The Decline of Employment Among Older People in Britain

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Editorial Note

Nigel Campbell is an Economic Adviser and Policy Adviser at Her Majesty's Treasury. He was a User Fellow at the Centre for Analysis of Social Exclusion, London School of Economics and Political Science, between May and August 1998. This paper was written as part of the Fellowship, which was supported by the ESRC. The opinions expressed in this paper are the author's alone, and should not be attributed to the Treasury or to the Government as a whole.

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Abstract

Older men have experienced the largest falls in employment over the last twenty years. Two-fifths of men aged between 55 and 65 are without work, compared to one-fifth in 1979, and the difference is equivalent to 600,000 fewer jobs for this age group alone. Older women have not shared in the general rise in female employment.

This paper analyses the Labour Force Survey and the first six waves of the British Household Panel Survey to examine why older people's employment has fallen, which groups have been most affected, and whether these trends are likely to continue.

Changes in employment between 1979 and 1997 have been reflected in opposite changes, not in unemployment, but in economic inactivity. Male employment has fallen furthest among people with the lowest, or no, educational qualifications.

Panel data suggest that, among people aged over 45, two groups are most likely to leave the labour market. They are (a) people in the bottom quartile of the hourly wage distribution and (b) people with wages in the top half but who are also members of an occupational pension scheme. Return rates back into work are low. Transitions between unemployment, long-term sickness and retirement are significant, and almost always weaken attachment to the labour market.

Explanations of the changes in male employment include occupational pensions, a shift in the relative demand for labour against older men (as relative wages and employment have both fallen), reduced labour supply, and age discrimination. Relatively few people report having suffered from age discrimination, so that is unlikely to be a major cause of the changes. Some of the reduction in labour supply will have resulted from voluntary decisions to retire early. Displaced older men experience sharp falls in wages returning to work and older men were likely to have been working in declining industries, however. Both these facts add weight to the view that much of the reduction in labour supply will have been either involuntary or the result of individuals making constrained choices.

Falling male employment seems to be part of an ongoing trend, rather than simply affecting one unfortunate generation. Men born later are less likely to be employed than earlier cohorts were at the same age. Although male employment is unlikely to fall as fast as it did in the early 1980s, the data up to 1997 give no indication that the trend will reverse on its own. Regional data between 1990 and 1997 also imply that, while

deep recessions do harm, economic recoveries alone may not be sufficient to reverse the trend.

The increase in female employment is due to higher labour supply and positive shift in labour demand. If a cohort effect is the reason for older women not sharing in this increase, the employment rates of older women in future will be higher. The remaining doubt is whether the causes of lower employment among older men will in the future also act to limit the effective retirement age of women.

1. Introduction

Older men are much less likely to be in work than they used to be. In 1979, just over one-fifth of men aged between 55 and 65 were not working. By 1997, that proportion had doubled. Male employment has fallen at all ages, but the decline has been worse for older men, whose employment rate fell by three times as much as that of "prime-age" men (aged between 25 and 50).

Most of this reduction in employment does not appear in the usual measures of unemployment. Alongside the 21 percentage point fall in employment is a 20 percentage point rise in the number of older men who are "economically inactive", neither employed nor defined as unemployed[1]. Unemployment among this group barely increased in comparison. As such, these people are likely not to appear in the unemployment statistics which are often quoted in the Welfare to Work debate and elsewhere[2]. Traditional policies would not have offered help to enable this increasing number of people to return to the labour market.

While employment rates have fallen particularly drastically for older men, older women have also been affected. They have not shared in the substantial general increase in female employment. Women as a whole were much more likely to be in paid work in 1997 than in 1979: their employment rate rose by 9 percentage points from 60% to 69%. The employment rate for women aged between 55 and 60, however, did not rise at all. Indeed, it fell back slightly. Again, the changes in employment were mirrored by opposite changes in economic inactivity, with unemployment rates for women largely unchanged.

Table 1 shows how employment, unemployment and economic inactivity rates have changed since 1979.

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1 Figures in this section are from the Labour Force Survey, which uses International Labour Organisation (ILO) definitions of labour force states. In order to meet the ILO definition of unemployment, a person must have looked for work in the last four weeks and be available to start work in the next fortnight. Employment in this paper includes both self-employment and working as an employee. People who are neither employed nor (on the ILO definition) unemployed, are said to be "economically inactive".

2 They may however be counted in statistics showing the number of workless households and/or (providing they are receiving Jobseeker's Allowance despite not looking for work) the claimant unemployed.

Table 1: Employment, unemployment and inactivity, 1979 and 1997, (%)

		Men All	Men Aged 55-65	Women All	Women Aged 55-60
Employment	1979	90.8	79.4	60.2	50.9
	1997	80.6	58.3	68.9	50.4
	Difference	-10.2	-21.2	+8.6	-0.5
Unemployment	1979	4.3	3.8	3.7	2.2
	1997	6.2	4.6	3.9	2.2
	Difference	+1.9	+0.9	+0.2	0.0
Economic inactivity	1979	4.9	16.8	36.0	46.9
	1997	13.3	37.1	27.2	47.4
	Difference	+8.4	+20.3	-8.8	+0.5

Notes:

a. Excluding students, under 18s, and people over state pension age.

b. 1979 and 1997 are chosen purely for data reasons, and not because of their relationship to the electoral cycle (although there was a change of Government in May of each year). They provide the longest period over which to detect trends, while still containing a whole year's data. (The Labour Force Survey began in 1977.) Both dates followed some years of growth in aggregate employment. The falls in older workers' employment rates would be slightly larger if 1996, which - like 1979 - was the fourth consecutive year of economic growth, were used instead of 1997. 1990 is used in the paper as the last cyclical peak.

c. Figures in tables may not sum exactly because of rounding.

To give some indication of the scale of these changes, 1.8 million more men would have been working in 1997 if the male employment rate had not fallen since 1979. Employment among men over 55 would have been more than 600,000 higher. This highlights the disproportionate effect on older workers: about one-sixth of adult men of working age are aged 55-65, but they account for more than one-third of the fall in male employment.

The rise in female employment since 1979 represents 1.5 million more jobs. However, that figure would have been another 200,000 higher if women in their fifties had had the same increase as other women of working age.

This paper analyses the rise in worklessness among older workers between 1979 and 1997. It contains original analysis of the Labour Force Survey and the British Household Panel Survey, and draws on the conclusions of previous work.

The structure of the paper is as follows. Section 2 sets out why the decline in employment might be a matter of particular concern. Section 3 describes some possible explanations for the decline, which are tested later in the paper. The Labour Force Survey is analysed in Section 4 to show the patterns of male and female employment, unemployment and inactivity at different ages, for different levels of educational qualifications, and for different birth cohorts. Section 5 discusses the relationship between wages and age. Section 6 describes the results from analysing the British Household Panel Survey, which follows the same people for six years. It therefore enables us to track individuals' movements into and out of employment, and between employment, unemployment, long-term sickness and retirement. Section 7 considers other related evidence and explores a number of the potential explanations. Section 8 draws conclusions.

2. Work, worklessness and welfare

There are three reasons why the current Government is concerned to help people move off welfare and into work:

- *poverty*. The unemployed tend to be poor, and the poor tend to be without work;
- *social exclusion.* Over and above the direct corrosive effects on an individual who is out of work, which can include ill-health, there is concern about the wider adverse effects on children in workless households and on communities;
- *the effect on the public finances.* People in work pay taxes, while people without work tend not to be liable for income tax or national insurance contributions. The converse tends to be true of social security benefits.

These concerns imply that Welfare to Work help should not be limited to the claimant unemployed. Research has shown that lone parents on Income Support are more likely to live in poverty and to suffer poor health and lack of nutrition than other lone parents[3]. Similarly, disabled

[3] See Dowler and Calvert (1995) for evidence on the nutrition of lone parents and their families.

people and partners of unemployed people should not be excluded from assistance with finding work if they would like it. The Government has signalled that it favours such an approach by introducing the New Deal for lone parents, the New Deal for partners of the unemployed, and the New Deal for disabled people, as well as the New Deals for the unemployed.

The above reasons also help in assessing the position of older workers. On these definitions, Welfare to Work should certainly be available to older people of working age who lose their jobs and are (or are at risk of becoming) poor and/or socially excluded. However, it can be argued that the first two reasons do not apply to people who choose to retire early, providing the decision is entirely voluntary and the person is satisfied by the income they have as a result[4].

The public finance effect, though, may still arise in up to three ways. The first occurs because people are taxed on their income, so that people who retire early (and thus earn less) pay less tax than people who do not. Other taxpayers are therefore effectively subsidising the decision to retire early. In one sense, this is no different from the "subsidy" available to those who choose not to maximise their lifetime income, by working shorter hours or by taking a job which does not pay as well as alternatives which they could seek. However, more widespread early retirement represents a substantial expansion of this subsidy, with which those paying the subsidies (i.e. taxpayers) may not be content.

A second externality arises if the voluntary early retirement decision leads to higher expenditure on social security benefits associated with not working (such as Jobseeker's Allowance, Incapacity Benefit or, later, additional income-related benefits to ease poverty in retirement).

Third, there is an issue relating to the ageing population. Britain's changing demographics and its implications for pensions have been widely documented: see, for example, Johnson, Disney and Stears (1996) and Budd and Campbell (1997). The Government has also stated its aim of doing more to help the poorest pensioners. The post-War assumption was that people would work for forty years of their life. With more people becoming students, and an increasing trend towards early retirement, working lives of thirty years might not be uncommon. As a matter of arithmetic, it is harder to have a pension system which is both adequate and affordable if people spend less time in work, whatever

[4] The issue of voluntary and involuntary decisions is discussed further later in the paper.

definitions of adequacy and affordability are used. A shorter working life also hinders a person's ability to make adequate pension provision for themselves.

There is therefore an argument for being concerned about the increase in early retirement, even among the "fortunate" (to use Galbraith's (1992) phrase) who choose early retirement, are happy with that decision, and consider they have adequate income for their purposes. The issue then becomes whether this conjunction of events is an accurate depiction of what has happened in the last twenty years or so. There is even greater cause for concern for older people who leave the labour force involuntarily and people who are (or will become) poor and / or socially excluded.

It is sometimes argued that early retirement is desirable because it enables jobs to go to younger people. Although this may be true of individual posts, where a younger person may fill "dead men's shoes", it is not an accurate representation of the economy as a whole, whose labour market is much more dynamic. The argument is, in fact, an example of the *lump of labour fallacy* – see Samuelson (1979) for more details. It is not the case that there are a fixed number of jobs to go round. Instead, aggregate employment is driven by the number of people competing (effectively) for jobs. Removing from the labour market someone who is employable merely reduces aggregate employment: it does not create a job for someone who is currently unemployed.

This issue is especially relevant to the discussion of older workers because, while overall employment fell by only one percentage point between 1979 and 1997, the pattern of employment changed very markedly. Economic inactivity among women aged between 18 and 54 fell by 9.5 percentage points over the same period, while male inactivity increased dramatically. According to Gregg and Wadsworth (1998), economic inactivity fell most among mothers with a child under 2, among women aged 25-34, and among women whose partners were already working. The last has contributed to the polarisation between two-earner and no-earner households in the last twenty years. Although lower female economic inactivity offset the reduction in male employment, it would be wrong to infer (as the lump of labour fallacy would suggest) that one trend has caused the other. We should consider the scale of the lost male employment, and what might be done about it, without thinking that positive moves there would reverse the trend towards higher female employment.

3. Why might employment have fallen?

Five possible explanations for the fall in employment among older workers are set out below. There are grounds for believing that each of them has had some effect in reducing employment among older workers. People will have different reasons for leaving, and remaining outside, employment. This paper considers the evidence, assesses the effect of each explanation and who is most likely to be affected.

1. More people *choosing to retire early*. Each generation is more prosperous than its predecessors, and one corollary might be that people choose to increase the amount of leisure during their lifetime. This explanation only includes people whose decisions are entirely voluntary and not those who take early retirement because they feel that it is the "least worst" option. Voluntary decisions should also leave people content with their income in retirement.
2. *Reductions in labour supply that are involuntary or the result of constrained choices* or distorted incentives (which unintentionally reduce labour supply). One example might involve people who lose their job and, unable to find another or discouraged from doing so, later cease to be attached to the labour market. Particular attention will be paid to transitions between employment, unemployment and inactivity. (Availability of occupational pensions could be another example, but these are covered in the next explanation.)
3. Early retirement may have been encouraged by the more widespread availability of *occupational pensions*. Occupational pensions can reduce both labour demand and labour supply. The demand side is affected because the vast majority of occupational pension schemes are salary-related, and such schemes impose higher costs on continuing to employ someone who is close to retirement. The labour supply part of this hypothesis can be closely linked to both the first two explanations: occupational pensions may provide higher incomes in retirement and so could increase the numbers choosing to retire early. On the other hand, if a firm offers an early retirement package for a temporary period when it is reducing its workforce, then the employee may feel that they are making a constrained choice. If, after taking the offer, they find that they are unexpectedly unable to find a new job, that would certainly represent an involuntary reduction in labour supply. The labour demand and involuntary labour supply effects

of occupational pensions respond to incentives which are not deliberately aimed at reducing employment, but which might be having that effect.

4. A *shift in labour demand* away from older men. This could occur as part of the more general labour demand changes against the unskilled, and unskilled men in particular, over the last twenty years. This shift has been interpreted as due to skill-biased technological change. If older workers are less likely to be skilled (and they are certainly less likely to hold educational qualifications), or are perceived to be harder to re-train, then that may reduce the employment of older men[5]. Separately, some employers may have encouraged early retirement as the least painful way to reduce the size of the workforce.
5. Increasing *age discrimination*. Older workers may be less likely to be employed solely on the basis of their age.

There are close links between the labour supply explanations (the first two and part of the third) and those affecting labour demand. It is sometimes hard to assess reasons for leaving work, even in individual cases. Did someone quit, or retire through ill-health, for example, or were they "pushed"? To what extent is voluntary early retirement an ex post rationalisation of redundancy? However, the five explanations above do provide a useful framework for analysis.

Employment may fall as part of a two-stage process. One job may cease for reasons associated with that particular firm's demand for that employee's labour, e.g. because their job is no longer needed in that firm or as a result of the incentives in occupational pensions. Someone, who would have preferred to remain in work if they could stay in their old firm, may decide not to take a new job if (as evidence described in Section 5.3 suggests) the wages available are much lower. The person would have left one job for reasons connected to labour demand, and not returned to work for labour supply reasons.

[5] On the other hand, if more frequent innovation means that training does not now last as long as it used to, re-training people who are fairly close to retirement could have become less unattractive. That should in turn boost employment among older workers.

4. Labour Force Survey evidence on employment among older workers

This section uses data from the Labour Force Survey to analyse changes in employment, unemployment and economic inactivity, broken down:

- by gender,
- by age,
- over time,
- by region,
- by educational qualifications, and
- by birth cohort.

The reduction of 1.8 million in male employment, set out in Section 1, would be higher if students were included, but only slightly. About 3% of the people aged between 18 and the state pension age[6] are now students, compared to 2% in 1979. The increased number of students reduces the male employment rate by about 0.8 percentage points, much less than the 10.2 percentage point fall in male employment (excluding students) set out in Table 1. The data and analysis in the rest of this paper exclude students and people under the age of 18.

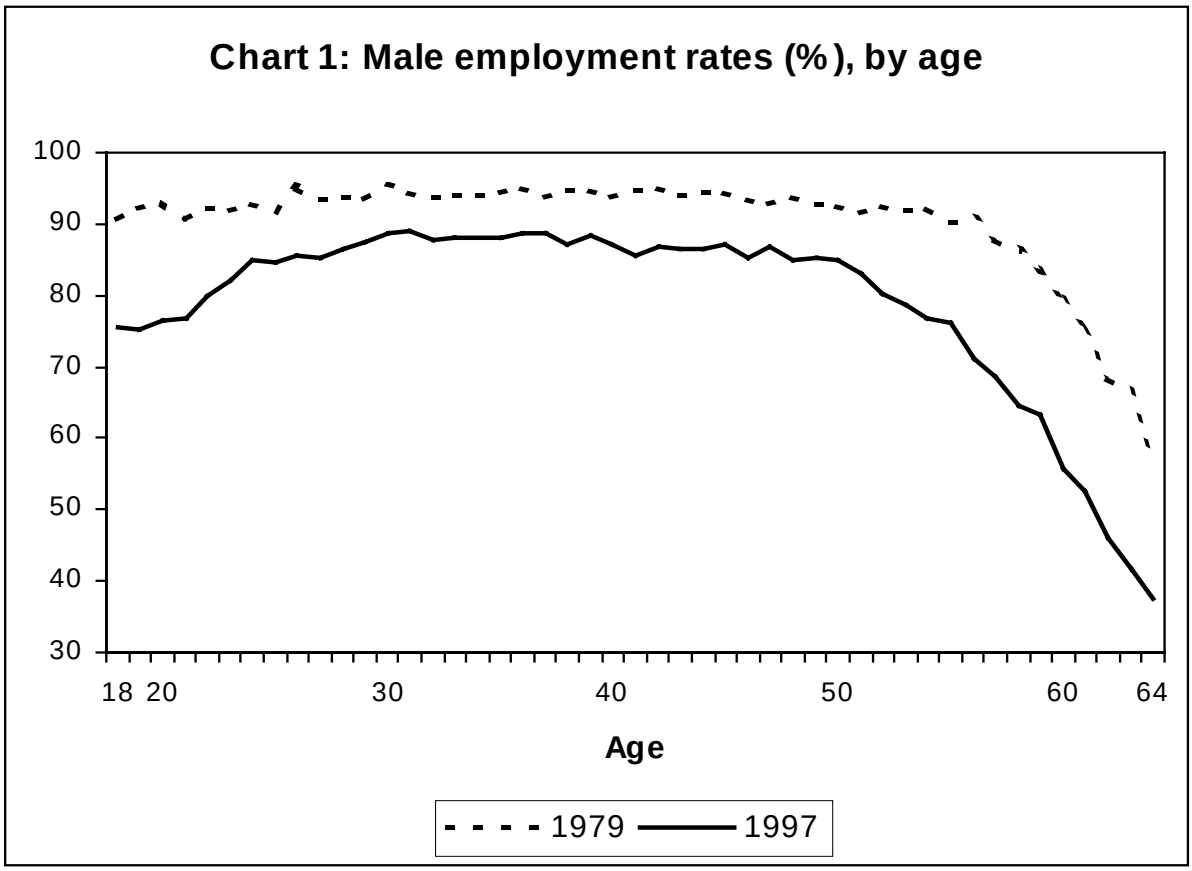
4.1 How employment and inactivity change with age

The employment rates of people between 25 and 35 increased between 1979 and 1997, while employment fell significantly among over 50s and those under the age of 23, and changed little among those between 35 and 50. Clearer stories emerge from breaking these figures down by gender.

Chart 1 shows that male employment has fallen significantly at all ages, with the decline most marked among older workers. Employment rates have always been lower among people close to state pension age: 57% of all men aged 64 were working in 1979. Two features, visible in Chart 1, have combined to increase this effect so that, by 1997, only 37% of 64-year-old men are in work. These features are that:

- male employment now seems to start falling from an earlier age – from about age 50 instead of around age 55; and
- lower employment at all ages means that the fall begins from a lower peak.

[6] The state pension age is 65 for men and 60 for women.



Charts 2 and 3 show that the fall in employment is much more closely connected to higher economic inactivity than to a rise in measured unemployment. Chart 2 is close to a mirror image of Chart 1: economic inactivity among men aged 64 has risen from 39% to 60%. Chart 3 shows that unemployment has risen by much less than economic inactivity, except among the youngest adult men. Among men in their 60s, unemployment has not risen at all.

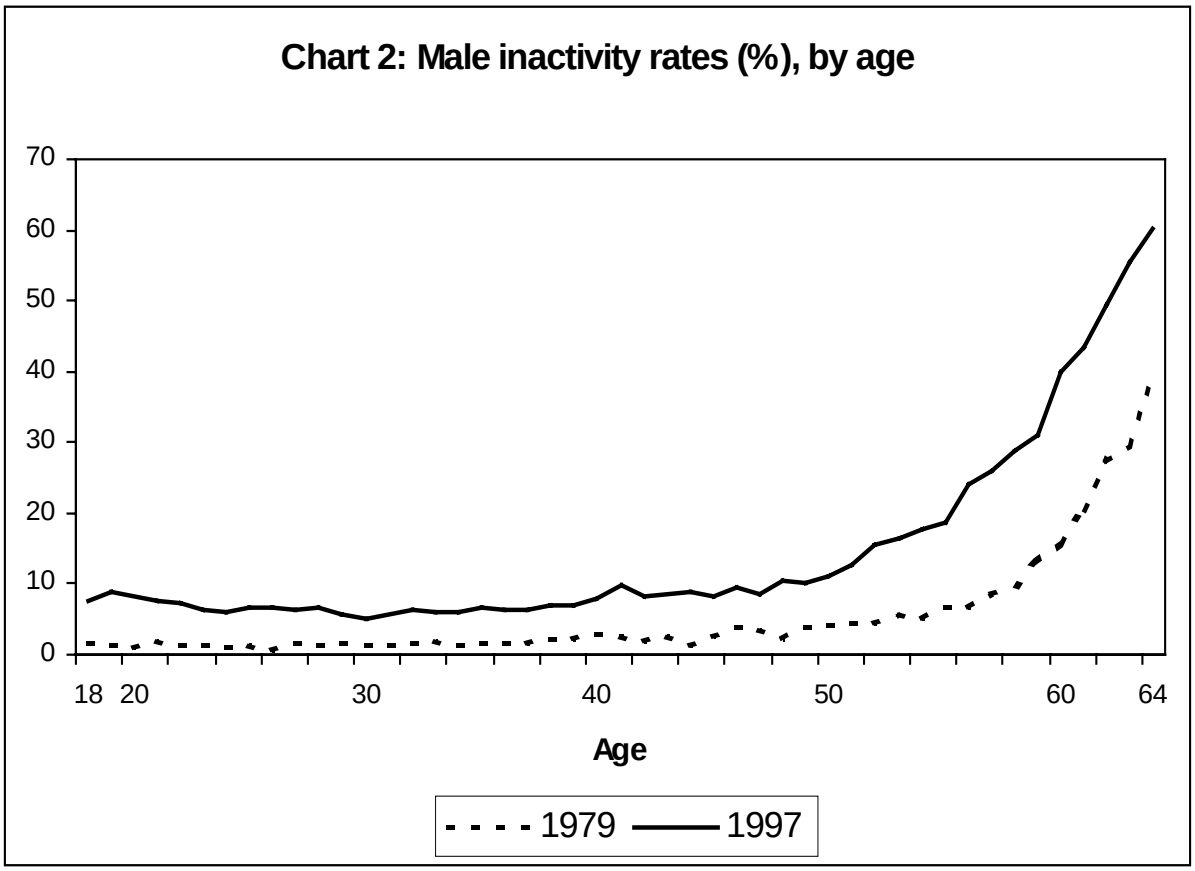


Chart 2: Male inactivity rates (%), by age
70
60
50
40
30
20
10
0
18 20
30
40
50
60
64
Age
1979
1997


Chart 3: Male unemployment rates (%), by age
20
16
12
8
4
0
18 20
30
40
50
60
64
Age
1979
1997

Female employment has risen dramatically, as Chart 4 shows, for each age group except for the over 55s who have seen no increase in their employment rates. Again, the employment rise over the last twenty years reflects a fall in economic inactivity. Unemployment among women over 25 is virtually the same as it was in 1979.

Tables 2-4 cover similar ground to Charts 1-4, but with numbers rather than pictures. Table 2 shows how employment, unemployment and inactivity rates changed between 1979 and 1997 for various age groups, and Table 3 shows the rates for each year.

Table 2 highlights the extent to which employment and inactivity changes mirror one another. Male unemployment increased much less than economic inactivity for all age groups, except for 18-25 year olds, whose unemployment increased slightly more than inactivity.

Table 2: Changes in employment, unemployment and economic inactivity rates, 1979-1997 (percentage points)

		Employment	Unemployment	Economic Inactivity
Men aged	18-24	-12.6	+6.6	+6.0
	25-49	-7.0	+1.6	+5.4
	50-64	-16.4	+1.0	+15.4
	55-64	**-21.2**	+0.9	+20.3
All men		**-10.2**	+1.9	**+8.4**
Women aged	18-49	+9.8	+0.2	-10.1
	50-59	+4.2	0.0	-4.2
	55-59	-0.5	0.0	+0.5
All women		**+8.6**	+0.2	**-8.8**
All	not in last 10 years*	+0.3	+1.2	-1.4
	last 10 years*	-7.5	+0.4	+7.1
All of working age		-1.1	+1.0	+0.1

Note:
* refers to the last 10 years of working age (ie age 50-59 for women, 55-64 for men).

Table 3: Employment, unemployment and economic inactivity rates, 1979 and 1997 (%)

		Employment		Unemployment		Economic inactivity	
		1997	1979	1997	1979	1997	1979
Men aged	18-24	79.3	91.9	13.5	6.8	7.3	1.3
	25-49	87.0	94.0	5.6	4.0	7.3	1.9
	50-64	67.5	83.9	4.6	3.5	27.9	12.6
	55-64	58.3	79.4	4.6	3.8	37.1	16.8
Women aged	18-49	71.3	61.4	4.3	4.1	24.4	34.5
	50-59	60.5	56.3	2.4	2.4	37.1	41.3
	55-59	50.4	50.9	2.2	2.2	47.4	46.9
All	Not in last 10 years*	78.5	78.2	5.4	4.3	16.1	17.5
	last 10 years*	59.5	67.0	3.4	3.0	37.1	30.0
Men**		80.6	90.8	6.2	4.3	13.3	4.9
Women**		68.9	60.2	3.9	3.7	27.2	36.0
Everyone**		74.8	75.9	5.0	4.0	20.2	20.1

Notes:
* refers to the last 10 years of working age (ie age 50-59 for women, 55-64 for men).
** of working age and excluding students.

Employment fell furthest among men aged 55-64, as the bold figures in Table 2 show. However, this group is clearly not the majority of the population. Table 4 takes account of population data to answer the question, "How much did the reduction in each age group's employment contribute to the total fall in male employment?" From it, we see that:

- Older men, and to a lesser extent men aged between 18 and 25, have taken a disproportionate share of the falls in male employment.
- Lower employment among men aged 55-64 is responsible for more than one-third (35.5%) of the decline in male employment, even though only about one-sixth (17.2%) of men are in this age group.
- Men aged 50-64 account for 46% of the decline in employment, more than for prime-age men. This is even more significant as there are only half as many men aged 50-64 as there are prime-age men.

The first and second columns in Table 4 do not sum to 100 because the age structure of the population has changed somewhat since 1979. More people are now aged between 35 and 55, and fewer aged either between 55 and 60 or 18-25. These changes mitigate the underlying trends slightly. If the population's age structure had not changed since 1979, the male employment rate would have fallen about 0.2 percentage points further, and female employment would have risen more by a similar amount.

Table 4: Contribution to changes in employment patterns, 1979-1997 (%)

		Each group's contribution to the change in:		Proportion of population (1997)
		Employment fall	Inactivity increase	
Men aged	18-24	**12.9**	7.4	10.5
	25-49	41.6	39.0	60.7
	50-54	10.7	11.3	11.7
	55-64	**35.5**	**41.6**	17.2
				100.0
		Employment increase	Inactivity fall	
Women aged	18-49	88.9	89.0	78.1
	50-54	11.2	11.0	12.3
	55-59	-0.6	-0.6	9.6
				100.0

4.2 Variations over time

Male employment has followed the familiar cyclical pattern, falling as a result of recessions and increasing in better economic times. This is visible in Chart 5, with employment peaking in 1979, 1990 and (so far) 1997. Most of the reduction in male employment occurred before 1983.

It would however be wrong to infer that there had simply been a one-off adverse shock to men in the labour market between 1979 and 1983, followed by relatively slight cyclical variations.

The pattern is much more complicated, as Chart 6 and other evidence presented later show. Male inactivity and unemployment both rose sharply during the recession of the early 1980s, but inactivity continued to rise when unemployment began to fall.

Labour market theory would suggest that inactivity should fall alongside unemployment as "discouraged workers" (who would like work, but are not currently actively looking for it) are attracted back to the labour market when the economy is growing strongly. Inactivity did stop rising during the late 1980s boom. However, the data since 1993 are not consistent with the discouraged worker hypothesis, when falls in male unemployment have been accompanied by smaller, but still significant, increases in inactivity. Section 4.3 presents further evidence on the relationship between inactivity and unemployment using regional data.

The picture for female employment is much simpler, as Chart 7 shows. Employment has been on an upward trend, with relatively small reductions only at the lowest points of the economic cycle (1979-83 and 1990-91). The employment changes reflect those in female economic activity[7], which has risen in every year since 1979

[7] People are "economically active" if they are either employed or (on ILO definitions) unemployed. Economic activity, which is the converse of inactivity, is also called labour force participation.

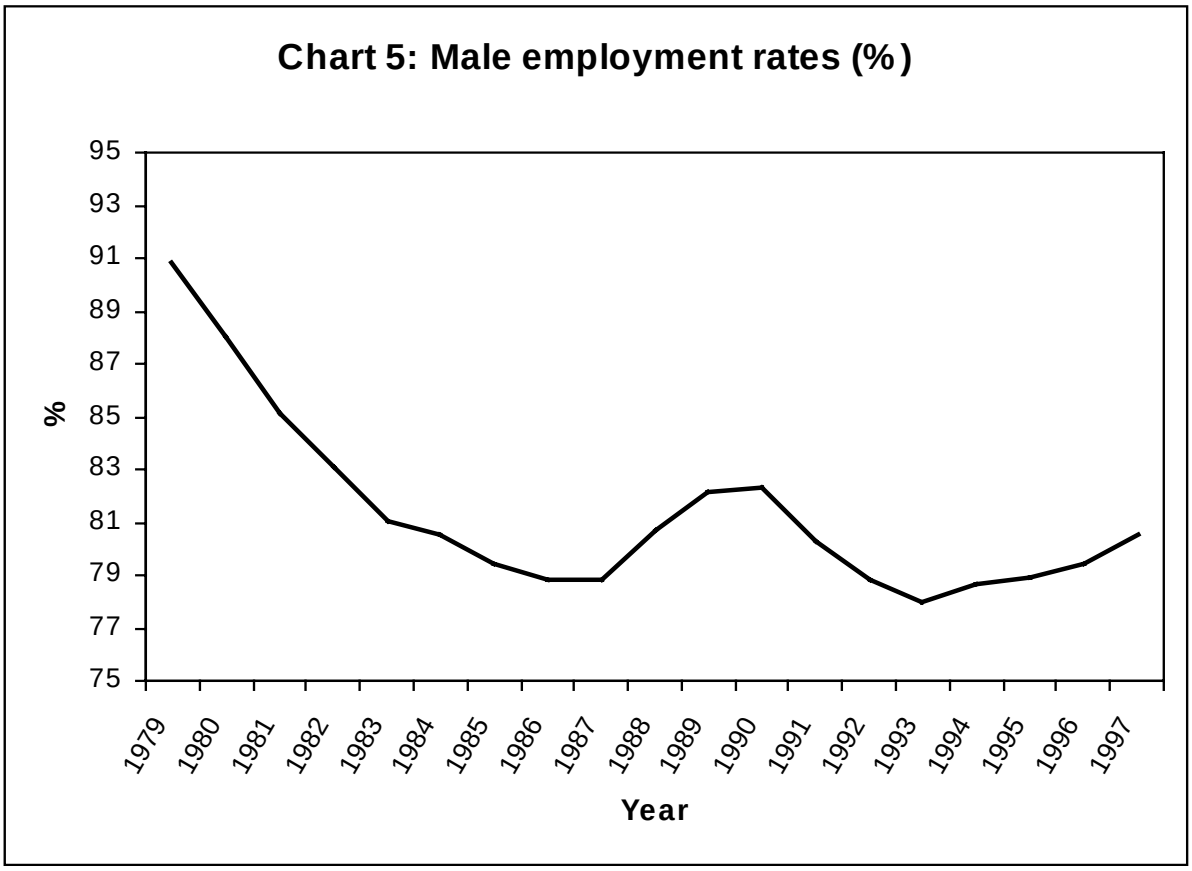


Chart 5: Male employment rates (%)
95
93
91
89
87
85
83
81
79
77
75
%
1979
1980
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1983
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1987
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Year

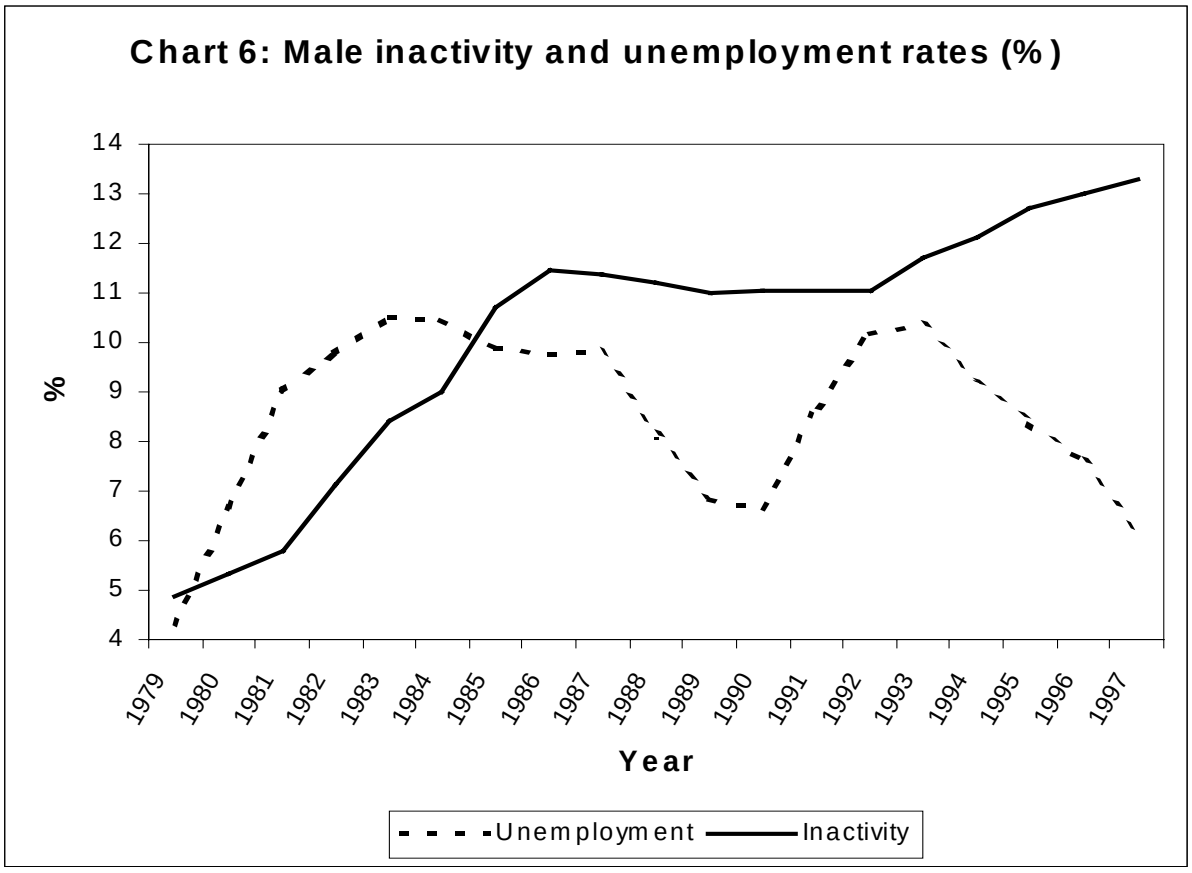
Chart 6: Male inactivity and unemployment rates (%)
14
13
12
11
10
9
8
7
6
5
4
%
1979
1980
1981
1982
1983
1984
1985
1986
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1989
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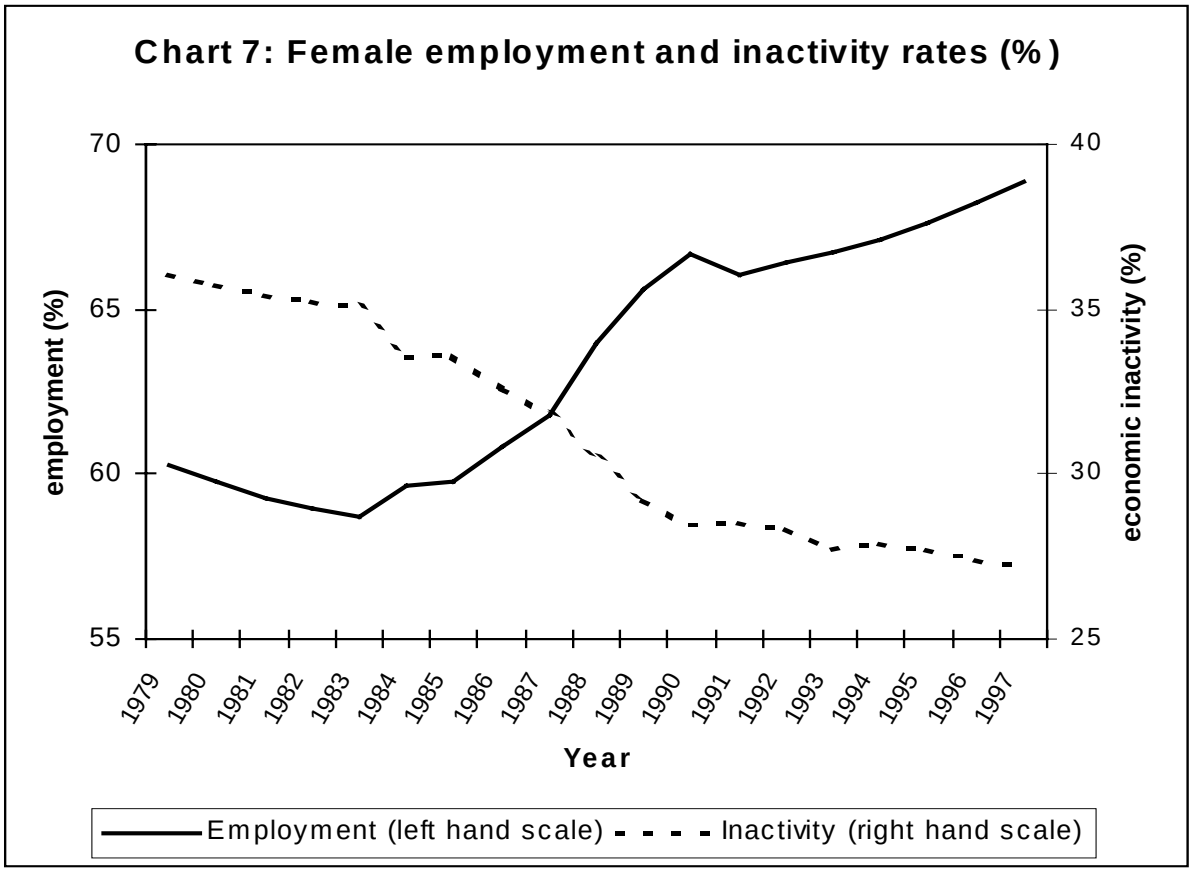
1996
1997
Year
Unemployment
Inactivity



4.3 Regional changes in unemployment and inactivity

At a particular point in time, the regions with the highest male unemployment also have the highest economic inactivity. Chart 8 shows the strong (but not perfect) correlation[8].

This correlation does not hold, however, when considering changes over time. The regions with the lowest male employment in 1990 (the last cyclical peak) are towards the right-hand side of charts 9a, 9b and 10. These regions tended to see *larger* falls in male unemployment between 1990 and 1997 – the line in chart 9a slopes downwards.

Inactivity, though, increased *more* in the regions that initially had lower employment (chart 9b). This offset the larger falls in unemployment. So, although differentials in regional male unemployment narrowed, the differentials in male inactivity widened. Overall, there was no correlation[9] between a region's male employment

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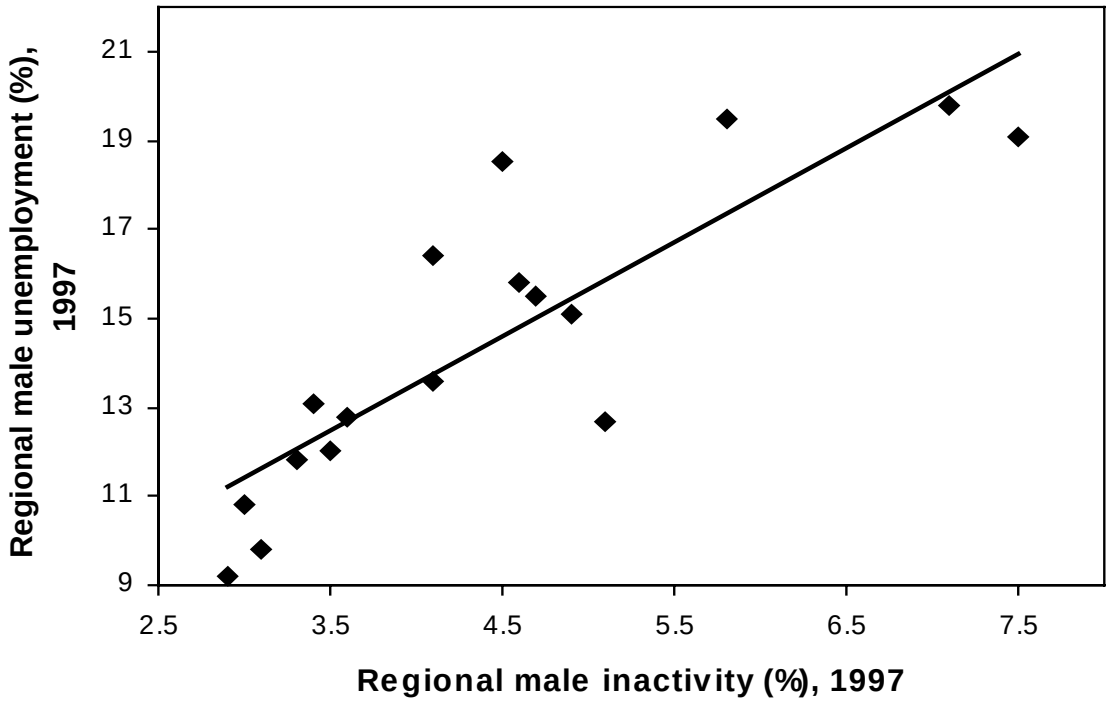
[8] Section 4.3 - which is based on data in Gregg and Wadsworth (1998) - looks at the labour market status of men in seventeen regions of Britain.

[9] The observed correlation between the regional male employment rate in 1990 and the 1990-97 change in that rate was –0.026. We would expect to observe a stronger correlation than that in 92% of cases where there was really no

rate in 1990 and the change in that region's male employment rate between 1990 and 1997 (as chart 10 shows).

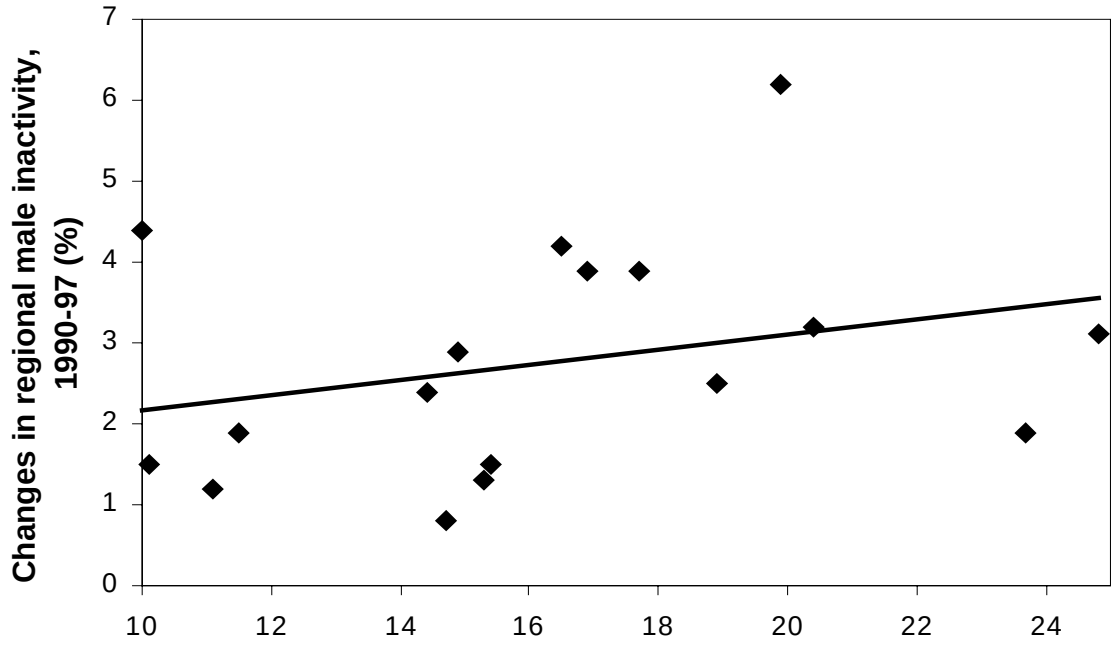
Chart 8: Regional unemployment and inactivity (%), 1997

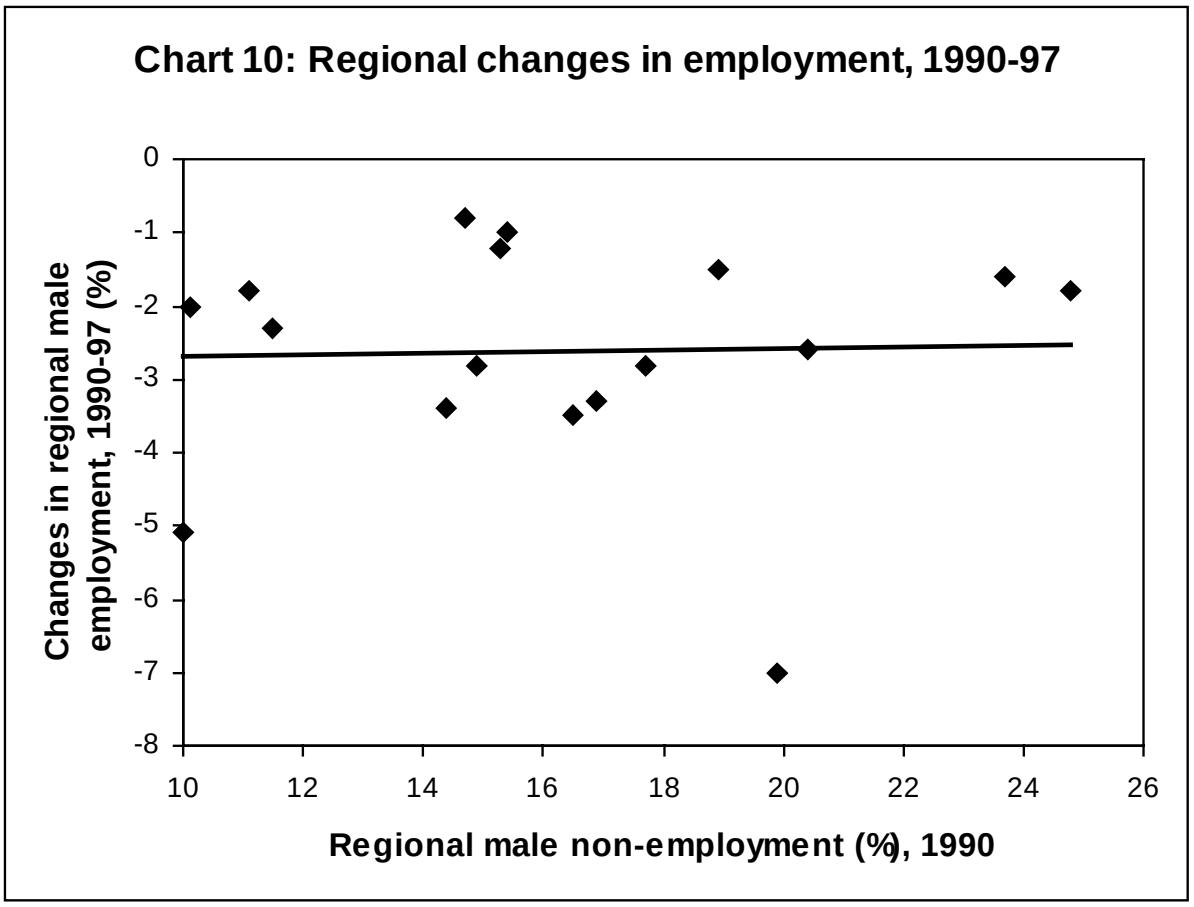


correlation between the variables. These figures are –0.047 and 86% respectively, for the correlation between the change in male inactivity and the change in male unemployment. In both cases, we can regard these observed correlations as spurious, i.e. not statistically significantly different from zero.

Chart 9a: Regional changes in unemployment, 1990-97

Chart 9b: Regional changes in inactivity, 1990-97





There are three implications:

- *Changes in regional inactivity are not correlated with changes in regional unemployment*, in contrast to the strong positive correlation between the levels of inactivity and unemployment at a particular point in time. This shows how drawing inferences about dynamic effects from "snapshot" data can be misleading.
- It provides further evidence that the "discouraged worker" hypothesis is not a good explanation of what has happened to men in the labour market since 1990.
- Even though the gap in regional male unemployment narrowed over the last economic cycle, there was no narrowing of the gap in total male *employment*. Furthermore, total male employment fell. On the basis of the experience of the last cycle, economic recovery alone would seem not to be sufficient to reverse the trend of falling male employment. That is not to say that the level of output does not affect employment rates: deep recessions certainly harm employment, but recovery alone may not be enough.

4.4 Qualifications

We can also compare the employment rates of people with different levels of educational qualifications. Four different categories[10] are used, based on the highest qualification each individual has attained:

1. Degrees or higher vocational qualifications;
2. A-levels, O-levels, higher grade GCSEs and their academic equivalents, advanced and intermediate vocational qualifications, including apprenticeships;
3. CSEs, lower grade GCSEs, and lower vocational qualifications;
4. No qualifications at all.

Table 5 shows how male employment rates vary with age for people with different levels of educational qualifications. Higher qualifications tend to be associated with higher employment, at any given age. And older people are less likely to be in work, for a given level of educational qualifications.

Table 5: Male employment rates in 1997, by qualification (%)

Highest qualification:	Degree	A or O level	CSE	No formal qualifications	Everyone
Age 40-49	94.2	88.7	83.1	68.1	86.2
Age 50-57	85.8	81.5	79.0	62.8	78.2
Age 58-60	67.5	64.9	63.5	50.4	61.3

Table 6 describes the changes since 1979, which employment among older people falling the furthest. At least two different effects seem to be at work. First, men with lower qualifications have, for a given age, generally faced bigger declines in employment. This connection is especially clear among people in their forties and early 50s. Men without any formal qualifications have seen particularly large falls. (However, fewer men were in this category by 1997. In 1979, 62% of men aged 58-60 had no educational qualifications, compared to 27% of men aged 58-60 in 1997.)

There seems to be an additional effect at work leading to larger reductions in employment rates among more qualified men in their late 50s. Older men[11] with degrees or higher vocational qualifications

[10] These categories are amalgamations of the nine categories set out by Robinson (1997, page 14).

[11] We do not have data for the educational qualifications of men aged over 60 in 1979 on a comparable basis.

suffered a slightly larger percentage point reduction in employment than other groups of the same age (except for people with no qualifications at all). This represents, however, a substantially bigger proportionate increase in non-employment. Non-employment among older graduates has quadrupled from 8% to 32%, while all three other groups have seen their non-employment either doubled or tripled.

Table 6: Fall in male employment rates between 1979 and 1997, by qualification (%)

Highest qualification:	Degree	A or O level	CSE	No formal qualifications	Everyone
Age 40-49	-4.2	-7.6	-12.1	-22.6	-7.7
Age 50-57	-9.8	-12.6	-14.7	-25.9	-12.9
Age 58-60	-24.7	-22.1	-20.8	-32.2	-22.1

Overall, therefore, there seem to be at least two forces at work. One reduces employment among all men, especially if they have lower educational qualifications and/or are older. Separately, another effect seems to be reducing employment especially among better-qualified men in their late 50s.

4.5 Analysis by birth cohort

We have already looked at the labour market status of people of different ages at two particular points in time (1979 and 1997), and at aggregate changes in between. Another way to analyse the Labour Force Survey is to compare people of the same age but of different "cohorts". (A cohort is a group of people born in the same period. Here we consider cohorts of people born in the same five-year period, e.g. 1922-1926, 1927-31 etc.)

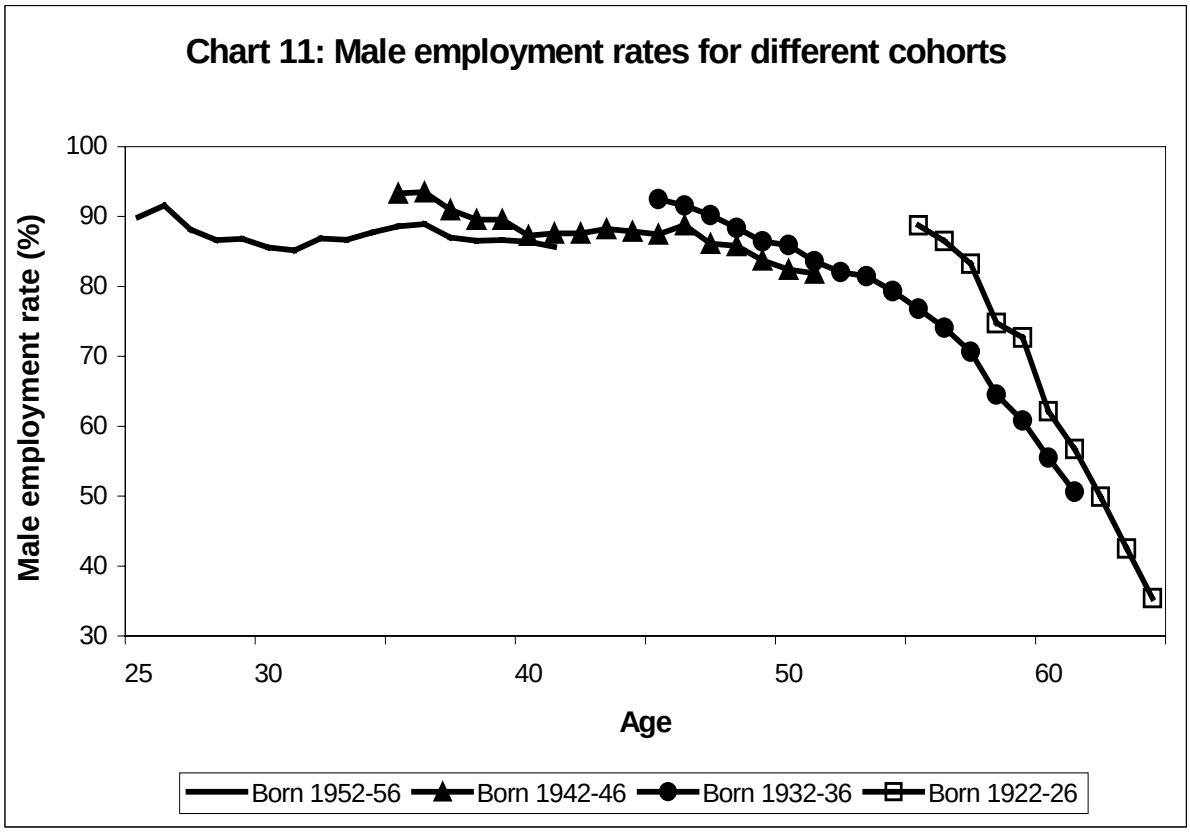
Section 4.2 showed that the changes in aggregate employment did not simply imply a one-off shock when male employment rates fell substantially in the early 1980s. One advantage of cohort analysis is that we can determine whether the decline in male employment:

- has particularly affected one or two cohorts; or
- is part of an ongoing trend, with each successive cohort of men more disadvantaged (in terms of lower employment rates) than previous ones.

Both these scenarios are consistent with the severe consequences, associated with the decline of traditional industries, for men who were

in their late forties or fifties at the start of the early 1980s. However, they have different implications for the future. Under the first, there is a clear concern for the generation affected, but the problem of declining employment would reduce naturally over time. In particular, the employment rate would rise again once that generation reach retirement age. On the other hand, the second scenario would give no grounds for complacency. It would imply that the trend is not likely to reverse of its own accord and, unless there were other offsetting effects, employment rates will continue to be significantly lower than they used to be.

Later cohorts have lower male employment, at every age, according to Chart 11. For example, the employment rate of 50-year-old men born in 1942-1946 was lower than the employment rate of 50-year-old men born between 1932 and 1936. The second scenario therefore fits the data better[12].



[12] With male employment rates lower among later cohorts, the first scenario could only be true if men who were then in their 20s were hit harder by the early 1980s recession than people who were then in their 40s and 50s. However, this is implausible, as older workers are likely to have accumulated more industry-specific and firm-specific skills, and so the consequence of losing their jobs is therefore likely to be more severe. Gregg, Knight and

Later cohorts also have higher inactivity, mirroring their lower employment (Table 7). Some of the changes – e.g. between the two most recent cohorts at age 50 – are quite small. However, many of the others – especially at age 55 and age 60 – shows a consistent pattern of increasing economic inactivity.

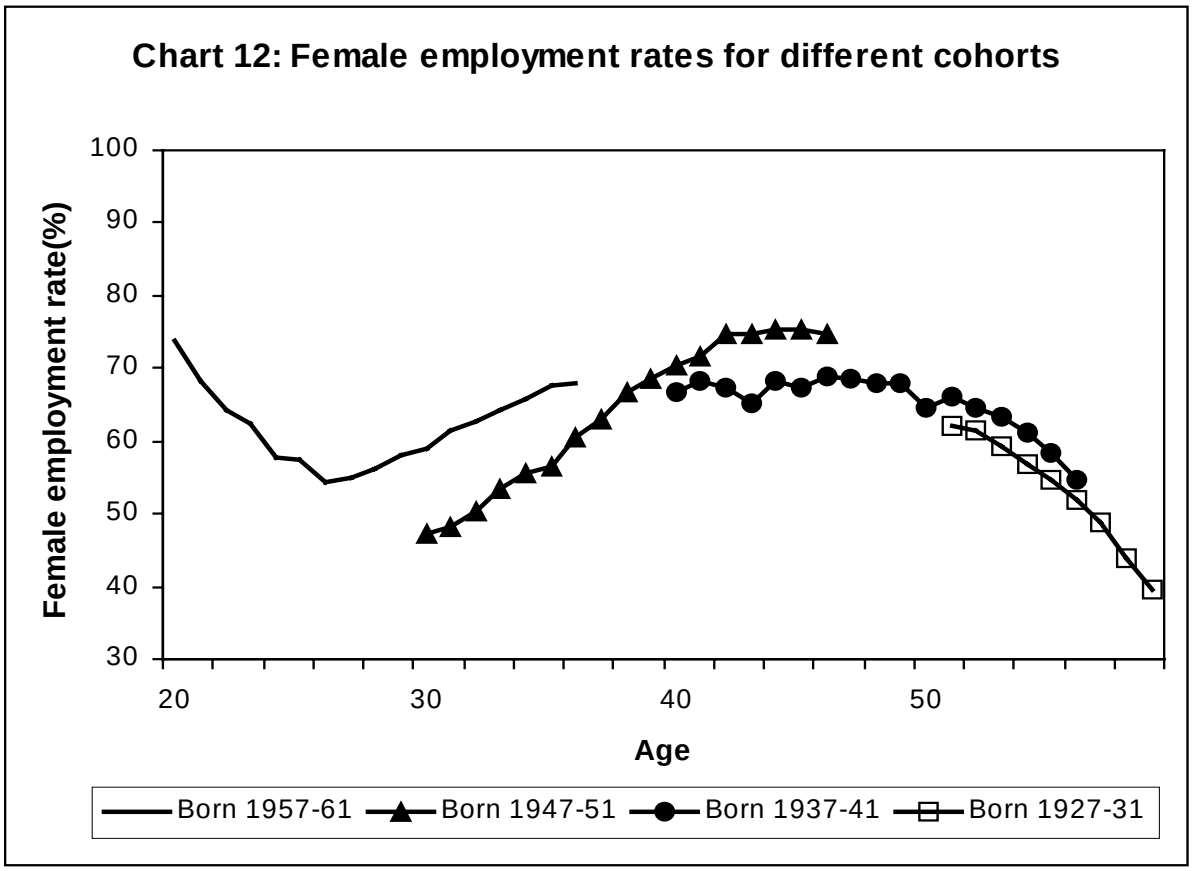
Table 7: Male inactivity rates (%)

Cohort born in:	Age 50	55	60	64
1922-26	n / a	6.7	30.9	61.0
1927-31	3.7	12.9	34.6	61.7
1932-36	7.5	16.2	38.2	n / a
1937-41	10.3	19.1	n / a	n / a
1942-46	10.9	n / a	n / a	n / a

Chart 12 shows the opposite trend for women. Later generations of women are more likely to be in paid employment, reflecting greater labour market participation. Such increases from one cohort to the next are particularly large at younger ages. There are increases for older women too, with one exception[13]. Employment changes are mirrored by opposite changes in economic inactivity, providing further confirmation of the pattern described in the rest of Section 4.

Wadsworth (1998) show that the cost of job loss increases with age and with experience in the most recent job.

[13] The exception is the cohort born between 1922 and 1926, who have a slightly higher employment rate when aged 55-59 than the cohort immediately after them. This may be related to the fact that these women will generally have left school during the Second World War, when female employment was increased rapidly.



This section has shown that men born later have lower employment rates, at a given age, than men born earlier. This implies that falling male employment is part of an ongoing trend, with each successive generation more disadvantaged than the last, rather than a one-off effect that particularly affected one generation of relatively older men. The declining employment of older men is therefore not likely to reverse of its own accord. Extrapolating from the 1979-1997 data, and not taking account of the effects of recent policy or other changes, we would expect to see the employment of older men continuing to decline (although not as quickly as in 1979-1983). The situation for women is the opposite, with higher employment rates among each successive cohort.

4.6 Conclusions from Labour Force Survey data

To summarise the evidence in Section 4:

- Male employment has fallen substantially. Men of all ages were less likely to be in work in 1997 than they were in 1979.
- The fall among older men has been particularly steep. The age at which male employment rates now seem to start declining from an earlier age: about age 50 rather than 55.

- Men aged 50-65 account for more of the fall in male employment than men aged 25-50, even though there are twice as many men aged 25-50 as there are men aged between 50 and 65.
- Economic inactivity has risen sharply alongside the decline in male employment. Unemployment increased by much less. For example, the male employment rate fell 10.2 percentage points between 1979 and 1997, while economic inactivity increased by 8.4 percentage points and unemployment by 1.9 percentage points. This strong connection between inactivity and employment is particularly true for older workers. For men aged between 18 and 25, the increase in unemployment is slightly higher than the increase in activity.
- Most of the fall in male employment since 1979 took place before 1983. However, this does *not* mean that these changes can simply be attributed to a one-off shock in the early 1980s. The data show that the picture is more complicated. One puzzle is why economic inactivity has continued to rise since 1993, while unemployment fell sharply, contradicting the "discouraged worker" hypothesis.
- Regions with high male inactivity, at a particular point in time, also tend to have high male unemployment. However, changes in male inactivity are not correlated with changes in male unemployment over the last cycle (1990-97). While the gap between regional unemployment rates has narrowed since 1990, the gap between regional inactivity rates widened. Changes in male employment since 1990 are not correlated with the level of regional employment then. On the basis of the last economic cycle, therefore, economic recovery alone would not be sufficient to reverse the trend of falling male employment. That is not to say that the level of output does not affect employment rates: deep recessions certainly harm employment, but recovery alone may not be enough.
- People with higher educational qualifications are more likely to be in work, at any given age. Similarly, for a given level of educational qualifications, older people are less likely to be employed. Male employment rates have fallen at all levels of qualification. There are at least two different trends to describe in the changes since 1979. The first exacerbates the existing situation, reducing employment among all men, especially if they have lower educational qualifications and/or are older. Separately, another effect seems to be reducing employment particularly among better-qualified men in their late 50s.

- These changes are part of an ongoing trend, with each successive generation of men facing lower employment rates than its predecessors, and have not simply affected one unfortunate generation. Looking at, for example, employment rates among 50-year olds, we see that men born later are less likely to be in work at that age than men born earlier.
- Changes to the position of women in the labour market have in many ways been in the opposite direction to those affecting men. For instance, female employment has risen dramatically, offset by substantially lower economic inactivity and with (again) relatively little change in unemployment. Later generations of women are more likely to be economically active, and more likely to be employed, than earlier generations. However, at all ages, women are still less likely than men to be in paid work.
- Older women have not shared in the general increase in female employment. While employment among older men fell by about 10 percentage points more than male employment as a whole, so female employment increased by about 10 percentage points more than employment among older women.
- Looking to the future, the decline in older women's employment may be caused by a cohort effect. If so, that might be less of a long-term concern. The concerns might then rest on (a) lower male employment, (b) sharper falls among older men, implying a trend of more people leaving the labour force early, (c) the possibility that the next generation of men will stop work even earlier than the current generation, and (d) that women in the future will leave the labour force earlier than they would have done had men's effective retirement age not fallen.

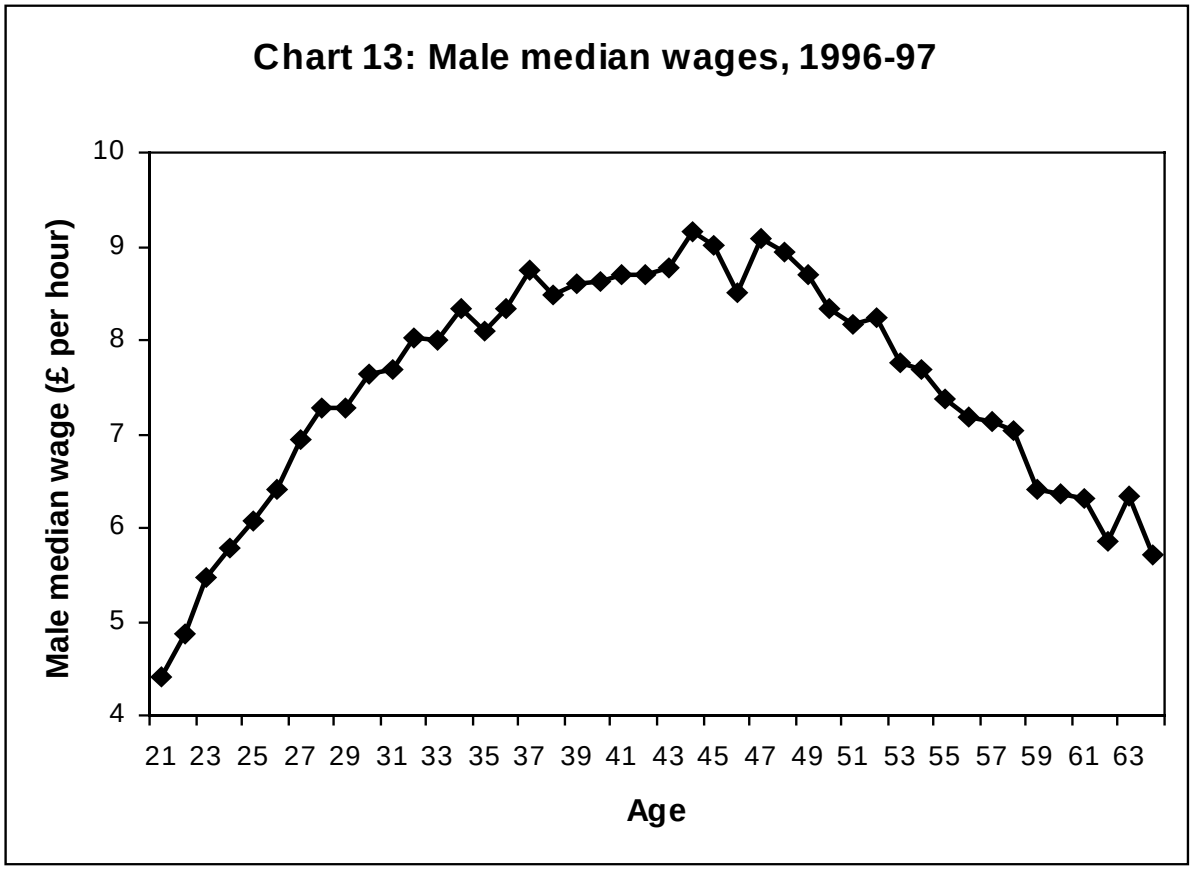
5. What happens to wages as people age?

One explanation for falling employment among older workers is related to the wages they can command. Work is likely to be less attractive to people whose potential wages are lower. Employers may also be more reluctant to employ older workers if they are less productive but, for example because of the legal constraints, wages cannot be adjusted to compensate. It is worth considering how wages vary with age and educational qualifications before turning to the possible consequences of the wage profile. As with employment, the story for women is very different from that for men.

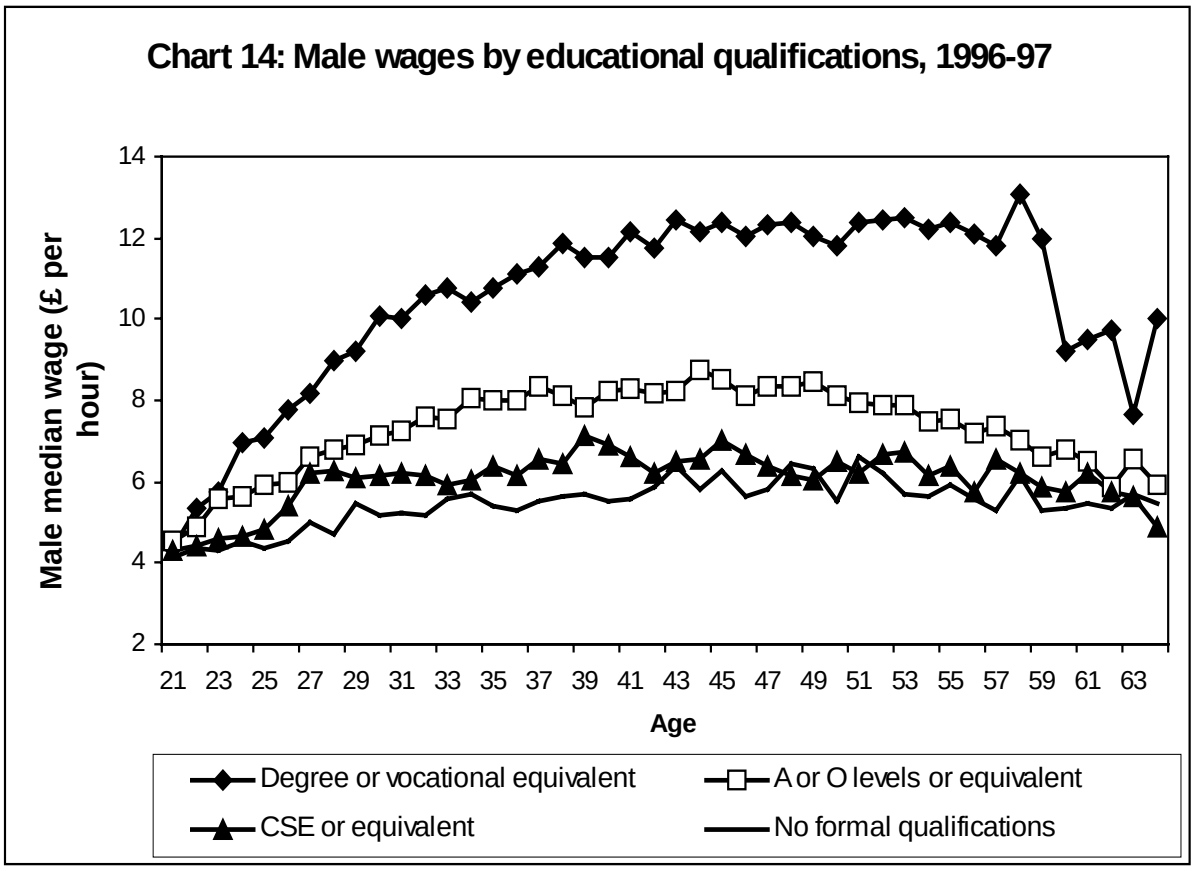
5.1 Male median wages

Chart 13 shows the profile of median hourly wages for employed men in 1996 and 1997, based on the Labour Force Survey[14]. At a particular point in time, 45-year-old men have the highest wages. Median hourly wages among men in their 60s are similar to those earned by men aged in their mid-20s.

Does this mean that men aged over 45 are seeing their hourly wages fall? Not necessarily. First, there is a cohort effect, related to the better educational qualifications of people born later. Chart 14 shows male median wages for different levels of qualifications. The fall is much less severe at each level of qualifications than for men as a whole. Part of the apparent decline in wages therefore reflects the fact that qualifications are less widespread among older workers (which in turn reflects the changes to the education system since the last War).



[14] There are no Labour Force Survey data on hourly wages prior to 1993. However, information on longer-run changes in the age profile of real wages appears below.

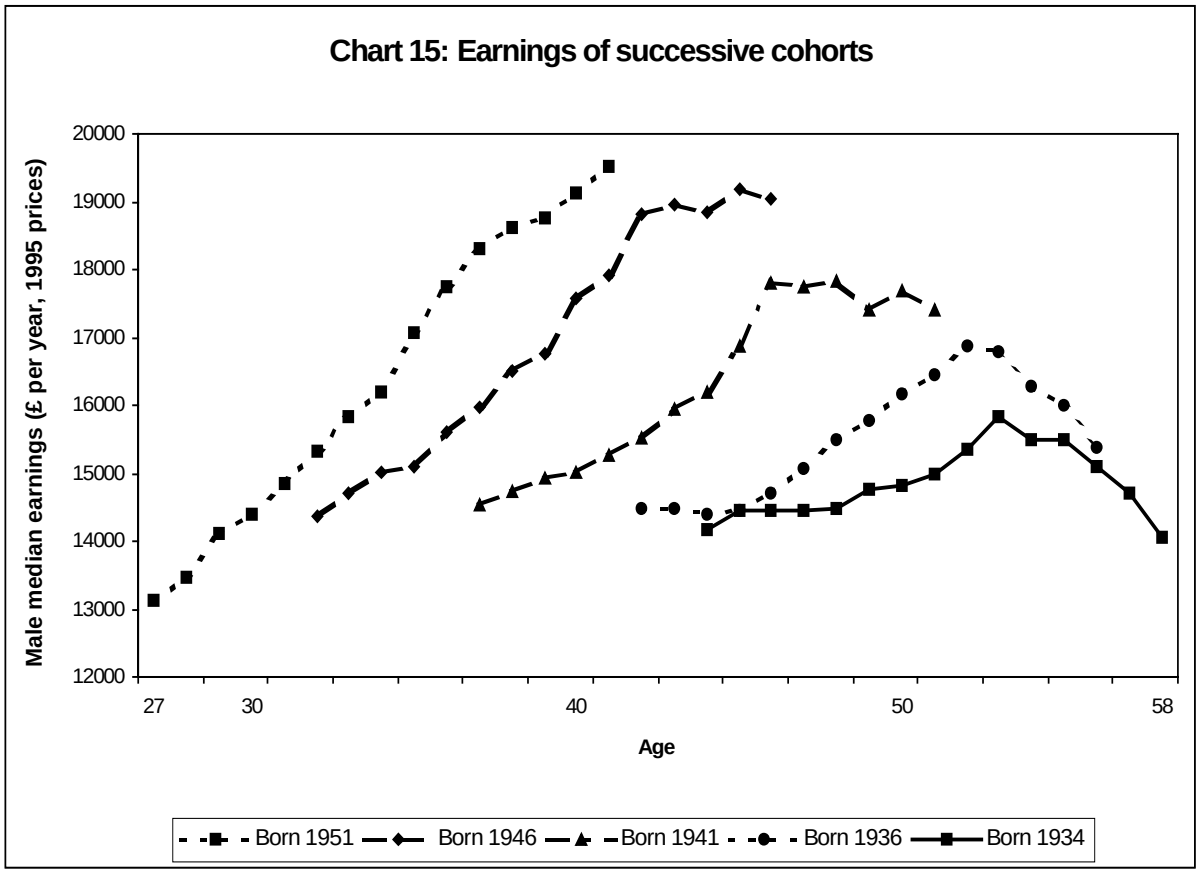


However, older men in their 60s with A- or O-levels (or equivalent vocational qualifications) still have significantly lower median wages than their counterparts in their late 40s or their 50s. The same seems to be true of graduates, although the small data sample and large variation in wages make it harder to draw inferences. Cross-section data cannot tell us, though, whether these lower median wages occur because of:

- individuals receiving lower wages as they get older; and / or
- a further cohort effect. In addition to the effect of increased qualifications, later generations tend to be richer over their lifetimes than their parents. This follows from the fact that the trend growth is positive; and / or
- selection. Charts 13 and 14 feature all the people reporting wages at the time of the survey. Those who cease to work may not be a random sample of all people in employment. If higher-paid people are more likely to drop out of the labour force, for example, the median wage would fall even if everyone in work is paid the same as before.

It is necessary to use longitudinal data, which follow individuals over a number of years, to distinguish between these three possibilities.

Ball and Marland (1996) use the Lifetime Labour Market Database (LLMDB), based on Inland Revenue and National Insurance data. The LLMDB is a longitudinal source, containing fifteen years of National Insurance records for a sample of men aged between 25 and 44 on 1st January 1978. Their cross-sectional results show a similar pattern to Chart 13, although male median earnings peak a little earlier, typically between the ages of 37 and 41. These results may not be inconsistent with the Labour Force Survey data presented above, as Ball and Marland look at annual, rather than hourly, earnings. (This may imply that annual working hours decline slightly as men reach age 40.) An alternative explanation is that two different time periods are being covered: Ball and Marland consider 1978-79 to 1992-93, while there were no wage data in the Labour Force Survey until 1993. It may also show that selection is an important factor, as Ball and Marland exclude people who did not have earnings in every year between 1978-79 and 1992-93.



The median real earnings of a cohort continue to rise until about age 50, as chart 15 shows[15]. Men just over than the age of 45 – the peak in Chart 13 – do not face falling (median) real wages. Instead, their cohort's

[15] Chart 15 is based on the longitudinal data in Ball and Marland (1996, page 38).

earnings will continue to grow, albeit slowly, and be overtaken by a younger cohort whose wages are growing faster.

The economic cycle has a substantial influence on the precise peak. Of the 20 cohorts considered by Ball and Marland, 11 had their highest real earnings during the last economic boom (seven in 1989-90, the others in 1987-88 and 1988-89) and the others peaked at the end of the sample period. The age at which cohorts earned most therefore varied between age 45 to age 53.

5.2 How have male wages changed?

We have already seen that the employment rates of older men have fallen, both in absolute terms and relative to other men, in recent years. If older men's wages had also fallen behind in relative terms, that would be evidence of an adverse shock in labour demand against older men.

The data show that the relative wages of older men have indeed fallen since 1979, although they now have higher earnings in real terms. According to information from the New Earnings Survey which was calculated for (but not published in) Dickens (1996), mean male hourly wages increased in real terms between 1979 and 1994 for every age from 22 to 59 inclusive. Men in their late 50s earned around 30% more than their counterparts fifteen years earlier, while men in their late 40s were nearly 45% better off.

The above results focus only on average earnings. Gosling, Machin and Meghir (1996), Schmitt (1995), Dickens (1996) and Machin (1996) have all shown how the earnings distribution has widened in recent years. Dickens (1996, Figure 2) implies that, between 1975 and 1994, the variance of the log hourly wages among men aged 50 doubled. This greater dispersion has affected older and younger workers alike[16].

5.3 The cost of job loss

If a person loses their job and finds that they can only earn a lower wage afterwards, they may be less likely to return to work. Gregg, Knight and Wadsworth (1998) measured the effect on wages of losing a job. Using data from the British Household Panel Survey, they found that the costs were significant, and especially large for older workers. People

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[16] The increase in variance for men aged 59 was also considerable, but slightly less (up 85 per cent, rather than doubling). Selection could be one explanation, especially if the men leaving the labour market in their 50s were more likely to have been at the top or the bottom of the distribution, rather than the middle.

returning to work after being displaced earned on average 10% less in real terms than they had in their previous job. People who stayed had a 5% increase in earnings over the year, so the total "pay penalty" - the gap in wage growth between "stayers" and people displaced during the year - was 15%[17]. The gap is even larger – 24% - for people over the age of 50. Older workers displaced from long-held jobs are also particularly badly affected. According to Gregg, Knight and Wadsworth's regression results, a man over 50, without formal educational qualifications, who had worked in the same job for more than five years prior to displacement, and who are without a job for more than six months before returning to work, faces a 35% loss in his real wage growth.

5.4 Female wages

The evidence on women's wages is in Charts 16 and 17. Male median wages are higher than female's at all ages. Cross-sectional data show that female median hourly wages peak at age 32, much earlier than men's. However, for a given level of educational qualifications, wages do not decline as age increases. This suggests that the earlier peak is indicative only of the fact that younger women have on average more qualifications than older women.

[17] A small part of the increased gap in monthly earnings was due to the displaced returning to jobs with fewer hours. The pay penalty for people who were displaced from a full-time job and started work in another full-time job was 12%.

Chart 16: Female median wages, 1996-97

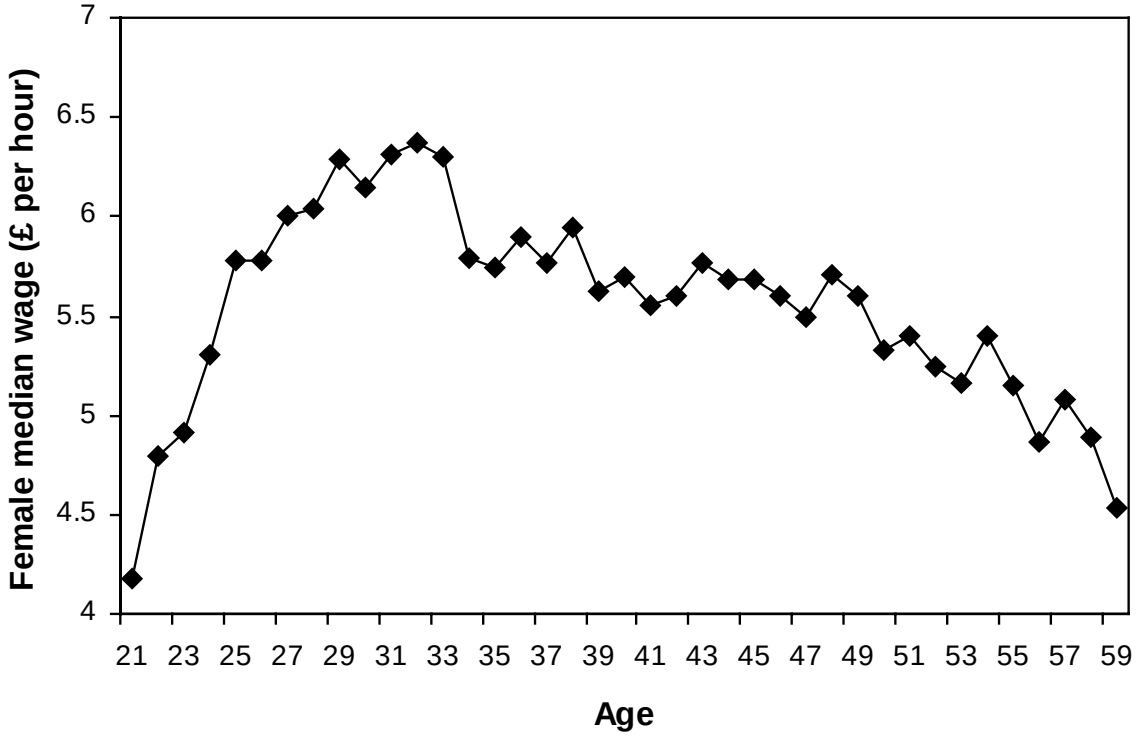
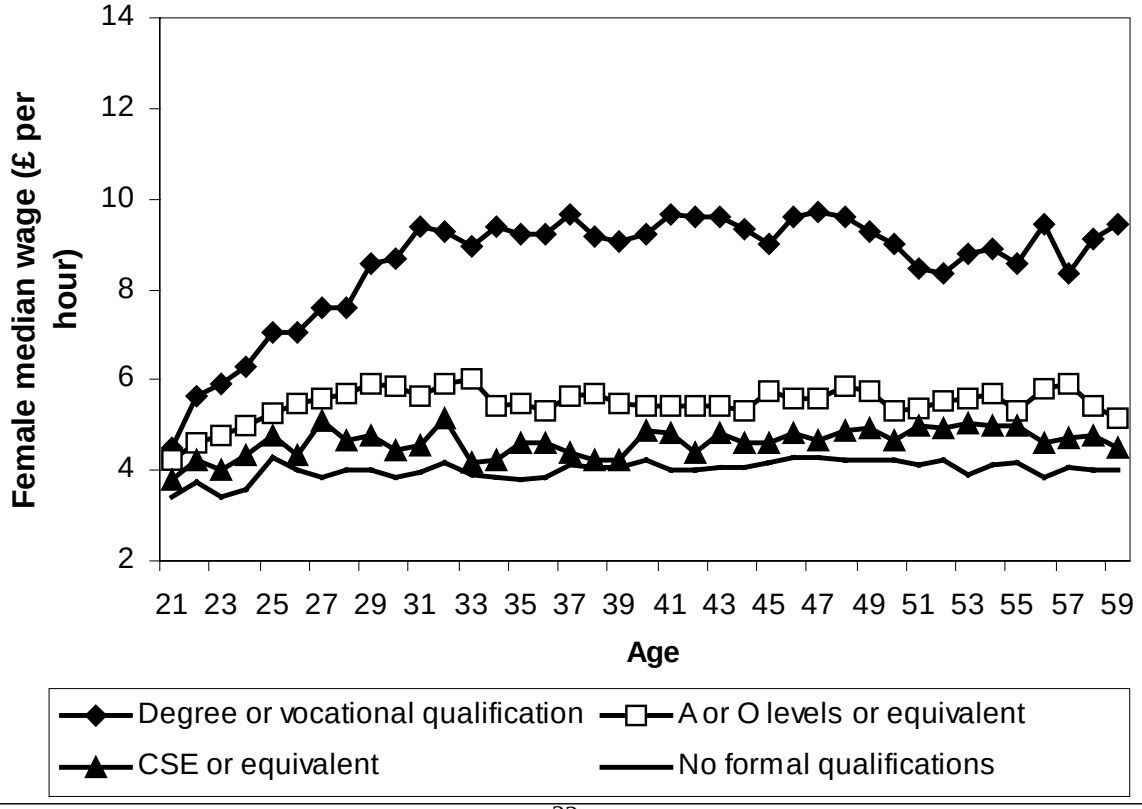


Chart 17: Female wages by educational qualifications, 1996-97



Conclusions

The following conclusions can be drawn on the basis of the combination of longitudinal and cross-section data:

- at any given time, men around the age of 45 have the highest median hourly earnings;
- real earnings for individuals continue to increase until a man (with the median wage for his age) reaches the age of 50 or so, and then decline slightly;
- the first and second conclusions are consistent because later cohorts have higher lifetime earnings and overtake those who are in their late 40s and are experiencing slower earnings growth;
- the economic cycle has a significant impact, so the precise age when real median earnings peak is "about age 50" and also around the time of an economic boom (around 1988 in the case of the LLMDB data);
- wages have become more dispersed for young and older workers alike;
- the average wages of older men have not increased as much in real terms as the earnings of men in their mid-40s. Older men have therefore seen both a disproportionate fall in employment and lower relative wages. Together, these provide evidence that older men have faced an adverse shock to labour demand.
- Wages can also have an effect on employment through labour supply. If someone can only earn low wages, they may not find it worthwhile to return to work. People who are displaced from the labour market often suffer significant falls in the monthly wages. The falls are even larger for older workers.
- Among women, 32-year-olds have the highest median hourly wages. The decline in median earnings after that peak can be fully explained by older women having on average lower educational qualifications. Qualifications can explain some, but not all, of the gap between the median earnings of 45-year-old men and older men.

6. Results from the British Household Panel Survey

The Labour Force Survey is a representative sample of people at each age, so Section 4.5 could draw conclusions about the employment status of cohorts by comparing successive observations. As different people are interviewed every year, the LFS cannot tell us what is happening to

particular individuals over a number of years, or identify the transitions and trajectories that people experience. This is important because, for example, the consequences of the following two situations may be very different, even if the overall employment rate at any given time is the same:

- people currently without work are likely to continue to be workless;
- people who are out of work today are likely to find work in the near future, so that individuals face shorter spells of unemployment or economic inactivity. Even if the employment rate is the same as in the first scenario, more people would be workless at some point in a five-year period, although the average durations of worklessness would be shorter. In addition, aggregate employment would be increased if more people had a close connection to the labour market.

Hills (1998) sheds light on the different implications of poverty being mainly a short-term or a long-term experience, and describes trajectories up and down the income distribution. Longitudinal data, which follow the same individuals over a period of time, are needed to investigate transitions between employment, unemployment and inactivity.

The British Household Panel Survey (BHPS) can be used for this purpose, however, as the same people are interviewed every year. There are about 10,000 adults, from a nationally representative sample of households, in the BHPS. Other adults also join the panel if they are members of new households containing people in the original sample.

This paper reports results from the first six waves of the BHPS. People who have given a full interview in all six waves have provided information on their labour force status on 1st September in seven years[18] (1990 to 1996 inclusive), and whether they have had any spells on unemployment or long-term sickness during these years. This enables us to separate people's employment histories into three categories:

- *employed throughout*. These people were employed on 1st September of every year, and reported no spells of unemployment or long-term sickness. They do not have to remain in the same job throughout: people who move from job to job without a spell of unemployment or long-term sickness are in this category;

[18] Including the retrospective question in the first wave. We have seven-year employment histories for three-quarters of the sample. Appendix A contains further background information on the analysis of the BHPS.

- *displaced from the labour market*. These people were employed initially, but were either not employed on 1st September of a later year or reported a spell or unemployment or long-term sickness. A minority of these people later return to the labour market, and are still employed on the last observed 1st September;
- *not employed initially*. This category contains people whose first reported labour force status was something other than paid employment or self-employment.

In order to concentrate on older people of working age, the sample analysed includes people aged 45 or over but under state pension age at the time of their first recorded labour force status. Table 8 sets out the employment status of the sample.

Table 8: Employment rates for BHPS panel* (%)

	Men				Women			Total
Age at beginning:	**45-49**	**50-54**	**55-59**	**60-64**	**45-49**	**50-54**	**55-59**	
Employed initially	90.5	81.9	69.8	52.3	72.8	67.4	53.1	70.7
Not employed initially	9.5	18.1	30.2	47.7	27.2	32.6	46.9	29.3
Employed at end	78.9	64.4	37.3	17.3	63.6	45.9	27.3	50.2
Not employed at end	21.1	35.6	62.7	82.7	36.4	54.1	72.7	49.8
Employed initially and employed at end	77.3	61.4	35.4	15.4	57.1	42.7	24.1	47.0
Not employed at end	13.2	20.5	34.3	36.8	15.7	24.7	28.9	23.7
Not employed initially and employed at end	1.6	3.0	1.9	1.9	6.5	3.2	3.2	3.2
Not employed at end	7.9	15.1	28.4	45.9	20.7	29.4	43.7	26.1
% of those initially employed who were:								
Employed throughout	71.4	61.5	44.9	20.9	68.5	52.6	37.6	55.8
Displaced	28.6	38.5	55.1	79.1	31.5	47.4	62.4	44.2

Note:

* For the three-quarters of the sample who provided full interviews in all six waves, "initially" means "September 1990" and "at the end" means "September 1996". See Appendix A for more details.

Fewer people in each age group are employed at the end of the panel than at the beginning. This is not surprising, as displacement

includes voluntary retirement at a pre-planned age. As well as being less likely to be in employment at all, older age groups are also more likely to be displaced within the six-year period, and less likely to return after displacement, than younger ones. At a given age, women are more likely to be displaced and less likely to return than men.

Employment rates are lower for older age groups, and a substantial number of people are out of work before the state pension age. Just over 90 per cent of men aged 45-49 were employed initially, compared to 53 per cent of people less than five years away from the state pension age (i.e. men aged 60-64 and women aged 55-60 initially). These BHPS data are consistent with the LFS evidence that fewer than half 62-year-old men and 58-year-old women are working and with Tanner's (1997) finding that the mean retirement age for men is 62 and for women is 59.

29 per cent of the sample who were not employed at the beginning of the survey period, and half were without work at the end. This partly reflects low rates of returning to work. (There is more detail on the people who were initially out of work, and on return rates, in Section 6.3.)

Of the 71 per cent of the sample who were employed initially, 56 per cent of these were employed throughout their period of observation (typically six years), while 44 per cent were displaced from the labour market at some point. The latter may be because of a period of unemployment, long-term sickness, or (voluntary or involuntary) retirement.

6.1 Who is displaced from the labour market?

Tables 9 and 10 report the results of a regression to determine which characteristics are associated with whether or not a person is displaced from the labour market. The regression includes all those in the sample who were initially employed. Displacement involves a period of unemployment, long-term sickness or early retirement. People who move from job to job without a period of unemployment or long-term sickness are held to have been in continuous employment.

The dependent variable for the regression is whether or not a person was displaced. As this only takes the values of 0 (for employed throughout) and 1 (for displaced), the assumptions for ordinary least squares regressions do not hold. Such regressions are therefore not appropriate. Instead, we estimate a probit model[19].

[19] More detail on the probit regression is in Appendix A.

The coefficients of the model are shown in Table A1 in Appendix A. Using the best of these regressions, Table 9 gives the probabilities of someone being displaced given their age, gender, wage quartile, whether or not the person was working in a declining industry, and occupational pension scheme membership.

Table 9: Probability of being displaced during the BHPS sample period* (%)

	Men				Women		
Age at beginning	**45-49**	**50-54**	**55-59**	**60-64**	**45-49**	**50-54**	**55-59**
In non-declining industries:							
Q1 of wage distribution and OP	19.6	28.9	39.6	65.6	25.6	36.1	52.5
Q1 and no OP	12.1	19.3	28.2	53.6	16.6	25.2	40.2
Q2 and OP	17.8	26.7	37.0	63.1	23.4	33.6	49.8
Q2 and no OP	12.1	19.3	28.2	53.6	16.6	25.2	40.2
Q3 (with or without OP)	16.9	25.5	35.7	61.8	22.4	32.3	48.4
Q4 (with or without OP)	20.6	30.2	41.0	66.9	26.7	37.5	54.0
In declining industries:							
Q1 of wage distribution and OP	29.3	40.4	51.9	76.2	36.5	48.2	64.6
Q1 and no OP	19.6	28.9	39.6	65.6	25.6	36.1	52.5
Q2 and OP	27.0	37.8	49.2	74.1	34.0	45.5	62.1
Q2 and no OP	19.6	28.9	39.6	65.6	25.6	36.1	52.5
Q3 (with or without OP)	25.9	36.5	47.8	73.0	32.7	44.2	60.8
Q4 (with or without OP)	30.6	41.8	53.4	77.4	37.9	49.7	66.0

Note:
OP = member of an occupational pension scheme
Q1 = top quartile of the wage distribution
* The sample period typically lasts from 1990 to 1996.

Table 10 gives the marginal effect of being a member of an occupational pension scheme on the probability of displacement. People who are in the top half of the wage distribution and are members of an occupational pension scheme have a significantly higher probability of being displaced from the labour market than people with the same wages but no occupational pension scheme. Occupational pension membership has no significant effect on people whose wages are in the bottom half of the distribution.

Table 10: Effect of occupational pension on the probability of displacement (percentage points)

	Men				Women		
Age at beginning	**45-49**	**50-54**	**55-59**	**60-64**	**45-49**	**50-54**	**55-59**
Q1 in declining industries	+9.7	+11.4	+12.3	+10.6	+10.9	+12.1	+12.1
Q1 in non-declining industries	+7.5	+9.6	+11.4	+12.0	+8.9	+10.9	+12.3
Q2 in declining industries	+7.4	+8.8	+9.6	+8.5	+8.4	+9.5	+9.6
Q2 in non-declining industries	+5.6	+7.4	+8.8	+9.5	+6.8	+8.4	+9.6
Q3 and Q4	0	0	0	0	0	0	0

Older age groups are more likely to be displaced (within the six-year period) than younger ones. Women are more likely to be displaced than men of the same age[20]. The following results hold, after taking age and gender effects into account.

- People in the bottom quartile of the hourly wage distribution are at the greatest risk of displacement.
- People in the top half of the wage distribution have a reduced chance of displacement, *provided they do not have an occupational pension*.
- Being in a job with an occupational pension significantly increases your chances of being displaced if you are in the top half of the wage distribution, often by ten percentage points or more. Men in their early 50s with an occupational pension and in the top quartile of the wage distribution are 50% more likely to be displaced than a man with the same age and hourly wages but no occupational pension. The effect on the third quartile is very weak and on the bottom quartile non-existent.
- These results hold, even after controlling for the fact that some people initially worked in industries that faced sharp employment falls during the period, while other industries grew. Displacement was, unsurprisingly, higher among people working in an industry whose employment fell by more than 2 per cent a year on average

[20] As the state pension age is lower for women than for men, women are closer to the state pension age than men of the same age.

between 1990 and 1995. (See Section 6.2 for further discussion of the data on changes to industry employment.)

- Although working in a shrinking firm increases the risk of displacement, working in a growing firm does *not* reduce the risk. People working in industries whose employment grew between 1990 and 1995 faced almost exactly the same risk of displacement as those who worked in industries whose employment fell by less than 2 per cent a year over these five years. One explanation might be that job increases in growing industries reflected higher recruitment, rather than much more retention of older workers.
- Educational qualifications seem to have no significant marginal effect on displacement rates among older workers, over and above the effect of wages. This result need not be inconsistent with the finding in Section 4.4 (which made no allowance for wages) about employment rates among men with different qualifications[21].
- Finally, sector appears not to have a significant additional effect. The private sector, the civil service, local authorities and the NHS all seem – after controlling for age, gender, wages, occupational pensions, and changes in industry employment – to perform similarly with respect to the displacement of older workers.

6.2 Were older workers initially employed in shrinking industries?

One reason why older workers may have suffered larger employment falls is if they originally worked in industries whose workforce was declining. They might then be more likely to be made redundant.

We measured changes in industry employment between 1990 and 1995. Aggregate employment fell over this period, which included a recession, by an average of ¾ per cent a year over the period. The median industry employment change for the sample was a fall of 1 per cent a year, from which we can conclude that people over 45 were slightly more likely than others to have been working in declining industries in 1990.

The position is, however, much more stark when we break down these data by gender. Men over 45 were much more likely to work in

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[21] Better-educated people are more likely to be towards the top of the wage distribution. It may be that wages have a more powerful effect than qualifications, especially for older workers (who might have attained their qualifications forty years previously). Information about performance in recent jobs and labour market history – which might be more important in respect of older workers – may be captured in the wage, but not in qualifications.

industries that were in decline. Three-quarters of the men sampled initially worked in industries whose employment fell. The median experience was for employment in the industry where they worked at the start if the panel, to shrink by more than 2.5% a year on average between 1990 and 1995, a fall of more than 12% over those five years. The median experience for women, by contrast, was a small increase.

Older men, therefore, are likely to work in declining industries, which in turn increases the risk of displacement. This is an important fact in the context of assessing whether people are leaving work voluntarily or involuntarily. In shrinking industries, people are more likely to be given at best a constrained choice to retire early. It is also significant that being in a growing industry did not reduce the older worker's chance of being displaced.

6.3 Who returns to work?

People whose first recorded labour force status was something other than employment or self-employment, do not appear in the above regression results. Instead, their responses are analysed here.

Table 11 shows the initial labour force status of the sample. 25 per cent of men and 35 per cent of women were initially without work. More than half of the women not in paid work are looking after their families. The others are more likely to be long-term sick or retired than unemployed.

Table 11: Initial labour force status, by gender (%)

	Men, aged 45-64	Women, aged 45-59	All
Employed or self-employed	75.4	65.3	70.7
Unemployed	6.4	2.6	4.7
Long-term sick	8.3	4.6	6.6
Retired	9.5	6.6	8.2
Family care, student or other	0.4	20.9	9.9
Total	100.0	100.0	100.0

The return rates back to employment are low – see Table 12. Only 11 per cent of those not initially employed are back in work by the end of the sample period. A further 7 per cent are in work on 1st September of some year, but are out of work again by the end. The other 82 per cent are not in employment on 1st September of any year covered by the BHPS.

People displaced from the labour market have a better chance of returning to work than those not initially employed, although the return rates are still not high. One-quarter of people in the sample who are displaced – and 49 per cent of men aged 45-49 – have returned to work before the end of the sample period.

Table 12: Proportions returning to work (%)

	Men				Women			Total
Age at beginning:	**45-49**	**50-54**	**55-59**	**60-64**	**45-49**	**50-54**	**55-59**	
% of those not initially employed, who during the sample period:								
return to employment at some point	22	26	11	9	35	19	11	18
return and stay in work	17	17	6	4	24	10	7	11
return but don't stay	6	9	5	5	11	10	4	7
never work in period	78	74	89	91	65	81	89	82
% of displaced who:								
return to employment	49.0	35.1	10.7	10.9	31.6	22.8	12.6	24.1
don't return	51.0	64.9	89.3	89.1	68.4	77.2	87.4	75.9
Memo items:								
% not employed initially	9.5	18.1	30.2	47.7	27.2	32.6	46.9	29.3
% employed initially and later displaced	25.9	31.5	38.4	41.4	22.9	32.0	33.1	31.2

Table 13 shows how the return rates (of people not initially employed) vary according to gender and initial labour force status. Unemployed people and women looking after their family have the greatest chance of moving into paid employment. The long-term sick have the least chance of returning to employment, and even less chance than people who are retired.

Table 13: Return rates to work, by initial labour force status and gender (%)

Initial labour force state:	Men, aged 45-64	Women, aged 45-59
Unemployed	30.8	48.2
Long-term sick	4.0	4.2
Retired	11.3	10.1
Family care, student or other	*	24.3
All non-employed	14.1	20.7

Note:
* sample size too small to make any robust estimate

There are significant movements within the broad category of being without paid work. Measuring labour force status only on 1st September in different years will understate the number of transitions but, even so, it can be seen that many people move from being unemployed to being long-term sick, and from both unemployed and long-term sickness into retirement. In each case, the attachment to the labour market is reduced as a result.

Tables 14 and 15 show movements between employment, unemployment and inactivity. Men initially aged over 55 are more likely to move into retirement, while moves into long-term sickness are concentrated among men initially aged 45-54. The bottom two numbers in the left-hand column of Table 14 highlights the fact that men who describe themselves as being retired are more likely to be back in work later than the long-term sick.

Table 14: Men's transitions between different labour force states (%)

Labour force state initially:	Labour force state at end of BHPS period					
	Employed	Unemployed	Long-term sick	Retired	Student or other	Total
Employed	67	5	6	22	0	100
Unemployed	19	26	23	31	1	100
Long-term sick	3	3	62	31	1	100
Retired	5	0	2	93	0	100

Nearly all the men moving from unemployment to retirement over the period were among those who had been out of work on every 1st

September throughout the sample period. This shows that attachment to the labour market is likely to be weakened by a long period of unemployment.

Table 15: Women's transitions between different labour force states (%)

Labour force state Initially:	Labour force state at end of BHPS period:					
	Employed	Unemployed	Long-term sick	Retired	Looking after family	Total
Employed	66	4	4	20	6	100
Unemployed	33	15	4	19	30	100
Long-term sick	4	0	58	31	6	100
Retired	6	3	1	74	16	100
Looking after family	15	1	6	24	54	100

6.4 Can we look further ahead?

We can observe, from Table 8, that the proportions employed in each age group at the end of the sample period are close to, and slightly lower than, the proportion initially employed in the next older group. The differences arise partly because the sample period lasts for up to six years – from September 1990 to September 1996 – while the gap between age groups is only five years. This is a useful consistency check, but it also allows us to draw inferences about the rest of the working lives of the younger people in the survey.

The "quasi-panel" draws on the fact that a representative sample of 45-49 year olds will, five years on, be a reasonably representative sample of 50-54 year olds. Joining the labour force histories from the BHPS waves of successive cohorts gives an approximation to a labour force history of a single cohort over a longer period. The quasi-panel can be used to estimate the proportion of people in their late 40s who might be expected, if the situation is unchanged from the 1990-96 period, never to work again.

The estimate depends crucially on what is assumed when joining the two cohorts. In total, the sample of 50-54 year old men not initially employed should have similar characteristics to the men who were initially aged 45-49 and who were not employed at the end of the period. Within these cohorts, however, we know that some of the younger group had only recently been displaced, while others were not observed as employed at all. We also know that some of the older group will find

work, but that 74 per cent will not. The proportion who will not work again will depend on the answers to the following questions.

- Are those who have already spent a considerable period out of the labour force more likely to be out of work in the future?
- Or are these 74 per cent a random sample of those not employed initially?

Upper and lower bounds for the estimates can be calculated on the basis of the possible answers to these two questions. Non-employment is higher among the older age groups: indeed male non-employment doubles in the 45-49, 50-54 and 55-59 age groups (as Table 8 shows). The extreme version of answering "Yes" to the first question – which gives an upper bound – is that very few people will return to work if they have been out of work at both the beginning and end of the sample period. If that assumption holds, 7.4% of men aged 45-49 will never work again. That represents 78% of those not initially employed at age 45-49. Likewise, 12.5% of men aged 50-54, and 27% of men aged 55-59, will not be in work and will never work again.

The alternative extreme assumption follows from answering "Yes" to the second question. In that case, non-employment is a random event and not correlated with previous non-employment, implies that 47% of men aged 45-49 initially non-employed do not work in the following twenty years[22], and so 4.4% of men of that age will never work again. A similar calculation shows that 47% of women initially aged 45-49 and out of work will not work in the following fifteen years.

Table 16 summarises these results. Between 4.4% and 7.4% of men aged 45-49 will not work again. Evidence suggests that the upper bound is closer to the truth. More than 90% of people out of work at both the beginning and the end of the sample period were also without work on every 1st September in-between. Those who have been unemployed for longer have a reduced likelihood of finding work, and the BHPS results above show that some people who used to be unemployed are now long-term sick or retired, and that the transitions from those situations to work are rare.

We can tentatively conclude, therefore, that 6%-7% of men aged 45-49 – and 14%-17% of women of the same age – will never work again.

[22] This figure is calculated from 78% x 74% x 89% x 91%, figures which appear in Table 12.

Table 16: Proportion of 45-49 year-olds who will not work before retirement

	% of population		% of those initially non-employed	
	Men	**Women**	**Men**	**Women**
Years to state pension age	**15-20**	**10-15**	**15-20**	**10-15**
Maximum	7.4	17.8	77.8	65.5
Minimum	4.4	12.8	46.8	47.0

Note:
For the reasons explained in the text, the maximum is likely to be a better estimate than the minimum.

6.5 Conclusions from BHPS evidence

Section 6 has presented the results from analysing the British Household Panel Survey. A representative sample of people aged between 45 and state pension age were interviewed every year for up to six years, producing labour market histories between 1990 and 1996. The main conclusions are:

- People are more likely to leave the labour market if they are either (a) in the bottom quartile of the wage distribution or (b) in the top half of wages *and also a member of an occupational pension scheme*.
- Being a member of an occupational pension scheme increases the risk of displacement by half as much again for people whose wages are in the top half of the distribution. Occupational pensions have no effect on the risk for people in the bottom half.
- These results hold, even after controlling for the effects of gender, age, and whether the person worked in an industry which was shrinking. The risk of displacement is higher among people who are older, female, and / or working in a declining industry.
- People with higher wages are, if they do not have occupational pensions, less likely to be displaced. Once wages are taken into account, the risk of displacement does not seem to be affected by educational qualifications. Similarly, whether someone worked in the public or private sector seems not to make a difference, over and above the other significant effects. In particular, the probability of someone in the top wage quartile and with an occupational pension being displaced is not affected by whether they work in the private or public sector.

- The risk of displacement is the same for people working in growing industries and in industries which are neither growing nor shrinking. Displacement in shrinking industries is, unsurprisingly, higher.
- Men over 45 were much more likely to have been working in shrinking industries. The median experience was for men over 45 to work in industries whose employment fell by 2.5% a year on average between 1990 and 1995, while aggregate employment fell by ¾% a year. By contrast, more than half of the women in the sample worked initially in industries whose employment grew. This fact has implications for whether people were leaving the labour market voluntarily or as a result of (at best) a constrained choice.
- Relatively few people over 45 return to employment after being out of the labour market. About one-quarter of the sample returned to work after being displaced. The return rate for men who were aged 45-49 when first sampled, and who were later displaced, was 49 per cent. Return rates were lower for older people.
- The return rates are even lower for people who were not employed at the start of the survey period. Only 18% of them were observed in work on 1st September in any of the years, and some of those did not stay in work: only 11% were still in work by the end of the survey period.
- People who were unemployed had more chance of returning to work than people who were long-term sick or retired. The long-term sick had even less chance of returning to work than people who classified themselves as retired.
- About half of those who were unemployed at the start of the survey period were either long-term sick or retired by the end. About one-third of the long-term sick had retired by the end. In each case, such moves are likely to reduce a person's attachment to the labour market.
- We can join different cohorts together to draw tentative conclusions about the chances of returning to employment in the long run. We estimate that 6%-7% of men aged 45-49 – and 14%-17% of women aged 45-49 - are likely never to work again, on the basis of this evidence.

7. Other evidence supporting the possible explanations

This Section describes further evidence which, along with the Labour Force Survey and British Household Panel Survey data presented elsewhere in this paper, can help distinguish between the different explanations of falling employment.

7.1 Voluntary early retirement

There are two trends here, working in different directions:

- greater prosperity; and
- increased life expectancy.

Technological and other innovations tend to make successive generations more productive than their predecessors, and are therefore able to earn higher lifetime incomes. It is reasonable for people to wish to take some of this greater prosperity in the form of increased leisure, and not use the whole of the additional productivity to generate greater finances for consumption. This already happens: for example, the basic working week for manual jobs in 1980 was only two-thirds of that in 1861 – see Gregg (1994) – although there are signs that this trend did not continue in the 1980s. Another way to increase leisure is to maintain the same number of weekly working hours, but reduce the number of years of work.

At the same time, life expectancy has increased[23] substantially. On its own, people might be expected to respond by increasing their working life to some extent, although not necessarily by the full amount of increased life. Since 1948, however, the state pension age has not risen at all (although legislation has been passed which will raise the pension age for women to 65 – the state pension age for men – by 2020). William Beveridge envisaged that people would retire later, not earlier, over time. He expressed the view (Beveridge, 1942, p99) that:

> The natural presumption from the increasing length of total life is that the length of years during which working capacity lasts will also rise, as health improves…A people ageing in years need not be old in spirit.

[23] Life expectancy has risen from 67.9 for boys born in 1961 to 73.2 for boys born in 1991. This is partly due to lower child mortality, but life expectancy in adulthood has increased substantially too. Life expectancy for 20-year-old men has risen from 70.4 to 74.2, and for 50-year-olds from 72.6 to 76.0, over the same period, according to Office for National Statistics (1997, Table 12).

The Labour Force Survey data in Section 4 show that average retirement ages have fallen in the last twenty years. If this reflects voluntary decisions, the former effect – greater prosperity – will have been the more powerful.

If expectations are fulfilled, early retirement will become more and more common. McKay and Middleton (1998, Table 6.1) found that successive age groups expect to retire at younger ages than their elders. Working people aged 30-34 expected, on average, to retire at age 59, while the cohort aged 45-49 had an average expected retirement age close to 61.

One indicator of a voluntary choice to retire early is financial security in retirement. If voluntary early retirement were the major feature of the changes, we would expect to see better-off people retiring earlier than those on lower incomes.

Results in Section 6 showed that people whose wages are in the bottom quartile were most likely to be displaced. Another important factor increasing the risk of displacement is whether employment in the person's industry is falling rapidly. Both these facts suggest that voluntary early retirement accounts for (at most) part of the fall in the employment rate of older men.

7.2 Occupational pensions

There are two ways in which occupational pensions can bring forward people's retirement date. The presence of such a pension will increase the income a person will receive in retirement, and might therefore reduce labour supply. In addition, the incentives on employers from salary-related pension schemes might reduce labour demand.

The prosperity argument might be expected to apply particularly to those who will receive occupational pensions. The maturing of such schemes has meant that, since 1979, pensioners' average incomes from occupational pensions have more than doubled. Pensioners' incomes from investments have more than doubled too. By 1993, 62 per cent of pensioners received an occupational pension and 73 per cent had some investment income[24].

Salary-related schemes are the most common type of occupational pension. Disney (1995) estimated that 9.8 million of the 10.7 million employees in occupational pension schemes were in salary-related ("Defined Benefit") schemes.

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[24] See Budd and Campbell (1997) for more details.

The incentives on employers arising from salary-related pension schemes arise because employers' contributions to such schemes increase, often dramatically, when a person is close to retirement. Any pay increases late in a working life have a disproportionate effect on the value of the pension paid throughout retirement. This is particularly and most obviously true of pensions related to final salary, where a 10% rise in final salary adds 10% to the annual pension[25]. The cost of employing people in such schemes will tend to rise with age, even if the wage (excluding pension costs) appears to fall in real terms (as Chart 15 showed).

If employers respond to these incentives by increasing early retirement, a wider consequence of the pension scheme could be to reduce employment. This could happen either directly, if the displaced person could not find another job, or because of the effect on the wages that they can command. Gregg, Knight and Wadsworth's (1998) evidence, described in Section 5.3, suggests that someone who is in their fifties when they were displaced from the labour market, will earn considerably less than previously. In turn, this may mean that they find that work no longer pays.

Separately, final-salary pensions can discourage people from "winding down" prior to retirement. There is generally a financial penalty to moving from full-time to part-time work for the last few years before retirement. This removes – or at least penalises - a choice which people might want to exercise: whereby they continue to work for the same firm, but "downshift" to a less demanding job or one with fewer hours in the run-up to retirement. (There are usually provisions in "final-salary" schemes that enable pensions to be calculated on a year close to retirement if that yields a better pension than taking the final year of work. The disincentive to downshifting is removed if these provisions are sufficiently flexible.) If downshifting is penalised, however, people may opt to break their connection with the labour market sooner than they would otherwise choose to do so.

Section 6.1 used the BHPS to identify the effects of occupational pensions, how they are associated with reduced rates of employment, and how the effect is concentrated among people in the top half of the hourly wage distribution. Tanner (1998) also found that occupational pension receipt had a significant impact on whether older men stayed in work. She looked at the labour market experience of men interviewed in

[25] However, it is also true for pensions based on average salary, unless the person's pensionable salary falls in real terms.

both waves of the DSS Retirement Survey (1988-89 and 1994) and aged between 55 and 59 during the first wave.

People with an occupational pension were more likely to be in work in wave 1 (which perhaps reflects the average employability of people eligible for an occupational pension and/or the type of job they do). Five years on, however, this situation is reversed. People without an occupational pension have higher employment rates in wave 2 than their pensionable counterparts, whether or not they had been working in wave 1. These results are summarised in Table 17.

Table 17: Labour market behaviour of men with and without an occupational pension

	% working in Wave 1	% of those working in Wave 1 who were still working in Wave 2	% of those without work in Wave 1 who were working in Wave 2	% working in Wave 2
with occupational pension	76.4	50.2	3.5	39.2
without occupational pension	68.8	60.5	8.4	44.2

Source: Based on Tanner (1998, Table 6) and author's calculations.

Most of this paper has concentrated on whether or not people are employed, rather than they classify themselves as retired. Tanner (1998) also found that 6% of men, who described themselves as retired in the DSS Retirement Survey, were in fact working[26]! Fields and Mitchell (1984) set out two scenarios that emphasise the problem of defining retirement. One is simple, the other less so:

> Suppose that at age 65, you leave your lifelong job, accept an employer-provided pension, begin to collect social security benefits, leave the labour force, and depart for a life of sunshine and tranquillity on a Caribbean island.

[26] There is no overlap between the "employed" and "retired" categories in the analysis of the BHPS (Tables 11, 13, 14 and 15).

> Suppose you leave your lifelong employer at age 61 with a year's terminal sabbatical. Starting at age 62, you become eligible for a private pension from your employer's pension fund, which you accept. At age 65, you file for social security. You continue to earn a few thousand dollars a year as a part-time consultant…Have you retired? If so, at what age?

About 10% of those aged over 45 and part of an occupational pension scheme when employed at the start of the BHPS panel, switched to working without such a scheme at some time in the following six years. Some of these people will have become self-employed, perhaps even following the equivalent of Fields and Mitchell's second scenario. Four-fifths of those whose occupational pension status changed were employed throughout the six years: their membership of an occupational pension scheme must have ended without an intervening spell of unemployment.

To summarise, salary-related occupational pensions – which are 90% of all occupational pensions – increase the cost of employing older workers. Such pensions thus provide incentives on employers to encourage their employees to retire early, and may therefore be reducing employment. These incentives are strongest in respect of final-salary schemes, which also (in their purest form) penalise people who want to work shorter hours in the run-up to retirement. In addition to these labour demand effects, occupational pensions make people richer, and might therefore be expected also to be associated with more people taking early retirement. The labour supply reduction could be entirely voluntary or as a result of a constrained choice when redundancy seems the only alternative.

The theoretical evidence is supported by the empirical findings. Sarah Tanner found that employment rates fell faster among members of occupational pension schemes. Analysis of the BHPS in Section 6 also suggested that people with occupational pensions are more likely to leave the labour market, but found that this effect was only present for people whose wages were in the top half of the distribution.

7.3 Early retirement in local authorities

A recent study by the Audit Commission found that 76 per cent of all retirements from local government in 1995-96 were early. There are three possible grounds for early retirement: ill-health, efficiency and redundancy. 39% of all retirements were early ill-health retirements,

11% were on the grounds of efficiency, and 26% were on the grounds of redundancy (Audit Commission, 1997).

Male non-manual staff are the most likely to retire early, even though there are a growing number of non-manual staff working in local authorities[27]. Less than one-fifth of retirements by male non-manual staff began at or after the normal retirement age of 65 (or between 60 and 65 if the person has 25 years' service).

The Audit Commission said that discretionary programmes to encourage people to take early retirement are sometimes seen by authorities as the most attractive, or the least painful, way to reduce the size of their workforce. Compulsory redundancy requires intensive management action, and sometimes leads to strife (especially in more unionised organisations), while early retirement reduces the likelihood of legal challenge or industrial action, and can often be implemented more quickly.

An average early retirement costs £35,000 more than a normal retirement, although there is a wide variation with the highest-paid 20% of early retirees accounting for 40% of the total cost. However, only part of this cost falls immediately on the employers. The local authorities' current expenditure budget typically meets about half of the total cost of discretionary early retirements, i.e. those on the grounds of redundancy and efficiency. The cost of paying the pension early falls initially on the Local Government Pension Scheme. The Audit Commission found that this cost is not usually reported in annual budget papers, even though it will affect the employing authority's finances within a few years[28]. Separately, Independent Research Services (1995) found that local authorities are unusual in not reducing the accrued pension to take account of its being paid early. Half the private sector pension schemes they looked at reduced the accrued pension to cover the cost of early payment even when the redundancy was compulsory. Most of the others reduced the accrued pension for at least the younger early retirees.

The difficulty of ensuring that managers make decisions based on the full cost of their discretionary early retirement decisions applies to private sector firms, as well as the public sector. If managers are

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[27] The number of non-manual staff in local authorities increased by 15% between 1987 and 1995.

[28] The authority's finances will be affected after pension contribution rates have been subject to their regular revaluation. Typically, contribution rates are set every three years.

responsible for only part of the budget (for instance, pay, but not the additional pension cost of early retirement), they will have an incentive to make decisions which provide short-term budget savings, even if there is a net long-term cost overall. This applies particularly if part of the cost falls outside the organisation itself, for example if the former employee starts to claim social security benefits following her early retirement.

Turning to ill-health retirements, there is a wide variation in the percentage of retirements on the grounds of ill-health, although no pension scheme in a survey by Income Data Services is as high as the local authorities. Selected organisations are shown in Table 18. British American Tobacco are the median private sector firm.

Table 18: Proportion of all retirements on ill-health grounds, 1995-96 (%)

Local government	39
Heinz	31
Teachers	25
Grand Metropolitan	24
Civil service	20
Stagecoach	18
British American Tobacco	9
Kodak	3

Source: Income Data Services (1997) and Audit Commission (1997)

The Audit Commission argues that the high level of ill-health retirements in local government is not merely a matter of bad luck:

> Variations between councils, together with published papers by medical experts, suggest that the use of ill-health retirement is often a matter of management policy rather than unavoidable incapacity. (Audit Commission, 1997, paragraph 75)

The medical evidence includes Poole (1997), whose article in the British Medical Journal concludes, "The granting of ill-health retirement…may not be determined by illness."

7.4 Incapacity Benefit and Invalidity Benefit

People who retire following a period of unemployment or ill-health are likely to be making either a constrained choice, due to a lack of

opportunities, or no choice at all. It is interesting to consider whether there are any links between employment, unemployment and ill-health, and the labour market consequences of each state for the other. One scenario might be that a person is made redundant, then does not find work for a time, becomes long-term unemployed, finds it even harder to find work, and eventually becomes long-term sick or disabled and in receipt of Incapacity Benefit (IB). The BHPS analysis in Section 6 looked at transitions between unemployment and economic inactivity.

The aggregate picture provides some evidence of links. There have, as described earlier, been large falls in employment among older men. This is mirrored by a rise of almost exactly the same magnitude in the number of people who are economically inactive (either early retired, long-term sick, looking after their family, or otherwise not seeking paid work).

The following figures are from administrative sources. They cover social security benefits, and are therefore not on the same basis as the LFS data of (self-reported) long-term sickness. But we do know there is much overlap, and that both have increased substantially.

The previous Government introduced Incapacity Benefit (IB) as a replacement for Invalidity Benefit (IVB) in April 1995. IB also replaced Sickness Benefit, which was the equivalent of IVB for people whose claim had lasted less than six months. A new medical test was introduced when IB replaced IVB. It is carried out by Benefits Agency doctors, applies after claimants have been on IB for more than 28 weeks, and was designed to establish whether the individual was capable of any work at all, regardless of their previous experience. It replaced the practice of GPs deciding whether people could do “suitable work”.

To help people on IB, Severe Disablement Allowance (SDA) or Income Support for the disabled move into work, the current Government is introducing a New Deal for disabled people. It is also replacing the Disability Working Allowance with a Disabled Person’s Tax Credit, and introducing more generous “linking rules” in benefits so as to reduce the risk that some disabled people face if they take what turns out to be a short-term job.

The rest of Section 7.4 looks at various breakdowns of the data, as follows:

- changes over time from cross-sectional data;
- flows onto and off IB and IVB, from IB to work, and from unemployment to IB;
- evidence on changes in disability.

7.4.1 Cross-sectional data on Invalidity Benefit

There are now more people on Incapacity Benefit than there are claimant unemployed. 1.56 million people claimed the equivalent of IVB[29] in February 1998, when the claimant count of unemployment was 1.38 million.

The number of IVB recipients more than tripled between 1976 and 1995. Since April 1995, the number of people claiming (the equivalent of) IVB fell from 1.77 million to 1.56 million.

The age structure of IVB has changed little over time, with about two-thirds of people receiving IVB being over 50. There was therefore also a tripling of over 50s on IVB.

In 1995, 470,000 IVB recipients had claimed benefit for six years or more, and nearly one million had been claiming for three years or more.

32% of the people claiming IVB in 1994 had diseases of the musculo-skeletal system, 19% had circulatory illnesses, and 18% had mental disorders. The causes[30] of IVB which increased most between 1980 and 1994 were "other and unspecified disorders of back" (up from 33,000 to 176,000), osteoarthritis (up from 20,000 to 121,000) and depressive disorder (up from 29,000 to 122,000).

The incidence of the benefit varies from region to region, with Wales and northern England having three times the rate of claims per 1000 of population as the southern English regions.

25 per cent of men aged 60-64 received Invalidity Benefit in 1994-95, according to analysis of the Family Resources Survey in Blundell and Johnson (1997, Table 1)[31].

7.4.2 Flows onto and off Invalidity Benefit

Both inflows and outflows of Invalidity Benefit changed very little between 1983 and 1995. The number of new Invalidity Benefit claimants remained fairly constant at about 300,000 a year. Outflows were also

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[29] The total number of Incapacity Benefit recipients is over 2 million, including people who previously would have received Sickness Benefit. It is best to think of the 1.56 million as the number of long-term IB recipients.

[30] Each of "other and unspecified disorders of back", "osteoarthritis" and "depressive disorder" is a category in the 1975 International Classification of Diseases.

[31] They show that 43 per cent of men aged 60-64 received at least one social security benefit (excluding Child Benefit) even though they are not entitled to a state pension. 13 per cent were on Income Support and 10 per cent were on a sickness benefit other than IVB. These figures do not add up because people can receive more than one type of benefit at the same time.

quite constant, averaging 215,000. As a result, the total number of claimants grew. There was some increase in inflows from 1991 until 1995, suggesting the presence of some hysteresis as unemployment began to increase in 1991. Since the introduction of IB, there have been both lower inflows and higher outflows.

Very few people move from IB to work. There are about 2.2 million people of working age receiving IB or the equivalent benefits for those not satisfying the contribution conditions for IB (SDA and Income Support for the disabled). According to the Department for Education and Employment (1998b), only around 5% of these people leave benefit for work each year. This is a much smaller proportion than even the very long-term unemployed. Half of those who leave IB for work are returning to a job with their previous employer.

Long-term recipients of Incapacity Benefit are paid £15 a week more than the long-term unemployed, thereby creating an incentive for unemployed people to be classified as long-term sick or disabled[32]. They also do not face the requirement to seek work or the accompanying sanction if they do not comply[33]. There used to be incentives on the Employment Service acting in the same direction when there were targets for the number of unemployment-related claims not pursued. The Employment Service no longer has this type of target. Instead, it has to meet targets for placing people into jobs. Incentives, for claimants and for the Employment Service, could have unintentionally distorted choices in a way that reduce labour supply.

People who move from Jobseeker's Allowance (JSA) to IB are likely to become less attached to the labour market. Edgeley and Sweeney (1998) estimate that about 21,000 people move from JSA to IB each month, about one-third of all new claimants of IB. About 15,000 move from IB to JSA, some because they no longer meet the medical requirements of IB.

There is little support for the "discouraged worker" hypothesis – discussed in Sections 4.2 and 4.3 – in the data on IVB recipients. The hypothesis would imply that a regression of IVB claimants would have a positive coefficient on unemployment. Cox (1997) did not, however, find any such effect. This is consistent with the fact that the boom of the late 1980s had no discernible effect on flows from IVB. One cause could be if people were encouraged to move from unemployment to IVB and then

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[32] The financial incentive is larger still if the unemployed person has a non-working partner or is not eligible for means-tested JSA.

[33] The requirement to seek work applies to JSA claimants under the age of 60.

permanently stopped looking for work. An alternative explanation would be that IB/IVB entitlement is disconnected from the state of the labour market, and based solely on the occurrence of ill-health, in which case ill-health would prevent economic activity for IVB claimants whatever the state of the labour market.

7.4.3 Changes in disability

The evidence on changes in the prevalence of disability is mixed. Craig and Greenslade (1998, Figure 2) show this particularly clearly. Data from the General Household Survey show that fewer people aged between 50 and 64 were less likely to have a limiting long-standing illness in 1996-97 than in 1985. However, comparing the DSS's survey of disability in 1996-97 with the OPCS surveys[34] in 1985 suggests a real increase in the prevalence of disability, concentrated on this issue.

It remains unclear to what extent changes in disability explain the substantial growth[35] in IB/IVB claims, although it is unlikely to have been the only factor.

7.5 Age discrimination

Age discrimination could be a direct cause of falling employment among older workers. It is important to be clear about the meaning of age discrimination. Selection taking into account appropriate factors (such as ability to do the job) is not in itself discrimination. The "appropriateness" part of the definition of discrimination means that neither the fall in wages nor the declining employment rates among older workers described in Sections 4 and 5 necessarily imply discrimination, just as the lower wages among under 25s do not necessarily imply discrimination against the young. What matters is whether these effects can be justified in terms of their abilities, skills, experience, productivity and wages.

Discrimination can be either direct (when age is needlessly used as a criterion) or indirect (for example, if mobility were included among the criteria in hiring for a sedentary job).

In secondary analysis of the 1994-95 Family and Working Lives Survey, McKay and Middleton (1998) found that 5 per cent of people aged 45-69 believed that they had been discriminated against in one or more job applications because they were felt to be too old. Age

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[34] Reported in Martin et al (1988)

[35] The number of people claiming IVB (or its equivalent in IB) approximately doubled between 1985 and 1996-97.

discrimination – or (at least) perceptions and awareness of it – might well be increasing as the relatively younger people were more likely to believe that they had been the subject of discrimination: 7 per cent of both female and male 50-54 year olds were in this category. 1 per cent of people aged 45-69, and a slightly higher proportion of people aged 55-59, felt that they had been discriminated against in opportunities for promotions or transfers.

These estimates provide a useful guide, even though it is possible for people to be discriminated against on grounds of age without knowing it or to believe erroneously that they have been the victims of age discrimination. These estimates also do not represent the effect of age discrimination on employment, even among the relevant age group: that would be rather smaller and would depend on how many of the victims of age discrimination have found other work. However, the arguments against age discrimination – that it is unfair and inefficient, like racial and sexual discrimination – hold regardless of how widespread it is.

Data are available on another element of age discrimination: where the retirement age is fixed. (Forbidding people from working in a firm just because they reach a certain age can be thought of as an example of age discrimination, although each case may well cause less anger than arbitrary decisions to fire or not to hire older workers.) The DSS Retirement Survey asked for the reasons for retirement. 11% of people with an occupational pension, and 4% of those without, said that they retired because of a fixed retirement age. In total, half the people employed immediately before retirement had an upper limit on their age of retirement. Furthermore, the fixed retirement age was - for one-quarter of men – less than the state pension age, according to Tanner (1997) and Tanner (1998).

The Government's view was put forward clearly by Andrew Smith MP, Minister of State for Employment, when he said,

> The Government is opposed to age discrimination in employment. It is wasteful for Britain, businesses and individuals alike. (Department for Education and Employment, 1998a)

The same publication set out the Government's plans to tackle age discrimination, in partnership with employers, older people themselves, and others. A non-statutory Code of Good Practice will be published by February 1999, following public consultation until October 1998. Its strategy also includes measures to help older people into work,

including the New Deal for the adult unemployed and the New Deal for disabled people. Three pilots in the Better Government for Older People programme – in Coventry, Wolverhampton and Devon – will be specifically aimed at employment opportunities for over 50s. In addition, policy is being changed so that jobcentres will generally no longer accept vacancies that set upper age limits for the applicant.

Quantitative analysis of large data sets, as carried out on the LFS and BHPS in Sections 4-6, cannot test age discrimination. It can instead be assessed using qualitative evidence. McKay and Middleton's (1998) research implies that age discrimination is relatively rare, among older workers, and is not therefore likely to be a major cause of the dramatic fall in employment among older men. (That is not the same, however, as saying that age discrimination should not be tackled.)

8. Conclusions

Section 8.1 summarises the key results from the Labour Force Survey and the British Household Panel Survey data, analysed in Sections 4-6. The LFS allows us to compare nationally representative samples from 1979 to 1997, while the BHPS tracks the same individuals from 1990 to 1996.

Section 8.2 uses these results to draw conclusions about the various possible explanations outlined above, and Section 8.3 describes why this work is relevant for policymakers.

8.1 Summary of key findings

Employment has fallen substantially, for men of all ages, between 1979 and 1997 (similar points of the economic cycle). Older workers have been particularly affected by the decline in employment. Men aged between 50 and 65 account for more of the fall than prime-aged men[36], even though the latter category is twice as large as the former.

Employment rates have always been lower among people in their 60s than in their 50s. Significantly, however, there are now signs that the fall in male employment begins earlier – from about age 50, rather than age 55.

These changes seem to be part of an ongoing trend, rather than simply affecting one unfortunate generation. Each successive generation

[36] Aged between 25 and 50

of men is less likely to be employed than its predecessors by age 50 (and indeed at any age).

The fall in employment has mainly been offset by higher economic inactivity, with unemployment increasing by much less. This is particularly true for older men – unemployment has not increased at all among over 60s since 1979 – but is also true at younger ages too. 18-25 year-old men, whose inactivity increased by slightly less than unemployment, are the only exception.

Changes to the position of women in the labour market have in many ways been in the opposite direction to those affecting men, with female employment rising dramatically, substantially lower economic inactivity and (again) relatively little change in unemployment. Later generations of women are more likely to be economically active, and more likely to be employed, than earlier generations. However, women are still less likely to be in paid work than men of the same age.

Older women have not shared in the general increase in female employment. Changes in employment rates among over 55s have been about 10 percentage points more adverse than the changes for their gender as a whole. The difference is that the employment rate of women over 55 has barely fallen, while the employment rate for men over 55 fell by 21 percentage points.

Regions with the highest unemployment rates tend to have the highest economic inactivity rates. However, changes in regional male unemployment over the last cycle were not correlated with changes in inactivity. While the gap between different regions' male unemployment rates has narrowed since 1990, the gap in inactivity rates has widened, and the gap in employment rates not changed at all.

Male employment has not simply suffered a one-off shock in the early 1980s, even though most of the fall in aggregate employment since 1979 took place before 1983. As well as the evidence from the employment rates of successive birth cohorts, there is a puzzle about why economic inactivity has continued to rise since 1993, while unemployment has fallen.

The "discouraged worker" hypothesis suggests that, during prolonged recoveries, some economically inactive people would become "encouraged" and start to look for work. The evidence on male inactivity and unemployment over the last cycle, at both a national and a regional level, do not support this hypothesis. Neither does the fact that the number of people who stopped claiming Invalidity Benefit did not fall during the late 1980s boom. Either the hypothesis is flawed or a more powerful effect was working in the opposite direction.

The average real wages of older men have increased over the last twenty years, but not by as much as the earnings of men in their mid-40s. Older men have therefore seen both lower relative wages and a disproportionate fall in employment. Together, these provide evidence that older men have faced an adverse shock to labour demand.

Real earnings for individuals continue to increase until a man (with the median wage for his age) reaches the age of 50 or so, and then decline slightly. However, at any given time, men around the age of 45 have the highest median hourly earnings. These statements can be reconciled as later cohorts have higher lifetime earnings and overtake those who are in their late 40s and are experiencing slower, but still positive, real earnings growth.

32-year-olds have the highest median hourly wages among women. However, the decline in median earnings beyond that peak can be fully explained by older women having on average lower educational qualifications.

Panel data suggest that, among people aged over 45, two groups are particularly likely to be displaced from work:

- people in the bottom quartile of the hourly wage distribution; and
- people with wages in the top half, but who are also a member of an occupational pension scheme.

People in the top half of the wage distribution and *without* an occupational pension have the lowest risk of being displaced. Being part of an occupational pension scheme increased a person's risk of leaving the labour market in a six-year period (without immediate re-employment) by 10 percentage points. For men in their early 50s, this is equivalent to raising the risk of displacement by about one-half. Occupational pensions seem to have no effect on displacement for people in the bottom half of the wage distribution.

The above results hold, even after controlling for the effects of gender, age, and whether the person worked in an industry which was shrinking. The risk of displacement is higher among people who are older, female, and / or working in a declining industry.

Once wages are taken into account, the risk of displacement does not seem to be affected by educational qualifications. The raw LFS data, ignoring wages, show that employment rates have declined furthest among people without formal qualifications and, once they reach their late 50s, people with degrees.

While displacement in shrinking industries is higher, people working in growing industries have the same risk of displacement as people in industries whose employment is static.

Men over 45 were much more likely to have been working in shrinking industries. Half of them worked in industries whose employment fell by 12% or more between 1990 and 1995, while aggregate employment fell by less than 4%. More than half of the women in the sample worked initially in industries whose employment grew.

One reason for the lower employment rates is that relatively few older people return to a job after being out of work. About one-quarter of the panel – 49% for men aged 45-49 – returned to work after being displaced. The return rates are even lower (18%) for people who were not employed at the start of the survey period. Younger people are more likely to return to work. We tentatively estimate that 6%-7% of men aged 45-49 – and 14%-17% of women aged 45-49 – are likely never to work again, using the "quasi-panel" at the end of Section 6.

Unemployed people were more likely to return to work than people who were long-term sick or retired. The long-term sick had even less chance of returning to work than those who were retired.

There were significant movements within the broad category of being without work, and such movements were generally associated with lessening labour market attachment. About half of those who were unemployed at the start of the survey period were either long-term sick or retired by the end. About one-third of the long-term sick had retired by the end.

8.2 What do the results tell us about the explanations of falling employment among older workers?

Section 3 set out five possible explanations for the increase in employment among older workers:

- More people making a voluntary choice to retire early.
- Labour supply reductions that are involuntary or the result of constrained choices or distorted incentives.
- The effects of occupational pensions.
- A shift in labour demand away from older men.
- Increasing age discrimination.

It is sometimes difficult, even in individual cases, to differentiate between these explanations. However, we can draw some conclusions on the basis of the evidence presented in the paper.

We can infer that age discrimination is not likely to have been the major cause of the dramatic fall in employment among older workers. Discrimination – in the sense of unequal treatment of people who could

do the job equally well – on the grounds of age seems to have been experienced by relatively few older people, according to qualitative research described in Section 7.5.

Occupational pensions are associated with lower employment rates. People whose wages are in the top half of the distribution, are more likely to leave the labour market if they have access to occupational pensions. Occupational pensions could be reducing employment in a number of different ways. 90% of occupational pensions are salary-related. Employers' contributions to such pensions increase, often substantially, as people near retirement age. They therefore add to the cost of employing older workers and provide incentives on employers to encourage their employees to retire early. Separately, occupational pensions may reduce labour supply, either voluntarily or as a result of constrained choice. The first case seems benign, with greater pension entitlements making people richer and enabling them to choose to retire earlier. Sometimes, however, early retirement packages, including an enhanced occupational pension, are offered on a temporary basis when the firm is seeking to reduce its workforce. People accepting that offer may be making what is a very constrained choice, especially if they feel that redundancy is the only alternative.

There is also evidence of a labour demand shift against older men, as this group has seen the largest decline in their employment rates and a fall in their relative wages over the last twenty years. This shift has taken place over a long period, and so does not reflect the level of aggregate demand at a particular point in the economic cycle. Older men were more likely to have been working in industries whose employment declined dramatically in the early 1990s.

That leaves labour supply explanations for the changes. To what extent did labour supply reduce voluntarily? And to what extent were labour supply reductions involuntary or the result of constrained choices?

As successive generations are richer than their predecessors, theory would suggest that voluntary early retirement might increase. This explanation is likely to hold for a proportion of early retirees, although not all the increase in displacement associated with occupational pension schemes will be voluntary.

However, voluntary, unconstrained decisions are, at best, probably a limited description of the story. It seems as if much of the change in employment reflects constrained choices or involuntary decisions:

- higher levels of wages are associated, in the absence of occupational pensions, with lower displacement rates. Voluntary, unconstrained decisions are not likely to have caused the substantial falls in employment among men at the bottom of the wage distribution.
- older men were more likely to be working in industries which shrunk in the early 1990s. Accepting an offer of early retirement in such an industry may be a constrained choice.
- A number of older people move from unemployment to long-term sickness or to retirement, and from long-term sickness to retirement. People making a voluntary decision are likely to move straight from employment to retirement instead.
- People who have been displaced typically find that their potential earnings in a new job are significantly less below their previous wages. This "pay gap" is especially large for older workers, and can be 25%-35%. People who do not re-enter the labour market because of this pay gap are not making an unconstrained choice.
- The scale of the problem – with the proportion of older men out of work increasing from one-fifth to two-fifths – is too large to have been caused solely by a number of individuals' deciding voluntarily to retire early.
- Looking to the future, later cohorts of men are less likely to be employed at age 40 (or 50) than earlier cohorts were at the same age. It does not seem plausible to explain this as more people making a voluntary decision to leave the labour market earlier.

Women's employment has increased dramatically since 1979, reflecting increased labour supply and a shift in labour demand from men (especially older men) to women. The lack of increase in employment among older women may be a cohort effect, perhaps because today's older women had less connection to the labour force earlier in their lives.

8.3 Why does this matter for policy?

Older men have been particularly affected by the fall in male employment. 600,000 more people would be working if the employment rate of men aged between 55 and 65 were the same as it was in 1979.

There are two types of problem here. The obvious one affects people currently in their fifties. The other is about what will happen in the future when younger people in the labour market reach their fifties.

The evidence presented here, from 1979 to 1997, do not give grounds for confidence that the trend to lower employment among older

men will reverse of its own accord. Indeed, there are signs of the trend worsening, with later cohorts less likely to be employed than their predecessors were at the same age and employment rates now starting to fall at an earlier age.

Measures to increase older male employment need not reduce the number of women employed. There is no trade-off because there is no given number of jobs: employability is the key. As its name suggests, the lump of labour fallacy is not true (see Section 2 for more details).

The fall in male employment has been accompanied by higher economic inactivity. The economically inactive are not competing for jobs. If they returned to the labour force, the effect on the sustainable rate of employment could be disproportionately beneficial.

This is not solely an economic issue, however. Lower employment has severe consequences for individuals and for society. There are well-documented arguments for Welfare to Work policies to help people at risk of poverty and social exclusion, whether or not they are part of the claimant unemployed. This applies particularly to those who are without work as a result of an involuntary reduction in labour supply or following a severely constrained choice.

Inasmuch as lower employment merely reflects more people making voluntary, unconstrained decisions to retire early, this would seem at first sight not to be a cause for concern. However, there is still an issue if incentives are unintentionally distorting decisions, and in so doing reducing employment. Potentially distorting incentives might arise in occupational pension schemes or because early retirement is in effect subsidised (see Section 2).

Older men without work are more likely to stay that way than younger people. Return rates to work are lower for the economically inactive than the unemployed. A person whose attachment to the labour market weakens, is less likely to return to work. Being without work for a long period has especially damaging effects on the individuals concerned.

The regional pattern of male unemployment and inactivity has two implications. First, drawing conclusions about dynamic effects from cross-sectional data can be misleading. (The levels of regional male unemployment and inactivity at a particular point in time are positively correlated, but the changes in these variables over the last cycle were not.)

Second, economic recovery may not be sufficient to reverse the trend towards lower male employment, on the basis of the experience of the last cycle (when regional male employment rates did not converge

even though the gap in regional male unemployment rates did so). That conclusion does not mean that employment rates do not depend on output. On the contrary, deep recessions can do harm to the sustainable rate of employment: recovery alone, however, may not be sufficient to reverse the trend.

The arguments against age discrimination hold even if, as the evidence above suggests, it is not widespread.

Looking to the future, policymakers should be concerned about whether the trend to lower employment among older men will continue or be reversed. There were, as at 1997, no signs of the trend reversing (although it might not be expected to fall as quickly as between 1979 and 1983). Indeed, later cohorts have lower employment rates, even at age 40, than men born before them. This implies that men in their fifties in the future could be even less likely to be employed than the current generation of older workers.

The fact that older women have not shared in the general rise in female employment may be a cohort effect. If so, there are more grounds for optimism that later generations of women will have higher employment when they are older. The outstanding issue would then be whether any of the undesirable causes of lower male employment will also act to cap the effective retirement age of women in the future.

Appendix A: Further background information of the sample from the BHPS

The first wave of the BHPS was conducted in 1991. Since interviews took place between September and March, it is convenient for many questions, including those on labour force status, to make use of a "reference date", which is 1st September at the beginning of the fieldwork period. So for example, respondents in Wave 1 were asked about their labour force status on the reference date in that year (i.e. 1st September 1991) and on the reference date in the previous year (1990), and their employment histories between those dates.

Some people do not give full interviews in each wave. Some join the panel after the first wave; others cannot be contacted, or are unavailable, after giving interviews in earlier waves; others still return to the panel after being interviewed in some early waves but not later ones. This attrition is not however random. Paull (1996) found that those who answer all waves are likely to spend a significantly higher proportion of the sample period in employment, and have significantly fewer transitions between employment, unemployment and being out of the labour force. A panel containing data only from those who gave interviews in all waves, would yield biased results. This analysis therefore includes the information from people who have answered questions about labour force status in some, but not all, waves of the BHPS.

The bias from restricting the data to a balanced panel is likely to increase with the number of waves. Paull's results are based on the first four waves on the BHPS. There are grounds for believing that the bias (as well as the loss of data) would be even greater after six waves.

For practical reasons, however, it is necessary to restrict the sample somewhat. People who have a recorded labour force status at only one or two points are not included in the sample. While leaving out everyone with an incomplete interview record would yield biased results, there is a trade-off between including relevant information on transitions between different labour force states and recording people as "employed throughout" who have really changed states but have not been interviewed after doing so.)

	Full interviews in all the first four waves of the BHPS	Respondents who did not give four full interviews, but who have at least one wave of labour market history and personal background information	Difference
% of time in:			
employment	59.74	52.11	+7.63***
unemployment	4.48	6.97	-2.49***
out of the labour force	35.78	40.92	-5.14***
Mean annual number of transitions:			
All types, including job-to-job	0.189	0.237	-0.048***
Between different labour force states	0.133	0.174	-0.041***

Source: Paull (1996), Table 11. *** means statistically significant at the 1% level

This sample, aged between 45 and state pension age on the reference date when their labour force status was first recorded, contains 2253 people. 1593 people (71 per cent) were employed initially. All told, there are more than 14,000 observations on the labour force status of individuals.

73 per cent of the sample have a full record of seven observations (including the retrospective question from wave 1), and their survey period lasts the full six years, from 1st September 1990 to 1st September 1996. In general, the survey period lasts between 2 and 6 years, depending on how many observations for that particular individual there are in the panel (3 to 7). The mean number of observations per individual is 6.3.

Variables used in the regressions

The longer the gap between an event and a question about it, the greater the possibility of recall error: see Dex (1991) and Paull (1996, Table 8). Wherever possible, therefore, the answers to the question about labour force status in the most recent September were used. The information about the previous September was only used when more recent recall data were not available, i.e. for September 1990 and when respondents had not answered the labour force status question the previous year.

The labour force status was based on BHPS variables JBSTATT (and where necessary JBSTATL), amalgamated in the following way:

1. paid employment or self-employment
2. unemployment
3. long-term sickness
4. retired
5. family care or (occasionally) student or other

In addition to the data for each 1st September, data on whether there had been a period of unemployment or long-term sickness during the year was also used to determine whether employment had been continuous throughout the year. Moves between jobs without a spell of unemployment or inactivity between them were ignored.

Another variable is based on whether a person is initially in an occupational pension scheme. Membership of an occupational pension scheme is not asked in every wave of the BHPS. In the BHPS, membership of occupational pension schemes is checked only for new entrants to the Panel and when a respondent changes jobs (including within the same company). The variable constructed for the purposes of this paper assumes that no-one who remains in the same job either joins or leaves an occupational pension scheme.

The gender variable is 0 for men and 1 for women. The sample is split into four age groups, based on the person's age at their first recorded labour force status: 45-49, 50-54, 55-59 and, for men only, 60-64.

Real hourly wages were calculated from the pay and hours of work variables. Following Dickens (1996, page 11), adjustments were made for wages recorded as being below 50p an hour or above £100 an hour. This reduces the risk of people being put in the wrong quartile of the wage distribution as a result of a reporting error. It is individual wage observations that are excluded, rather than the people themselves. The remaining observations, matched with the data on labour force states, were then used to provide each individual with an average hourly real wage through their first spell of employment during the survey. (People with very low wages will therefore appear in the lowest quartile if they have any recorded wage over 50p an hour.)

Hourly wages were converted into quartiles of the wage distribution for that individual's age group and gender. Older people and women are more likely to have lower wages, so we would have confused the age, gender and wage effects if age- and gender-specific wage quartiles had not been used.

The change in industry employment is based on the two-digit SIC code of a person's first recorded employment, and the employment in each industry in 1990 and in 1995. Employment in the UK was lower in 1995 than in 1990, as a result of the 1990-1992 recession. The median

experience for people in the regression sample was to be working initially in an industry whose employment fell by the equivalent of 1 per cent a year between 1990 and 1995. Two dummy variables have been constructed:

- people working in industries whose employment grew between 1990 and 1995;
- people working in industries whose employment fell by more than 2 per cent a year on average over the same period.

Probit regressions

The dependent variable is whether or not a person was displaced. As this is an indicator variable, i.e. one which only takes on the values 0 (for employed throughout) and 1 (for displaced), the assumptions for ordinary least squares regressions do not hold, and such regressions are not appropriate. Instead, the following probit model is estimated:

$$\Pr(y = 1 \mid x) = \phi(x\beta)$$

where y is the variable which shows whether an individual has been displaced, x represents the explanatory variables (e.g. gender, age etc.) for that individual, and β are the estimated coefficients on the explanatory variables, and $\phi(.)$ represents the cumulative normal distribution. A simple model with only one explanatory variable (say gender) would therefore have the following form:

$$\Pr(y = 1 \mid \text{gender}) = \phi(\beta_0 + \beta_1 * \text{gender})$$

Unlike ordinary least squares regressions, the effect of each explanatory variable is not simply equal to the coefficient. Neither can coefficients simply be added together. The coefficients, the βs, for each of the regressions appear below. The one on the right is the best.

Table A1: Regression results*

	1. Regression with separate wage and occupational pension variables	2. Improved regression with terms for interaction between wage and pension	3. Best regression, without non-significant variables
gender	*0.213*	*0.206*	*0.199*
	(2.37)	*(2.29)*	*(2.26)*
age 45-49 at start	*-0.309*	*-0.302*	*-0.301*
	(-3.66)	*(-3.57)*	*(-3.59)*
age 55-59	*0.279*	*0.289*	*0.292*
	(2.59)	*(2.68)*	*(2.70)*
age 60-64	*0.958*	*0.963*	*0.958*
	(6.30)	*(6.33)*	*(6.32)*
additional effect of being a woman aged 55-59 at start	*0.327*	*0.331*	*0.327*
	(2.24)	*(2.26)*	*(2.24)*
Member of an occupational pension scheme at start	*0.167*	-	-
	(2.10)	-	-
Occupational pension and first wage quartile	-	*0.317*	*0.312*
	-	*(2.49)*	*(2.48)*
Occupational pension and second quartile**	-	0.244	0.244
	-	(1.87)	(1.88)
Occupational pension and bottom half of the wage distribution	-	0.062	-
	-	(0.56)	-
Top quartile of the wage distribution for that age & gender	-0.200	-	-
	(-1.73)	-	-
Second quartile of wages	*-0.256*	-	-
	(-2.36)	-	-
Top half of the wage distribution	-	*-0.330*	*-0.348*
	-	*(-2.70)*	*(-2.97)*
Third quartile of wage distribution	-0.181	-0.153	-0.139
	(-1.77)	(-1.47)	(-1.39)

Work for an industry whose employment fell by 2% pa or more between 1990 & 1995	*0.288* *(2.65)*	*0.286* *(2.63)*	*0.312* *(4.03)*
Industry employment grew between 1990 & 1995	-0.034 (-0.31)	-0.034 (-0.30)	- -
Educational qualifications, but not a degree	0.002 (0.03)	-0.002 (-0.02)	- -
Having a degree	-0.007 (-0.06)	-0.017 (-0.13)	- -
No hourly wage data available***	*1.880* *(10.71)*	*1.858* *(10.55)*	*1.840* *(10.58)*
constant term	*-0.536* *(-3.96)*	*-0.511* *(-3.75)*	*-0.519* *(-4.85)*
χ^2 statistic	425.62	427.69	427.26
χ^2 degrees of freedom	14	125	11

Notes:

* z-statistics in brackets. If z is greater than 1.96 or less than –1.96, the coefficient is significant at the 5% level (z~N(0,1)). Statistically significant coefficients are italicised.

** These are statistically significant at the 6% level.

*** The data on working hours are only available in respect of the employment at the time of interview, and not for employment as at 1st September. People whose first employment has ended before the date of first interview therefore do not have information on working hours. A dummy variable has been constructed so that this data is not discarded. It is not surprising that the coefficient on this variable is significant, as this variable will equal 1 for all those (for example) who leave the labour market between 1st September 1990 and their first interview in the fourth quarter of 1991.

The constant term represents the base case: a man initially aged 50-54, in the bottom quartile of the wage distribution, without qualifications or an occupational pension, and initially working in an industry whose employment will not change. The probability of being displaced is $\phi(\beta_0)$, where β_0 is the coefficient on the constant term. Tables 11-13 in the body of the report show the probabilities of being displaced for this and other cases.

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