role of cohort changes in the balance (and rules) of defined-benefit versus defined-contribution pensions.

The equivalent statistics for women are presented in figures 11.15 and 11.16. In general, employment rates of high-educated women are greater than those of low-educated women. In contrast to the story for men, the aggregate cohort patterns presented in figure 11.11 can be seen among those with both low levels of education and high levels of education. First, in both cases, employment rates of women in their early 50s were much higher among those born in the 1950s than among those born in the 1940s, 1930s, or 1920s. Second, while there is a dip in the employment rates during child-

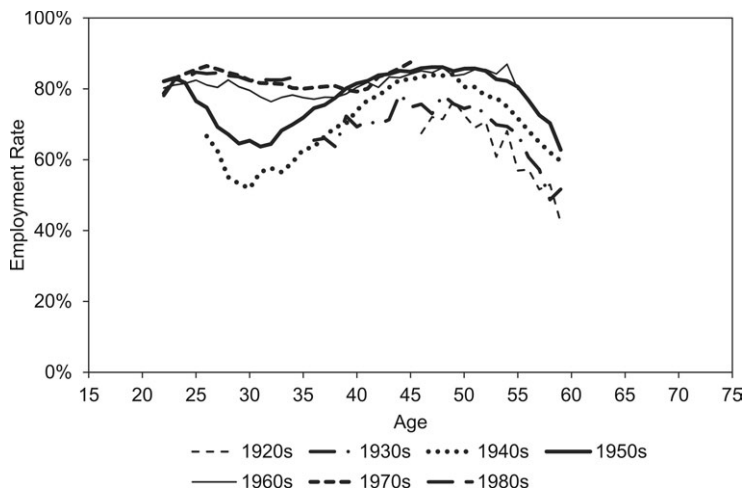


Fig. 11.16 Employment among successive cohorts of high-educated women

Source: LFS.

bearing years among those born in the 1960s and 1970s, this is much less noticeable than it is among those born in the 1950s. In both of these cases, the changes across birth cohorts are more pronounced among those with higher levels of education.

In terms of the outlook for the employment prospects of women in their 60s going forward, two things look likely from these figures. First, the slightly higher employment rate of women in their early 50s who were born in the 1960s (compared to the 1950s) is only present for women with low levels of education. This suggests that the “birth cohort effect” boosting the employment rate of women in their 60s in the near future might be driven by an increase in employment among women with low (as opposed to high) levels of education. Second, the fact that women in their 60s will increasingly have accumulated greater labor market experience over their entire lifetimes is especially true for women with high levels of education, since it is among this group where employment rates during late 20s / early 30s have increased the most. This could be particularly likely to boost the future wages of older women given the evidence that wage returns to labor market experience (and the negative returns to time out of the labor market) are stronger for women with higher rather than lower levels of education (Costa Dias, Elming, and Joyce 2016).

11.3.2 Employment Trends by Occupation

In what follows, we look at employment rates in different occupations over time. In particular, we examine the extent to which the trends seen among older individuals over the period since 1995 are similar to or divergent from

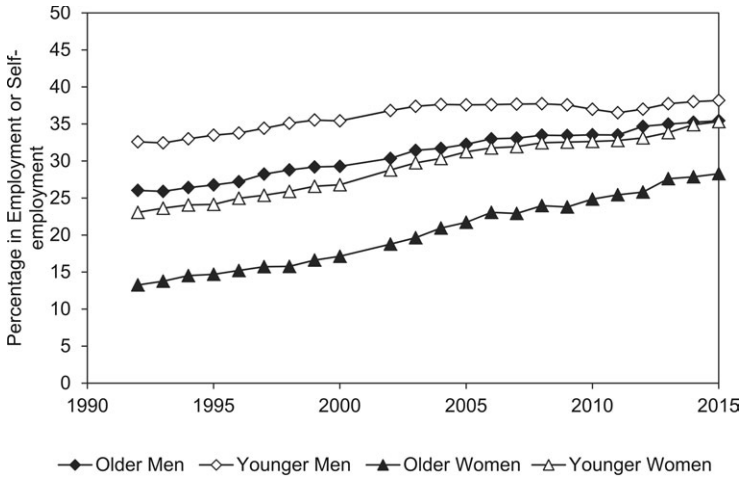


Fig. 11.17 Percentage of older and younger individuals employed in professional, managerial, or technical occupations over time by sex

Source: LFS.

Note: “Older” contains those aged 50–64, and “younger” contains those aged 20–49.

those seen among young working-age individuals. Specifically, the percent of individuals aged 50–64 who are employed in a particular occupation—and how this has changed over time—is compared to the equivalent among individuals aged 20–49. Again, this is done separately by sex. Three broad occupational groups are considered: (1) professional, managerial, or technical; (2) skilled nonmanual; and (3) skilled manual.

Summary data on employment in professional, managerial, and technical occupations are presented in figure 11.17. Over the 20 years from 1995 to 2015, the percent employed in these areas increased among older men, younger men, older women, and younger women. While these increases were very large for those aged 20–49 (at 4.7 ppt and 11.2 ppt for 20–49-year-old men and women, respectively), the equivalent increases seen over the same period for men and women aged 50–64 are even larger (8.7 ppt and 13.6 ppt, respectively). As a result, the employment gap in these occupations between older and younger individuals—seen among both men and women—is now considerably smaller than it was 20 years ago. Thus this is an area where employment growth has generally been favorable in the United Kingdom over the last 20 years, but the increase in the employment rate has been greater for older individuals than for younger individuals.

The equivalent data for employment in skilled nonmanual occupations are shown in figure 11.18. Among men, the employment rate over the period since the mid-1990s in these occupations has been broadly stable, and this is true among ages 50–64 and 25–49. Among women, there is a striking

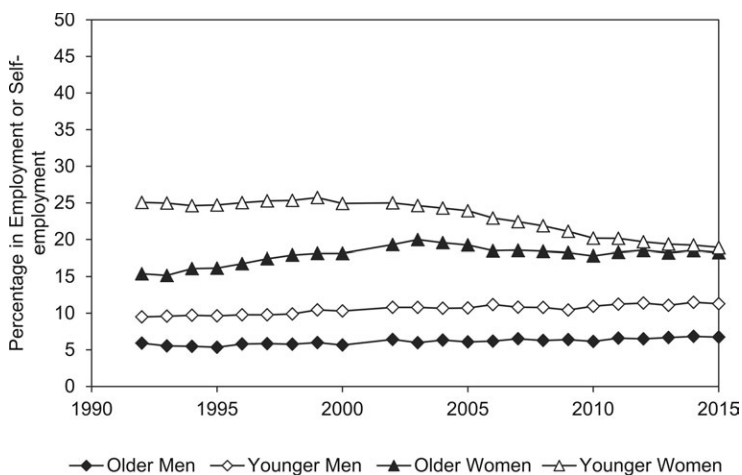


Fig. 11.18 Percentage of older and younger individuals employed in skilled non-manual occupations over time by sex

Source: LFS.

Note: “Older” contains those aged 50–64, and “younger” contains those aged 20–49.

difference in the trends by age. Among those aged 50–64, the employment rate of women in these occupations was greater in 2015 than in 1995, with the decline in employment since 2003 not being sufficient to offset the earlier growth. In contrast, the percentage of women aged 20–49 employed in skilled nonmanual work has declined throughout this period. So among women, this is an area where employment growth among those aged 50–64, albeit slight, has occurred despite employment in these occupations becoming less common among younger women.

Finally, the patterns for employment in skilled manual occupations are presented in figure 11.19. This shows that over the period since 1995, there is little change in the proportion of older men or older women who are employed in skilled manual occupations. This is also true of younger women, despite a reasonably sharp fall (of almost 4 ppt) in the percentage of younger men who are employed in skilled manual occupations. So this is an area where the employment rate of older men (and older women) has held up despite a fall in the employment rate in these occupations among younger men.

11.3.3 Wage Growth among Older Workers

The focus so far has been on trends in employment—both overall and in different types of occupations. This subsection looks instead at the evolution of average hourly wages among older employees and compares these

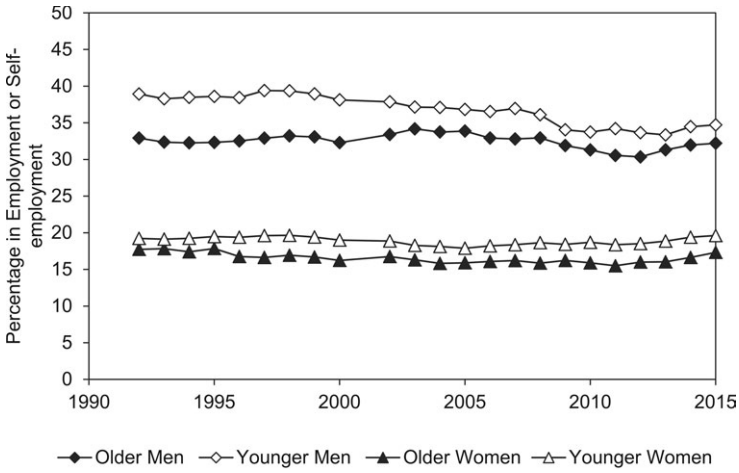


Fig. 11.19 Percentage of older and younger individuals employed in skilled manual occupations over time by sex

Source: LFS.

Note: “Older” contains those aged 50–64, and “younger” contains those aged 20–49.

to both inflation and hourly wage growth among younger employees. This is of interest because it can show how part of the financial incentive to have paid work (the wage) is evolving and also because changes in the observed wage distribution over time for different age groups are informative about the characteristics or skills of the individuals who are choosing to continue paid work.

The data on growth in median hourly wages among men are presented in figure 11.20, with wages indexed to 100 in 2005. Between the mid-1990s and 2003, there was broadly similar growth in hourly wages between different age groups of men. All age groups enjoyed wage growth that exceeded inflation, with those aged 65–69 experiencing slightly higher wage growth than younger age groups. A more diverse pattern can be seen over the period since 2003, with average male wage growth being greater among older age groups than among younger ones. While male wage growth among 65–69-year-olds and, albeit to a lesser extent, 55–64-year-olds has continued to outstrip inflation, the period since 2003 has seen average male wage growth among 20–29-year-olds, 30–39-year-olds, and 40–54-year-olds of less than the rate of inflation.

Trends in hourly wages among women by age group show a fairly similar story to those for men. Over the period from the mid-1990s to 2003, all age groups experienced wage growth in excess of inflation, with not that much dispersion in wage growth between different age groups. Over the period

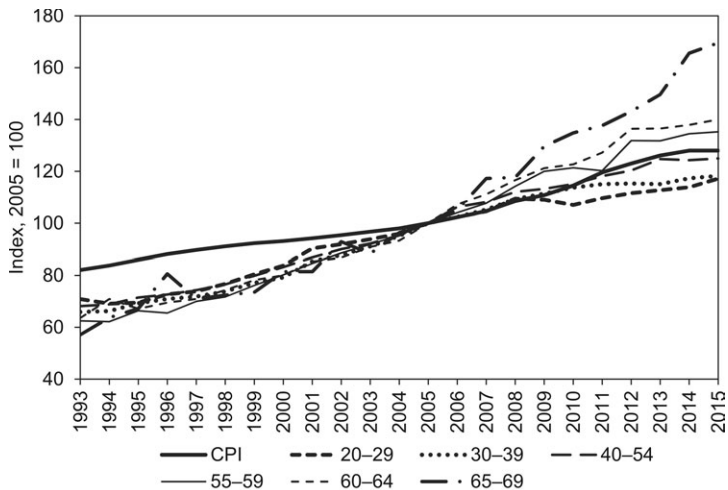


Fig. 11.20 Median wages of men over time by age group
 Source: LFS.

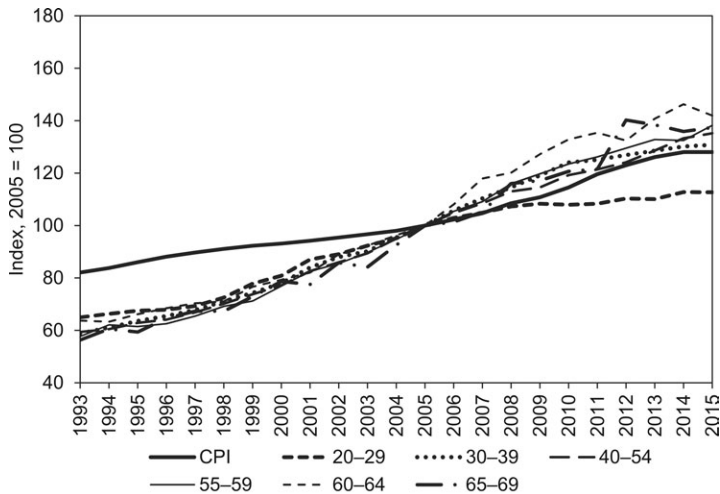


Fig. 11.21 Median wages of women over time by age group
 Source: LFS.

from 2003 to 2015, there is more dispersion in wage growth between different age groups with greater average wage growth, as there was for men, among older employees rather than younger ones. Unlike men, however, it is only 20–29-year-old women who, as a group, have experienced wage growth lower than the rate of inflation.

11.4 Conclusions

This chapter has documented employment rates among older men and women over the 40 years from 1975 to 2015. Over the first two decades of this period, employment rates of older men fell, whereas over the subsequent two decades, they rose. In contrast, employment rates of older women were relatively stable over the first decade but have risen sharply since and are now at record levels. The growth in employment of older men and women since the mid-1990s has coincided with a period of increases in the employment rate among younger men and women. In both cases, however, the growth in employment among older individuals over the last 20 years has been stronger than that of the rest of the working-age population.

There have also been differences in these trends by education levels. When taking years of schooling as a measure of educational attainment, the employment rates of older men over the period since 1995 have grown much faster among the “low educated” than among the “high educated.” As a result, the gradient in employment among men by education is much less steep than it used to be, with employment rates among “low educated” men now higher than they were in the mid-1970s. In contrast, growth in the employment rate among older women has been similar across the education distribution. But as we have documented, there are some not-insubstantial issues with using years of schooling as a measure of education, not least because a large proportion of men who left school at age 15 or earlier—and therefore without any formal qualifications—have subsequently acquired some. And when using qualifications rather than years of schooling as a measure of education, a much larger proportion of the increase in employment rates of older women over the period since 1995 can be accounted for by increasing education levels across successive birth cohorts.

Of key interest to policymakers is the extent to which reforms have contributed to changes in employment rates that we have documented. In terms of state pensions, there have been many significant reforms over the period since 1975, though many will have had a limited impact on the marginal financial incentive to retire that individuals face. The most important being, perhaps, the removal of the earnings test in 1989, which research has shown increased employment among men aged 65–69 (and will have also limited the extent to which subsequent reforms affected the incentive to work), and the increase in the female state pension age since 2010, which has also been shown to have boosted employment rates of women, who, as a result, now cannot receive a state pension until later. Further increases in the female state pension age—and, from 2018, the male state pension age—are likely to push employment rates of older women and men up further. Other policy reforms since the mid-1990s may have also had important impacts on employment outcomes, not least the reforms to out-of-work disability benefits in 1995 and 2008, and the more recent outlawing of mandatory

retirement ages. A more explicit investigation of the role of these reforms in explaining the overall trend, perhaps in comparison with what has been occurring in other countries over the same time period, is left as an important topic for future research.

It is also clear that the story behind the changes in employment rates cannot fully be told by looking at policy reform alone. Other trends have been important. Among older men—and in particular “low educated” men—we have shown that employment rates at older ages now decline more gradually than they did in the past and this, at least in part, is likely to have been brought about by the shift among private-sector employers from providing defined-benefit pensions to providing defined-contribution pensions. This shift is likely to continue having an effect on retirement behavior for some time—as will, eventually, the reforms to public-service pensions that came into effect in the mid-2000s (for new entrants) and the mid-2010s (for all members more than 10 years from their existing normal pension age).

Among women, differences in employment rates at younger ages are a key part of the story. Women born in the 1950s had much higher employment rates in their early 50s than those born earlier, and this has fed into an increased employment rate at older ages (rather than a faster drop in employment rates in their mid-50s). Among women born in the 1960s, there has been, at least among those with “low” education, a further increase in employment in their early 50s, suggesting that continued increases in employment rates of older women are likely. In addition, employment rates among women at younger ages—in particular among women with higher levels of education—mean that over time, women are approaching their 60s with greater labor market experience, potentially boosting the wage that they can command (especially given the evidence that wage returns to labor market experience are stronger for women with higher rather than lower levels of education), which, in turn, could also encourage them to remain in the labor market for longer.

Economy-wide trends—such as the shift away from physically demanding jobs in primary industry and manufacturing toward service sector roles—might well have affected employment rates at older ages. And as we have shown, the proportion of older men and women employed in professional, managerial, and technical occupations has been particularly strong, outstripping even the strong growth in the employment rate in these roles seen among younger individuals. At the same time, we have seen an increase in the relative wages of older workers that has been particularly apparent for those aged 65 and older. This is a trend that is likely to be related to selection effects as retirement incentives evolve and to cohort effects in education and lifetime occupational choices, feeding through into the employment outcomes of older workers as each successive cohort moves through later life.

Further research—and, indeed, the attention of policymakers—should not only be focused on whether older individuals are working but consider

more the nature of their activities in paid work as well as the hours worked and earnings, which will all be key determinants of the living standards of older individuals and are likely to change systematically over time as the pattern of employment participation at older ages evolves.

References

- Banks, J., R. Blundell, and C. Emmerson. 2015. "Disability Benefit Receipt and Reform: Reconciling Trends in the United Kingdom." *Journal of Economic Perspectives* 29 (2): 173–90.
- Banks, J., C. Emmerson, and G. Tetlow. 2016. "Effect of Pensions and Disability Benefits on Retirement in the United Kingdom." In *Social Security Programs and Retirement around the World: Disability Insurance Programs and Retirement*, edited by D. A. Wise, 81–136. Chicago: University of Chicago Press.
- . 2017. "Health Capacity to Work at Older Ages: Evidence from the United Kingdom." In *Social Security Programs and Retirement around the World: The Capacity to Work at Older Ages*, edited by D. A. Wise, 329–57. Chicago: University of Chicago Press.
- Banks, J., and S. Smith. 2006. "Retirement in the UK." *Oxford Review of Economic Policy* 22 (1): 40–56.
- Blundell, R., M. Costa Dias, C. Meghir, and J. Shaw. 2016. "Female Labor Supply, Human Capital, and Welfare Reform." *Econometrica* 84:1705–53.
- Blundell, R., C. Meghir, and S. Smith. 2002. "Pension Incentives and the Pattern of Early Retirement." *Economic Journal* 112 (478): C153–C170.
- Bozio, A., R. Crawford, and G. Tetlow. 2010. *The History of State Pensions in the UK: 1948 to 2010*. IFS Briefing Note 105. London: Institute for Fiscal Studies.
- Costa Dias, M., W. Elming, and R. Joyce. 2016. *The Gender Wage Gap*. IFS Briefing Note 186. London: Institute for Fiscal Studies.
- Crawford, R., S. Keynes, and G. Tetlow. 2013. *A Single-Tier Pension: What Does It Really Mean?* IFS Report R82. London: Institute for Fiscal Studies.
- Cribb, J., C. Emmerson, and G. Tetlow. 2016. "Signals Matter? Large Retirement Responses to Limited Financial Incentives." *Labour Economics* 42:203–12.
- Disney, R., and S. Smith. 2002. "The Labour Supply Effect of the Abolition of the Earnings Rule for Older Workers in the United Kingdom." *Economic Journal* 112:C136–C152.
- Government Office for Science. 2016. "Future of an Ageing Population." GS/16/10, July. <https://www.gov.uk/government/publications/future-of-an-ageing-population>.