Late careers and income dynamics among older people: consequences of unstable careers on the income situation in Great Britain

Schmelzer, Paul

Veröffentlichungsversion / Published Version
Arbeitspapier / working paper

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:
SSG Sozialwissenschaften, USB Köln

flexCAREER
Working Paper (2009)

Late careers and income dynamics among older people

Consequences of unstable careers on the income situation in Great Britain

Paul Schmelzer

Paper prepared for the flexCAREER workshop
in Bamberg (May 15-16, 2009)

Faculty of Social and Economic Sciences
Otto-Friedrich-University Bamberg
D-96045 Bamberg
Germany

Institute for Sociology
University Göttingen
D-37073 Göttingen
Germany

http://www.flexcareer.de

Late careers and income dynamics among older people

Consequences of unstable careers on the income situation in Great Britain

Paul Schmelzer

INTRODUCTION

For almost three decades, all Western societies have been experiencing a sharp decrease in the labor market participation of older adults. The UK has been no exception. The research on this topic has concentrated mainly on early retirement pathways and their determinants (Blundell & Johnson, 1999a; Blundell *et al.*, 2002; Meghir & Whitehouse, 1997). However, the impact of recent reforms as a response to the financial burden of aging population poses the question of the adequacy of the current pension system in times of flexibilization of labor markets. Still, there is little research on the impact of destabilization of later careers on pension income and income inequalities in later life.

Like in most OECD countries, the demand for workers and their skills in the UK has changed significantly over the last few decades. Researchers explain these changes in demand primarily in terms of technological change, changes in work organization, and growing international trade (Castells, 2000). These factors induced employers to apply more often numerical and wage flexibility strategies. These have also been fostered by an uncoordinated market economy (Regini, 2000). The influence of trade unions was reduced and the collective bargaining system abolished, which opened the way for flexible wage bargaining. Furthermore, the radical commercialization of the public sector induced many firms to exchange secure for insecure contracts and to outsource workers or to transfer traditional work to own-account workers (Ladipo & Wilkinson, 2002).

Within the context of these changes on the labor market, we will examine how these flexibility strategies affect the employment careers of older workers. Destabilization of later careers might have a negative effect not only on the earning trajectories at the end of the career, but also on pension income: especially since the pension systems have been designed for typical male career profiles of the postwar period on the assumption of a continuous full-time employment career. Furthermore, we will investigate which groups are especially prone to flexibility strategies and whether social inequality patterns have changed.

Using the British Household Panel Survey, this paper investigates the following topics: (1) an analysis of the employment career of older workers with a focus on the income mobility and the risk of becoming unemployed might shed light on the destabilization thesis of later careers. (2) We will analyze the transition to retirement and pension income. We will begin this study with an overview of UK institutions with a focus on the change in labor demand in the UK between 1990 and 2005. Then, the section of data and methods used to examine older workers' careers will be followed by a presentation of results. A final summary will conclude this working paper.

INSTITUTIONAL CONTEXT

Employment System and industrial restructuring

The UK economic system can be classified as an uncoordinated market economy with decentralized and dualistic systems of industrial relationships. Uncoordinated market economies are characterized by a lack of coordination between corporative bodies, such as the financial sector, firms, trade unions, and employers' associations. In contrast to coordinated market economies, the British economic system does not compete on the world market so much by producing high quality goods, but rather by offering high-quality services (Soskice, 1991, 1999). In turn, the British production regime determines the kind of employment relationships. They can be described as low-trust relationships and they do not require craftsmen with solid vocational training. Thus, employers are reluctant to invest in on-the-job training, especially for lower-skilled and low service workers.

Self-improvement market ideology in the UK and low employment protection legislation (EPL) enable companies in the UK to adjust to technological and organizational changes and the volatilities of the global markets by transferring the risk to individuals (Breen, 1997). Therefore, companies in the UK are less timid to apply flexible forms of work to their employees than in coordinated market economies (Regini, 2000). Intra and inter job mobility is high, and individual resources, such as education, networks and job experience, are crucial factors in protecting workers against market risks (DiPrete *et al.*, 1997). Social groups lacking these resources are at a higher risk of job hopping between low-paid jobs with inactivity gaps in between. A loose institutional link between vocational certificates and occupations, combined with low EPL, facilitates mobility between industries and occupations, even for older workers. Fear of poaching makes firms unwilling to invest in job-specific vocational skills of their employees. Thus, firms prefer workers with higher education and invest rather in transferable skills (Soskice, 1991).

The conservative government under Margaret Thatcher introduced labor market reforms aimed at the deregulation of the labor market. The impact of these reforms on the increase of flexible forms of work can hardly be considered a mono-causal explanation for the increase of flexible forms of employment, since the labor market in the UK was already highly flexible before the 1980s (Deakin & Reed, 2000). Employment protection regulation (EPL) was already quite low before the 1980s for both permanent and temporary contracts with no significant changes between the late 1980s and late 1990s. Regulation even shifted slightly towards stricter labor market regulations from the late 1990s to 2003 (OECD, 2004). However, reforms aiming at the retrenchment of social security programs played an important part in increasing *income insecurities*. The restriction of the influence of trade unions opened the way for flexible wage bargaining, which shifted wage negotiation to the firm and individual level.

The deindustrialization of the economy and changes in technology, increasing demand for services, and the growing trade with low-wage countries are far more plausible explanations for the destabilization of employment careers in the UK. Until 1970, there was a strong demand for skilled and semi-skilled workers and enough jobs for unskilled workers. Since then, the British economy has experienced the most

dramatic decline of traditional industries among all OECD countries. In the period between 1970 and 2003, the share of manufacturing jobs declined monotonically from 35 percent to 15 percent (Rowthorn & Coutts, 2004). The British manufacturing industry has seen the near disappearance of the coal industry in Wales during the 1980s, a serious decline in train-manufacturing plants, as well as the downfall of the shipbuilding and the car manufacturing industry (Black, 2004). In contrast to the rest of OECD countries, the declining *share* of manufacturing jobs was not compensated by the increasing *productivity* of manufacturing jobs: the UK manufacturing sector has experienced thirty years of almost stagnant per capita output (Rowthorn & Coutts, 2004). In comparison to the manufacturing sector, the productivity of the knowledge-based service sector (finance and business services such as consulting, computer and information services) has grown significantly in the last decades. This in turn led to the further devaluation of jobs in traditional industries. Indeed, non-service employment is one of the lowest paid sectors in the UK. For comparison, the non-service sector in Germany is the second best-paid sector, ranging just below business sector (Fagan *et al.*, 2005). At the same time, the privatization of major, state-controlled firms in the 1980s (including British Aerospace, British Telecom, British Leyland, Rolls-Royce, and British Steel) had an impact not only on the 'periphery,' but also on the core workforce, especially in industries providing services. Thus, the privatization of state industries should not only have intensified the application of flexible forms of work in the private service sector, but should also have made it possible to apply flexible strategies to workers in manufacturing industry.

The impact of recent economic changes on older workers in a self-regulating market with low EPL and open employment relationships can be summarized as the spread of market risks and decline of social protection.

Labor force participation and unemployment

The labor force participation rates are shown in Figure 1. Among men ages 55 to 59, the labor force participation rate decreased from 83 percent in 1984 to 75 percent in the mid 1990s and then increased slightly again. The labor force participation rate of men in the 60–64 age group was 60 percent of 1984, bottomed out at 50 percent in 1996, and increased

steadily again to 60 percent in 2005. The participation of women ages 55 to 59 has increased continuously since 1984s from about 50 to 63 percent. Though, women's statutory retirement age is 60 participation rates of women aged 60-65 grew from 20 to 30 percent. The drop of participation rates for men but increasing rates for women in 1980s and at the beginning of the 1990s could be interpreted in terms of the transformation of the economy from traditional industries towards service society. Rising activity rates for men and women since 1997 suggest that the improving economic situation and measures targeted at increasing the participation of older workers (reduction of pension benefits, tighter eligibility for disability benefits (from 1995), in-work benefits and training incentives for unemployed (from 2002) reversed this trend. Figure 2 demonstrates that, after a short recession between 1991 and 1994, the UK experienced an economic boom, accompanied by decreasing unemployment rates.

Figure 1: Participation rates for men and women

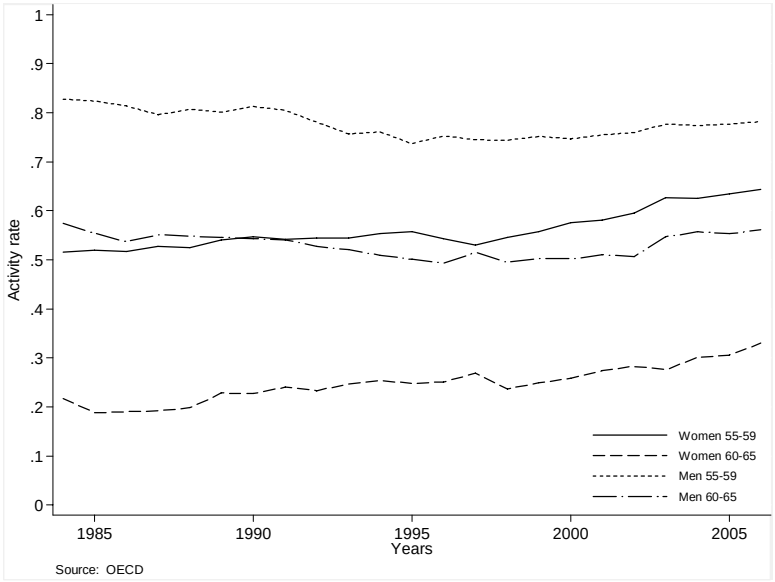


Figure 2: Unemployment rate and GDP

Welfare arrangements and pension systems

Welfare regimes play a crucial role in channelling employment insecurities in later life by labor market policies and the pension system. Since the Labor Party came to power in 1997, the new government has launched a set of reforms that have partially reversed previous policies. Though New Labor stayed on the deregulation path, there has been a shift towards active labor market policies, moving from welfare benefit receipt to welfare-to-work policy. First, New Labor strove to improve the quality

of labor supply by launching the New Deal program, which is aimed at the integration of disadvantaged groups (young and old workers) into the labor market. This program tries to improve the quality of the labor force with re-training measures on the one hand, and discourage unemployment by reducing unemployment insurance benefits on the other hand. Second, statutory National Minimum Wage was implemented to encourage low-qualified workers to look for a job. Third, through Earned Income Tax Credits, New Labor sought to channel many of the unemployed into low wage service jobs (Dickens *et al.*, 2003; Rubery, 1989). Furthermore, following the EU's Part-time Directive, statutory rights for part-time workers have been put on par with those available to full-time workers.

The British pension system followed Beveridgean social policy, which is characterized by universal provision, entitlements based on residence and need, with flat rate benefits and financed through general taxation. The Beveridge pension system has two tiers of provision (plus the third voluntary tier provisions: savings and insurances). The first tier is publicly provided tax-financed pension and targets the low earners. This pension is unrelated to earnings. The entitlement to a full benefit requires forty-four-years of contributions for men and thirty-nine years for women. Replacement rates are extremely low, covering only 15 percent (in 2002) of average male earnings (Disney *et al.*, 2003). Reforms facilitating women's entitlements and increasing levels of participation at the labor market allowed for the coverage of the vast majority of the youngest retirement cohorts with full basic pension (Johnson & Stears, 1996). 'Fair' actuarial adjustments for delaying employment exits beyond the official retirement age (rewarded by 7.5% a year) and low replacement rates provide incentives for delaying retirement decisions. In this context, it should be noted that income from a basic state pension is lower than means-tested benefits, which force many (early) retires to rely on other income sources.

While there are no alternatives to the state pension of the first tier, there are several options on the second tier. Like the first tier, the second tier also is mandatory, but only accessible for those employees who earn above the lower earnings limit (LEL). The State Earnings Related Pension Scheme (SERPS) was introduced in 1978 and aimed to provide one fourth of the best twenty years of earnings (Blundell & Johnson, 1999a; Blundell & Johnson, 1999b). However, SERPS never intended to

become a universal scheme for all employees. Workers who already belonged to an occupational pension with higher pension income guarantee could contract out of the state scheme. This applied to more than half of all employees and mainly for male employees (Blundell et al., 2002).

Private pensions (second tier) include occupational pensions and individual retirement accounts, known in the United Kingdom as Personal Pensions (Blundell et al., 2002). Occupational pension is the most important income source in later life (for example, after forty years in service, occupational pension covers about two-thirds of the final earnings). Occupational pensions currently cover around 45 percent of employees and are typically defined benefit (DB) schemes (Blundell et al., 2002). Lower earners are less likely to be members of an occupational pension scheme than higher earners and are also less likely to contribute to any kind of private arrangements (Blundell & Johnson, 1999a). Lower earners are more likely to be contracted into less favorable SERPS because they are not offered any occupational pensions by their employers. As already mentioned, in the case that they earn below the lower earnings limit, they do not accrue any second-tier pension rights at all. In 1988, the British government introduced defined-contribution (DC) pension schemes (personal or stakeholder pensions), and many employees switched to DC provisions already in the first few years. In contrast to defined benefit (DB) schemes based on years of service, DC schemes are based on contributions being made into a fund. The reason for introducing the DC scheme was concern about the cost of SERPS. The government sought to cut projected public pension expenditure (Disney et al., 2003). DC plans now cover more than one-third of employees with private pensions (Banks & Blundell, 2005; Banks & Smith, 2006). Defined contribution schemes will affect the retirement behavior and the pension income of the youngest retirement cohorts.

In the context of our analysis, it is important to note that the only early retirement route via work related pensions is through occupational pensions or personal pensions. Given the different pension types, there are various mechanisms that influence early retirement behaviour. For older workers relying only on state pension benefits (first or second tier) with official retirement age of 60 for women and 65 for men, early exits are only possible via inactivity. In contrast, people with occupational

pension contributions are able to transit directly into (early) retirement using their occupational pensions. However, there are also significant differences for the last group. While voluntary retirement via occupational pensions penalizes early retires, the early exits at the employer's request provide much more generous provisions. The pensions for early retirements for health reasons are also relatively generous (Blundell & Johnson, 1999a). Furthermore, because of high variety of occupational pension provisions, there are 'bad' scheme provisions that offer only low replacement rates, as well as 'good' schemes that offer high replacement rates at early retirement (Hansen, 2000). The move from defined benefit to defined contribution schemes shifted the risks increasingly onto individuals. Thus, retirement behavior of individuals with contribution schemes (usually personal pensions) is hard to predict since retirement behavior depends on economic situation, pension wealth of individuals, and unobservable decisions (like couple retirement). However, lower contribution rates of DC plans compared to the DB schemes imply lower final pension wealth, which might result in delayed retirements for individuals with DC plans.

Even though the UK displays the highest employment rates and lowest expenditure for their pension system among other European countries, the British government also introduced many reforms aimed at retrenching early retirements and reducing state pensions. The British government changed the legislation for regular retirement schemes, restricted the early exits via disability pensions, and equalized the retirement age between men and women. The conservative government of Margaret Thatcher has cut back the generosity of state pension provisions. The indexation of the basic state pension from earnings to prices in 1982 devaluated the basic pension compared to average earnings (about 6% between 1980 and 2002). Reforms to SERPS in 1986 and 1995 have reduced pension wealth from 25% of the best twenty years to 20% of the best 40 years of contribution. This will decrease pension income for workers retiring after 2000 (Blundell & Johnson, 1999a).

EFFECTS ON LATE CAREERS AND PENSION INCOME

Changes over time

As it was argued before, the restructuring of the economy, the increase in the demand for services, and growing trade with low-wage countries might *destabilize* the employment careers and income trajectories of older workers. Since the pension system had been initially designed for male full-time workers in traditional industries contributing to pension systems without interruption, the destabilization of late careers might have negative consequences on the *pension income* for those individuals of the retirement cohorts who have experienced a destabilization of their working career.

With the *destabilization thesis,* we argue that older people might bear a disproportionate part of the consequences of the demand shift on the labor market. First, uncoordinated market economies like the UK re-adjust to new economic challenges not so much by improving well-established industries, but rather by investing in newer fields of technology (Soskice, 1999). The UK economy was also successful in establishing itself in the field of internationally competitive services (banking, consulting, advertising etc.) that involve individual skills of highly-trained and mobile professionals. However, neither the newly-created jobs in new fields of technology nor high-skilled jobs in services can absorb the increasing redundancy of older industrial workers. Second, growing automation and new procedures of production of the whole working process have disproportionately devaluated the technological skills of older people in traditional industries. Furthermore, the re-organization of companies in hierarchies, created the demand for new qualification profiles (Snower, 1999). At the same time, the incentives for investing in the skill upgrading of older employees are fairly risky because of the few remaining years in service, fear of poaching, and abundant supply of well-qualified young people.

Adjustment to new economic challenges in the UK occurs not only through the downsizing of redundant labor, but also by *adjusting the earnings* to workers' productivity. In the UK, with an environment of weak trade unions, low-trust relationships, and weak EPL, earnings adjustments are more feasible than in coordinated market economies.

While for internal market reasons, earnings rise with tenure in a company, the productivity rises at the beginning and the middle of the employment career and levels off later in life. Thus, the devaluation of human capital for older workers, coupled with low barriers for wage flexibility might have a negative impact on the income trajectories of older people. Furthermore, involuntary job mobility (direct or via a spell of inactivity) has a scarring effect on subsequent earnings. Studies for the UK report significant wage losses, especially for older workers, due to unemployment (Arulampalam, 2001; Arulampalam *et al.*, 2001; Gregory & Jukes, 2001).

The pension income of the post-employment career strongly depends not only on the kind of pension schemes workers paid in during their employment career, but also on their *retirement behavior* (though, of course predicted pension income influences retirement behavior). In the 1980s and at the beginning of the 1990s, there was a trend towards early exits, especially among men. Occupational pension schemes and the relatively generous public disability schemes encouraged this trend (Blundell & Johnson, 1999a). However, the restriction of disability schemes, reduction of the pension wealth for basic pension, as well as for SERPS, might delay retirement decisions for the youngest retirement cohorts. Furthermore, the economic upswing, low unemployment rates, and activation measures might improve the situation of older workers. However, as will be discussed in the next section, the flexibilization and recent pension reforms have different impacts on retirement behavior and pension income of various socio-economic groups.

Patterns of social inequalities

Although older workers display several 'disadvantages' when compared to middle age groups, lower-qualified workers might bear the main burden of economic changes and *destabilization thesis* might apply only for this group. First, the trade with low wage export countries accelerated the declining demand especially for unskilled work in the UK. The detailed analyses by Rowthorn and Coutts (2004) suggest that trade with these countries reduced the UK manufacturing employment share between 1992 and 2002 by about one quarter. At the same time, for every four to five manufacturing jobs that were lost, there was an average of

one new manufacturing job created through the export of high-skill-based manufactured goods (Rowthorn & Ramaswamy, 1999). Second, low-qualified workers are very unlikely to secure the jobs in rapidly growing high skill services. Although the growth of service jobs also occurred at the low end of the qualification spectrum, service jobs in low-skilled services are rarely a promising alternative destination for redundant male industrial workers (Fagan et al., 2005). In contrast, non-employed women are about four times more likely to restart in (low-skilled) service jobs than men (Fagan et al., 2005). At the same time, low-skilled service jobs are associated with insecure positions and low wages. The stagnation of productivity in manufacturing and the growing supply of low-skilled labor paved the way for wage flexibility for low-skilled workers (Freeman & Katz, 1995). Indeed, studies report growing difference in earnings structured by education (Banks *et al.*, 2002). Thus, lower-skilled workers might experience a higher risk of downward income shifts than high-skilled workers.

With respect to the transition to retirement and pension income, the flexibilization of the labor market forced many low-qualified workers into inactivity. Since state benefits and disability pensions are less generous in the UK than in other European countries, the transition into retirement via an inactivity spell might be not the best option in terms of future pension income. Furthermore, fair actuarial adjustment for the early exits reduces pension income (of the second tier). Many low-qualified persons work are in part-time jobs (mainly women) or in self-employment (mainly men), which also might reduce pension income later in life. The pension reforms also disadvantaged especially lower-qualified individuals. The reforms aimed to increase participation rates and reduce expenditures for older workers by changing actuarial formulas for public pensions and shifting the emphasis to private pensions. The reforms reducing state pension benefits caused the average private pensions to grow much more quickly than state pensions (Disney et al., 2003). Given that more of higher earners than of lower earners have contracted out from state pensions, it is to be expected that the gap in pension income will widen across the cohorts. Furthermore, the increasing gap in working income has an impact on earning-related pensions and thus might also contribute to this trend.

DATA AND METHODS

The data used in this study is based on the British Household Panel Survey (BHPS), which began in September 1991. Fifteen waves are available, providing information on the individual employment history, education, income and payment, as well as a detailed of information on individual characteristics. Additionally, retrospective data helps to reconstruct the employment histories of individuals (Halpin, 2000). The Institute for Social and Economic Research (ISER) of the University of Essex collected the data. The BHPS represents a national sample of households, including about 10,000 persons in approximately 5500 households. The households of Northern Ireland and the North and West Highlands were initially excluded from the survey.

Risk of becoming unemployed and income mobility: the analysis is based on workers, age 50, that were employed within the research window. We have constructed birth cohorts for when individuals reach age 50 and are in the following periods: 1) 1990-1994, characterized by economic stagnation and increase of unemployment rate, 2) 1995-1997, when GDP grew and unemployment fell steadily, 3) and 1998-2005, which saw the further decrease in unemployment rate and activation measures for older people.[1] To investigate the destabilization of the late employment careers, the risk of becoming unemployed will be investigated. Income mobility will be the second step of this working paper. A change of gross hourly income between employment spells of more than 8 percent is defined as mobility. For the risk of becoming unemployed, we use single-episode transition models; for income mobility, we use competing risk multi-episode transition rate models (Blossfeld & Rohwer, 2002).

Transition into retirement and pension income: The observational risk period for transition into retirement starts at age 55, regardless of whether the individual is in a job or not. Constructing the cohorts, we use the same periods as above: 1990-1994, 1995-1997, and 1998-2005.[2] The

1 For unemployment and income mobility models these cohorts correspond following birth dates: 1940-1944, 1945-1947, and 1948-1955.

2 For retirement and pension income these cohorts correspond following birth dates: 1935-1939; 1940-1942; and 1943-1950.

definition of retirement is complicated, since the concept of retirement may embody a number of different elements, such as complete and permanent withdrawal from employment, individual perception of retirement (self-reported employment status), and the receipt of pension income (private or from the state) (Banks & Smith, 2006). Since *flex*CAREER project aims to investigate the impact of the late employment career on work related pension income, we define retirement as the point at which individuals receive state, occupational or private personal schemes and are out of work (less than 10 hours per week). For these reasons, only state pension (first and second tier), pension from former employer, and private personal pension are considered to be pension income, while widow's pension or disability benefits are not. This definition is also advantageous because different groups have different perception of retirement (Banks & Smith, 2006).

As known from previous research, the human capital factor has an ambiguous impact on retirement processes: on the one hand, individuals with high human capital accumulate enough financial wealth by investing in personal and occupational pension schemes as well as in other assets (insurance, savings etc.), which allows them early retirement. Blundell et al. (2004) report that occupational provisions accelerate the retirement process close to retirement. On the other hand, opportunity costs of early retirement, especially of high-qualified workers, might delay retirement decisions even after official retirement age. Thus, higher pension wealth of some high-qualified individuals might accelerate their retirement transitions before official retirement age. For other high-qualified individuals, the income losses might delay their retirement decisions. In contrast, many low-qualified workers rely only on state pensions (basic pension or SERPS) or unfavorable occupational schemes and are supported by the state until official retirement age which, given our definition of retirement, might lead to an abrupt transition to retirement. Indeed, as Figure B 1 depicts (in Appendix B), the survivor function of women of higher occupational classes crosses the survivor function of those of lower occupational classes. For these reasons, the proportional hazard assumption might lead to heavily biased estimated effects. Thus,

we will introduce models that allow the *effect of covariates to vary over time* (Blossfeld *et al.*, 2006).[3]

Pension income: The dataset contains all individuals who retired between 1990 and 2005. Since pension income in UK comes from several sources and thus might increase over the time, models are estimated by means of linear mixed random effect models (LMM) using monthly pension income. LMM are an appropriate method for treating Caussian repeated correlated outcomes (Molenberghs & Verbeke, 2005). The models deal with unbalanced data that covers at average 5 years of after getting retired. For the intercept and slope models for phases with incorporated covariates and i^{th} subject at the j^{th} measurement occasions, we use the following notation:

$$Y_{ij} = (\beta_{00} + \beta_{01}x_{ij1} + \beta_{02}x_{ij2} + ... + \beta_{0p}x_{ijp} + b_{0i}) + ((\beta_{10} + \beta_{11}x_{ij1} + \beta_{12}x_{ij2} + ... + \beta_{1p}x_{ijp} + b_{1i}) \times time1) + \epsilon_{ij}$$

with intercept β_0 and slope β_1 depending on covariates $\beta_{0p}x_{ijp}$, $\beta_{1p}x_{ijp}$. Random intercepts (b_{0i}) and random slope (b_{1i}) effects are assumed to be normally distributed with mean 0 and variances σ_0, σ_1, and covariance σ_{10} and will be introduced if they improve the model fit. Since we have got unbalanced data, we use a 2 x 2 unstructured covariance matrix. Measurement error ϵ_{ij} is assumed to be independent of random effects (b_i) and normally distributed. Approaching the subject under study, we take into account the selection bias that might arise from the under-representation of low-qualified individuals in the sample: given our definition of retirement, low-qualified workers are less likely to retire within the observational window because of panel attrition combined with delayed transitions of low-qualified individuals. Low occupational

3 Different models have been fitted. Gompertz model provides the best fit: $h(t) = exp(B\beta)exp(ct)$ with $c = C\gamma$ The introduction of covariates in the shape parameter breaks with the proportional hazard assumption. While the scale parameter β is linear predictor in its scale parameter, the shape parameter gamma (γ) is not. To avoid complete misspecification of the hazard rate Gompertz model exponential piecewise constant models are also used for comparison (Blossfeld et al., 2006). Another way to check for the proportionality assumption is to introduce interaction effects between time periods and occupational classes.

and private personal scheme coverage of low-qualified women might particularly bias the estimated effects.[4]

Because we are interested in the timing of retirement and in how flexibilization impacts pension income, the following variables referring to the late employment career will be introduced in our models: number of employer changes, cumulative unemployment and inactivity experience, cumulative job experience in full-time, part-time, and self-employment, self-reported health and financial situation, and marital and employment status of the partner. In addition to the covariates described above, we include the following covariates in the analysis: 1) region (four regions created from twelve official regions: North, South, Middle, Scotland), 2) education: dummy variables based on the CASMIN scale, 3) occupational class based on the Erikson and Goldthorpe (1992) classification, 4) regional unemployment rate (separate for men and women), 5) branch of industry (based on a modified Singelmann (1978) classification by collapsing transformative and distributive industries, and personal service and producer service industries).

RESULTS

Late careers since the 1990's

To gain the first insight into the employment careers of older workers we use sequence analysis starting at age 50. Figure 3 visualizes the sequence order for women and men. Of 1043 women in the sample about 800 women are in employment at age 50. About 150 women are in family care and about 50 women reported to be disabled. The figures for men are

---

However, such a model is less parsimonious and makes interpretation more complicated.

4 To deal with possible bias we construct a covariate lambda as inverse Mills' ratio (also known as Heckmans' two step sample correction model). The lambda is constructed from the first-stage retirement model. For the proper identification of the second-stage model the first-stage model should superset the factors of the first-stage model. Therefore we introduce additional covariates which influence the probability to belong to the sample but which can be omitted in the second-stage equation. These covariates include health status, marital status, ethnicity etc.

similar to those for women with the exception of family care. Given a smaller starting sample for men than for women (874 to 1043 persons), more men are employed at the age of 50 than women.

Since the focus of this study is later employment careers, we shall take closer look at the most frequent career patterns. For both sexes the most frequent sequence that follows employment sequence is retirement. About one fifth of individuals in the initial sample retire during the observation window. Unemployment sequence is the second most frequent sequence after employment sequence and men are more likely to become unemployed than women. However, a large portion of the men and women who become unemployed also manage to get reemployed. In Figure 4 we plotted the sequence order not only according to the frequency but also according to the age at which individuals change their occupational states. As Figure 4 demonstrates the majority of men (and women) become unemployed in their early 50's. It is remarkable that many men and women retire before their official retirement age. It is also noteworthy that some women work beyond their official retirement age.

Figure 3: Sequence order for women and men starting at age 50

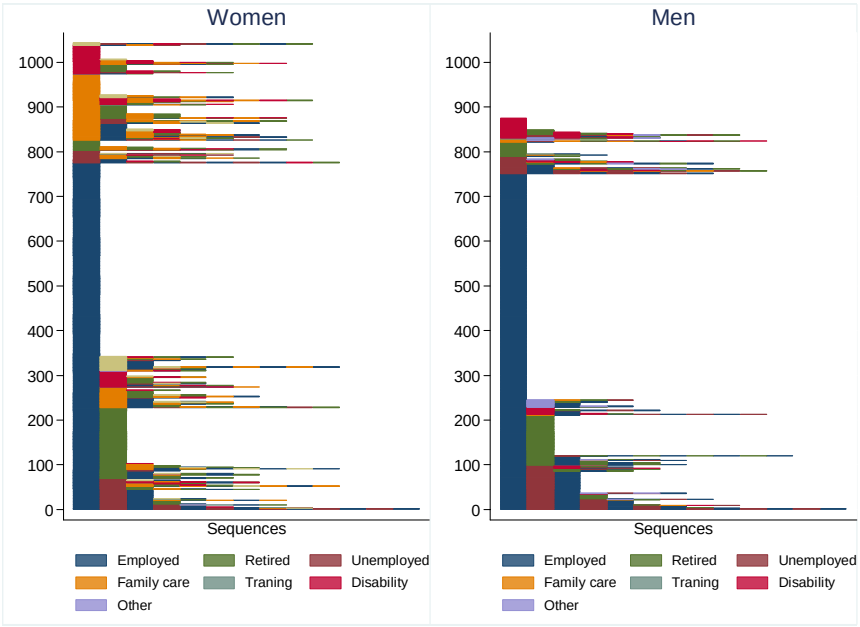
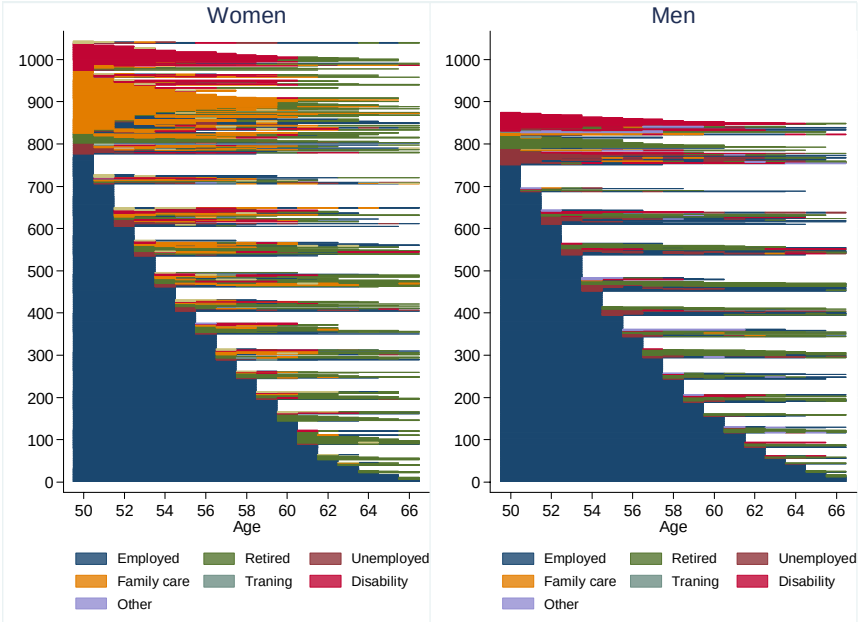


Figure 4: Sequence order differentiated for age for women and men starting at age 50



Risk of becoming unemployed

Across the cohorts the situation improved for older men, but has not changed much for women (Table 1 Model 1). These results contradict the *destabilization thesis*. However, we should keep in mind that deindustrialization began already in the mid-1970s and achieved its peak in the early-1980s. Thus, most individuals with weak attachment to the labor market were supposedly already out of the labor force before they turned age 50 and reached the research window. For these reasons we estimated the probability to belong to the sample (Appendix: Table A 1). Indeed, the probability of belonging to the sample is 38 percentage points (discrete change of probability)[5] lower for women with primary education, 30 percentage points lower with basic vocational education, and 18 percentage points lower with technical secondary education than for those women with tertiary education. Men with primary and basic vocational education are also statistically significantly less likely to belong to the sample than men with tertiary education (18 percentage points with primary and 14 percentage points with basic vocational education). Because low-qualified workers have already been flexibilized before the start of our research window, the interaction effects between cohorts and occupational class are unlikely to yield changes in social inequality.

Who is at risk of becoming unemployed? First of all, permanent and part-time contracts reduce the risk of becoming unemployed for both sexes (Table 1 Model 3). Second, previous unemployment experience and frequent change of employers increases the risk of becoming unemployed. Third, though many workers with weak attachment to the labor market (low-qualified individuals) were already 'flexibilized' and thus are not in the analysis sample, there is clear evidence that a lower occupational standing reduces the chance of remaining in employment. Skilled manual and unskilled female manual workers display higher risks

5 Discrete change of probability is calculated as a difference between predicted probability of an independent variable x and the probability when this variable changes its value holding all other variables at their mean.

of becoming unemployed than the service occupational class (Model 2). For men, the occupational class effect is less pronounced: qualified routine non-manual and skilled manual workers are more likely to become unemployed than service class workers.

Upward and downward income mobility

While upward mobility increased for both sexes, there are no clear results for downward mobility (Appendix A: Table A 2 and Table A 3). While there is a perfectly linear trend of upward and downward mobility for women, the effect for men levels out (compare LL between Model 2 and Model 3).[6]

Upward and downward mobility is clearly structured by occupational class for both sexes. Compared to the service class, all other occupational classes display either lower upward mobility, higher downward mobility, or both (Table 2, Table 3, Model 2). Low-qualified workers have especially high rates of downward mobility. There is also some evidence that over time low-qualified workers are less likely to move upward than high-qualified workers. In contrast, high- and low-service class have experienced even the increase of earnings over the cohorts (main effect cohort metric in Model 4).

Change of an employer increases both upward and downward mobility.

Transition into retirement

The early transition into retirement slightly decreased over cohorts (Figure 5 and Table 4 Model 1). As argued in the theoretical part, this might be the effect of reforms that induced individuals to delay their retirement, coupled with a favorable opportunity structure on the labor market. For both sexes, the highest numbers of labor market exits coincide with the official retirement age (See age effects: Table A 4 in Appendix A).

---

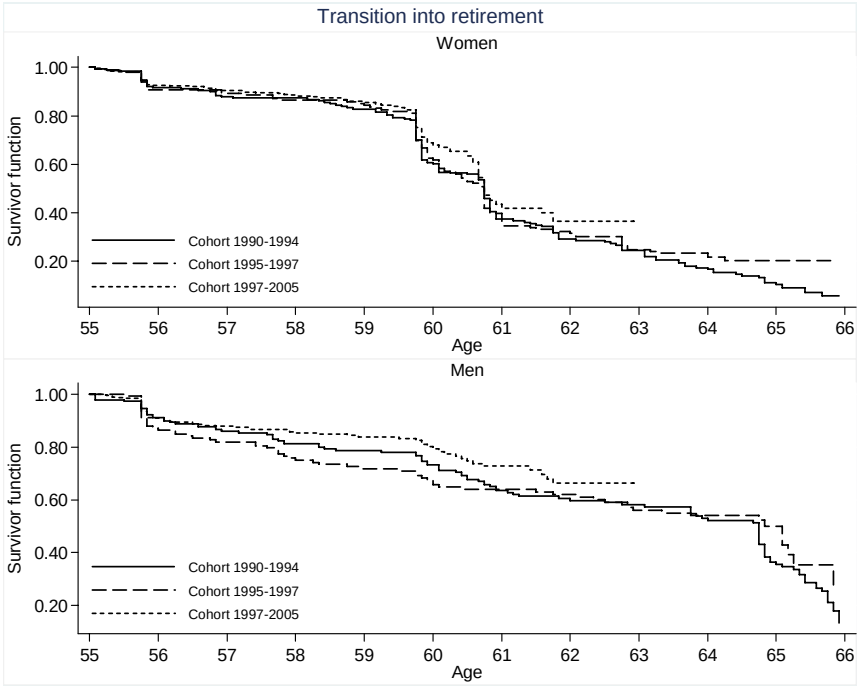
6 Because the squared effect of the variable cohort improves data fit for the mobility of men in the following models, metric squared variable is omitted for women.

As we argued in the methodical part, predictors reflecting wealth and human capital might bias the estimated effects because of the inadequacy of the proportional hazard rate specification. For this reason, we estimated the Gompertz model, introducing the shape parameter gamma for occupational classes and for pension schemes, when necessary (To understand the problematic, the exponential piecewise constant and Gompertz models are shown in Table A 5 Appendix A and described in footnote 7).

---

7 The Model 4 in Table A 5 shows the Gompertz model without covariates in the shape parameter gamma. The positive effect of the constant of the scale parameter gamma indicates the increasing retirement rates with increasing age, which corresponds to the age effects of the exponential piecewise constant model (Model 1). Model 1 and Model 2 assume proportional hazard process among different occupational classes. In Model 5 the effect of occupational groups is allowed to vary over time. According to the gamma coefficients, all occupational classes below service class display accelerating transition rates into retirement. Thus, the proportional hazard assumption biases estimated effects in the *scale* parameter (compare Model 3 and Model 5). Indeed, non-nested model tests with the Bayesian index criterion (BIC) and Akaike information criterion (AIC) show a much better model fit for Model 5 than for Model 3.

Figure 5: Kaplan-Meier survival estimate for retirement transitions



Which factors influence retirement behavior? First, compared to the service class, individuals in lower occupational classes are less likely to retire early (Model 2). This effect is especially pronounced for women. However, lower occupational class in the *shape parameter gamma* has an accelerating effect on the transition into retirement. These results are in line with the theoretical argumentation. While at the beginning of the process only high-qualified women have an option of early retirement (via occupation or private pension schemes), lower-qualified women have to delay their retirements or have to rely on state benefits. As time passes by, the probability of retiring for women from lower occupational classes increases relative to service class women (shape parameter gamma). As can be seen in Figure B 1 (Appendix B), the survivor function drops more abruptly at age 60 for all occupational classes lower than the service class. Fair actuarial adjustments for deferrals, coupled with high earnings, encourages many high-qualified women to delay their retirement decisions even after the official retirement age. Furthermore, some occupational pension schemes have leaving ages of sixty-two or sixty-three. Given that a pensionable age of 60 is also associated with a reduction of statutory employment protection, high-qualified women have the option of remaining in employment while abrupt retirement for low-qualified women indicates the push mechanism for these women.

The picture for men is similar to women's transitions (Table 4, Model 2). However, there is only a slight overlap of retirement rates between different occupational classes, because far more men are covered by occupational and personal pension schemes (Figure B 1 in Appendix B). It implies that early retirement options (voluntary or involuntary) are more evenly distributed among men than women. Individuals below the service class display lower retirement rates than the service class (Table 4, Model 2). We interpret it with the wealth hypothesis. High-qualified individuals are able to accumulate enough pension wealth in the form of occupational and personal pensions and various additional assets (savings, insurance etc.), and they are more likely to achieve the pension entitlements. Thus, high pension wealth pulls them into early retirement. We also estimated the effects of the changes for occupational classes over time. There is no clear evidence of change in either direction (Model not shown).

With respect to job histories, family care, unemployment, and inactivity spells accelerate the retirement transitions for women and spell of inactivity for men. Changing employers during the risk period (starting at the age of 55) delays retirement decisions. This might have a negative effect on pension income, but only for people with occupational pension schemes.

Finally, the kind of pension schemes, that individuals have during their late working career, and financial situation have a significant effect on their retirement behavior. Individuals with an occupational pension scheme or being in a good self-reported financial situation display higher transition rates into retirement before the statutory retirement age, but lower rates thereafter (Model 4). The mechanism behind these results is similar to that of occupational classes (for women). While for unobservable reasons some high earners speed up early retirements, others delay their retirement decisions. Apparently, individuals of both groups of this subpopulation have the option of deciding whether they want to retire earlier or later. In contrast, low earners without such pensions or in bad financial situation are neither able to retire earlier nor to delay their retirement decisions.

Private personal pensions (usually DC based plans) display lower transition rates than occupational pension schemes (DB based plans). As argued above, delayed retirements for individuals with DC plans is a result of lower pension wealth of the DC plans compared to the DB plans.

Finally, we estimated couple retirement. Neither marital status nor the employment status of the spouse play any important role for retirement processes (Model not shown).

Pension income [8]

We observe an increase of pension income across the cohorts (Table 5, Model 1). We interpret the increase of pension income as a result of the

8 To ensure the stability for $\beta_{1p}x_{ijp} \times time$ parameters we estimated the models using both sexes. The estimated effects for women are less pronounced than for men but display similar signs as for men. Where coefficients display different signs we introduced interaction effects. Models for both sexes are available upon request.

increasing share of individuals with occupational pension and private pension schemes.

As shown in Table 5 (Model 2), pension income is clearly structured by qualifications.[9] Higher educated people not only have higher pension receipts at the point of retirement ($\beta_{0p}x_{ijp}$), but they also display higher growth rates ($\beta_{1p}x_{ijp} \times time$) in their post-employment life (Model 3).

The results in the following models clearly demonstrate the widening gap over time in income provisions among individuals belonging to different educational groups (Table 5 Model 4). Compared to tertiary education, individuals holding all other educational degrees lose about 22 pounds a year when receiving their first pension income, which amounts to 330 pounds within the observation window (1990-2005). In Model 5 the rate of change for educational groups was multiplied with cohort metric. As Model 5 demonstrates, not only the pension receipts at the time of retirement have changed over cohorts but also the rate of change. This means that over time each new cohort of better-educated people experiences a higher growth than lower-educated individuals. Using Model 5 we plotted the pension income development for different cohorts and educational groups starting at the time when individuals retire and following them the next 5 years. For the retiring cohort 1990-1994 we observe differences at the point of retirement but there is no striking difference concerning pension growth (Figure 6). The picture changes dramatically over the cohorts. For the retiring cohort 1998-2005 not only the gap at the point of retirement increased significantly between the educational groups but also the pension growth. Especially individuals holding tertiary degree gained in pension growth compared to the previous cohorts. For other educational groups there is no increase of pension growth between the cohorts (Figure 6).

The gap in pension receipts at the very beginning of the retirement process has increased between different educational groups for several reasons. As we argued in the theoretical part, not all workers have profited from pension reforms. The fact that the low-qualified are more

---

9 Since the last occupational class might not be representative for the whole later employment career, we decided to use the educational. However, the effects for

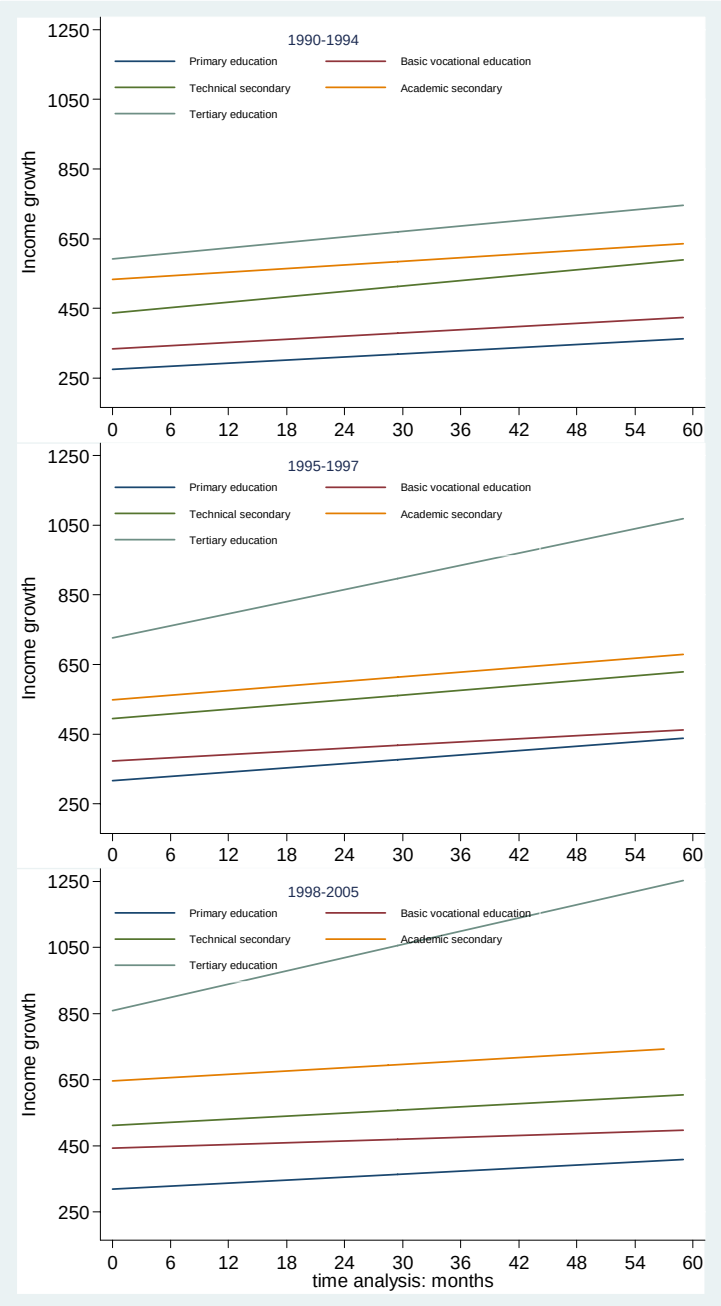
likely only to receive a state pension (first or second tier) in comparison to higher qualified workers and since non-state pensions grow much more quickly than state pensions explains the widening income gap between cohorts. Furthermore, a large variety of occupational pensions operate using 'bad' scheme provisions for the lower-qualified and 'good' schemes for better-qualified individuals, which also contributes to increasing cleavages between educational groups. The striking change in pension income growth for tertiary education we trace back to increasing diversification of pension income sources. While lower-qualified individuals rely mainly on state pension (first or second tier), the higher-qualified increasingly receive their pension income from several sources. They are more likely to receive occupational pension and to receive it from different several employers. Since 1988 they are also more likely to contribute to defined-contribution (DC) pension schemes (personal or stakeholder pensions).

In our theoretical part, we also argued that the destabilization of late careers might also have a negative effect on pension income. Indeed, each month of inactivity and/or unemployment has a scarring effect on the pension income (Model 6). Interruptions in employment in the form of the family care reduce future pension income for women (Model not shown). Changing employers close to retirement only has a scarring effect on subsequent pension income for men (model not shown). We trace this effect back to the penalties arising from reduction of occupational pensions when changing firms or companies. A full-time contract in one's last job and working in producer service industries increase pension income. Being a married woman reduces pension income.

---

occupational class display similar coefficients. Results for occupational class are available upon request.

Figure 6: Predicted values for different educational groups and cohorts (in Pounds)



SUMMERY AND DISCUSSION

In this paper we investigated pre-retirement and post-retirement phases in the UK, taking into account institutional and historical developments. For the first phase we addressed the question whether the demand for flexible forms of work has destabilized late careers in UK. In this respect we specifically focused on the question of which groups bear the main burden of the increasing demand for flexibility. Transition to retirement was also given a prominent place in this paper. For the second phase we investigated the impact of flexibilization and recent reforms on pension income development with an emphasis on social inequalities in later life.

Using the destabilization thesis, we argued that older people might bear a disproportionate part of flexibilization of the labor market. The main findings concerning social changes in a late career were that the situation improved for older men with respect to the unemployment risk. There is also clear evidence for an overall increase of upward mobility but no clear evidence for the increase of overall downward mobility. At first glance, these results contradict the destabilization thesis. However, as we argued in theoretical part, the *destabilization thesis* might apply in the first instance for low-qualified individuals since the demand shift towards high-skill-based manufactured goods and the creation of high-skill service jobs especially devaluated the job skills of lower-educated older workers (Fagan et al., 2005). Because deindustrialization began before our research window, most individuals with weak attachment to the labor market were already 'flexibilized'. Already at the risk set (at age 50) the probability of belonging to employment sample is much lower for lower-qualified than for higher-qualified people. Even though the lower-qualified have already been 'flexibilized' before turning 50 (and thus are not in the sample analysis), the lower-qualified workers are less likely to move upward but display higher hazard rate to move downward or to become unemployed than higher-qualified workers.

With respect to the transition to retirement we demonstrated that high-qualified men and women have an option of early retirement (via occupation or private pension schemes), while for lower-qualified men and women such an option is rather limited. At the same time, higher-

qualified persons also have the option to delay their retirement. High earnings and an increase in earnings for higher-qualified individuals even after the age of 50, coupled with fair actuarial adjustments for deferrals, have especially encouraged many high-qualified women to delay their retirement decisions even after the official retirement age. Thus, the lower-qualified are rather pushed into early retirement and thus have to accept the reduction of pension provisions in the future. In contrast, for the higher-qualified it is rather the matter of decision for timing of retirement.

Though private pension provisions and the spread of occupational pensions allow early retirement, there is an overall trend towards pension deferrals for all educational groups. Thus, pension reforms aiming at delaying retirement decisions seem to display their effect. However, as we argued in theoretical part, these reforms disadvantage especially low-qualified workers since many of higher-qualified workers have contracted out from state pension that yield lower pension provisions than private based pensions. Furthermore, lower-qualified are more likely to get 'flexibilized' and to contribute to pension system. They have to rely either on the basic state pension or on means-tested benefits, both of which are extremely low in UK. Indeed, as the Figure 6 demonstrates, there is a widening gap in pension income not only at the time point of retirement but also in later life.

To summarize the results, we found that an increasing demand for flexibilization and implementation of pension reforms has a different impact on different groups. For the higher-qualified we could not find any evidence for the deterioration of their situation in the late employment career. Considering the pension income their situation improved considerably over time. In contrast, the low-qualified workers face a double problem. On the one hand, they are confronted with higher risks of becoming economically inactive because the rapid decline of the manufacturing sector and profound technological changes have especially devaluated the skills of low-qualified workers. At the same time, the expanding service sector is not an alternative for low-qualified workers. On the other hand, recent market oriented reforms have also had a negative effect on the pension income for low-qualified workers since the pension systems have been designed for typical male career profiles with continuous full-time employment careers.

BIBLIOGRAPHY

Arulampalam, W. (2001). Is unemployment really scarring? Effects of unemployment experiences on wages. *Economic Journal, 111*(475), F585-F606.

Arulampalam, W., Gregg, P., & Gregory, M. (2001). Unemployment scarring. *Economic Journal, 111*(475), F577-F584.

Banks, J., & Blundell, R. (2005). Private pension arrangements and retirement in britain. *Fiscal Studies, 26*(1), 35-53.

Banks, J., Blundell, R., Disney, R., & Emmerson, C. (2002). Retirement, pensions and the adequacy of saving: A guide to the debate. *Briefing Note No. 29*.

Banks, J., & Smith, S. (2006). Retirement in the uk. *Oxford Review Of Economic Policy, 22*(1), 40-56.

Black, J. (2004). Britain since the seventies. Politics and society in the consumer age. In. London: Reaktion Books - Contemporary Worlds.

Blossfeld, H.-P., Golsch, K., & Rohwer, G. (2006). *Event history analysis with stata*. Mawah, NJ: Lawrence Erlbaum Associates.

Blossfeld, H.-P., & Rohwer, G. (2002). *Techniques of event history modeling. New approaches to causal analysis* (2 ed.). London: Lawrence Erlbaum Associates.

Blundell, R., & Johnson, P. (1999a). Pensions and retirement in the uk. *Social Security and Retirement around the World, I*.

Blundell, R., & Johnson, P. (1999b). Pensions and retirement in the uk. In J. Gruber & D. Wise (Eds.), *Social security and retirement around the world* (Vol. I). Chicago and London: The University of Chicago Press.

Blundell, R., Meghir, C., & Smith, S. (2002). Pension incentives and the pattern of early retirement. *The Economic Journal*, C153-C170.

Blundell, R., Meghir, C., & Smith, S. (2004). Pension incentives and the pattern of retirement in the united kingdom. In J. Gruber & D. A. Wise (Eds.), *Blundell* (pp. 643-690). Chicago/ London: The University of Chicago Press.

Breen, R. (1997). Risk, recommodification and stratification. *Sociology, 31*(3), 473-489.

Castells, M. (2000). *The rise of the network society. The information age* (2 ed.). Oxford: Blackwell Publishers.

Deakin, S., & Reed, H. (2000). River crossing or cold bath? Deregulation and employment in britain in the 1980th and 1990th. In G. Esping-Andersen (Ed.), *Why deregulate labour markets?* (pp. 115-147). Oxford: Oxford University Press.

Dickens, R., Gregg, P., & Wadsworth, J. (2003). The labour market under new labour: The state of working britain. *Palgrave Macmillan Publishing*.

DiPrete, T. A., de Graaf, P. M., Luijkx, R., Tahlin, M., & Blossfeld, H.-P. (1997). Collectivist versus individualist mobility regimes? Structural change and job mobility in four countries. *American Journal of Sociology, 103*(2), 318-358.

Disney, R., Emmerson, C. W., & Smith, S. (2003). Pension reform and economic performance in britain in the 1980s and 1990s. *Working Paper 9556*.

Erikson, R., & Goldthorpe, J. H. (1992). *The constant flux. A study of class mobility in industrial societies*. Oxford: Clarendon Press.

Fagan, C., Halpin, B., & O'Reilly, J. (2005). Service sector employment in germany and the uk. *Journal of Applied Social Science Studies/ Zeitschrift für Wirtschafts- und Sozial wissenschaften, Schmollers Jahrbuch, 125(1)*, 97-108.

Freeman, R. B., & Katz, L. F. (1995). Introduction and summery. In R. B. Freeman & L. F. Katz (Eds.), *Differences and changes in wage structures* (pp. 1–22). Chicago and London: The University of Chicago Press.

Gregory, M., & Jukes, R. (2001). Unemployment and subsequent earnings: Estimating scarring among british men 1984-94. *Economic Journal, 111*(475), F607-F625.

Halpin, B. (2000). Bhps work-life history files (Version 2). Essex.

Hansen, H. (2000). Schemes for early retirement from the labour market in eight countries. *DNISR Working Paper No. 1*.

Johnson, P., & Stears, G. (1996). Should the basic state pension be a contributory benefit? *Fiscal Studies, 17*(1), 105.

Ladipo, D., & Wilkinson, F. (2002). More pressure, less protection. In B. Burchell, D. Ladipo & F. Wilkinson (Eds.), *Job insecurity and work intensification*. London/New York: Routledge.

Meghir, C., & Whitehouse, E. (1997). Labour market transitions and retirement of men in the uk. *Journal Of Econometrics, 79*(2), 327-354.

Molenberghs, G., & Verbeke, G. (2005). Models for discrete longitudinal data. In. New York: Springer.

OECD. (2004). *Employment outlook*. Paris.

Regini, M. (2000). The dilemmas of labour market regulation. In G. Esping-Andersen & M. Regini (Eds.), *Why deregulate labour markets?* (pp. 11-28). Oxford: Oxford University Press.

Rowthorn, R., & Coutts, K. (2004). De-industrialisation and the balance of payments in advanced economies. *Cambridge Journal Of Economics, 28*(5), 767-790.

Rowthorn, R., & Ramaswamy, R. (1999). Growth, trade, and deindustrialization. *International Monetary Fund Staff Papers, 46*(1), 18-41.

Rubery, J. (1989). Precarious forms of work in the united kingdom. In J. Rodgers & G. Rodgers (Eds.), *Precarious jobs in labour market regulation: The growth of atypical employment in western europe* (pp. 49-73). Geneva: ILO publications.

Singelmann, J. (1978). *From agriculture to services. The transformation of industrial employment*. Beverly Hills, CA: Sage.

Snower, D. J. (1999). Causes of changing earnings inequality. *Discussion Paper Series, 29*.

Soskice, D. (1991). The institutional infrastructure for international competitiveness: A comparative analysis of the uk and germany. In A. B. Atkinson (Ed.), *Economics for the new europe* (1. Auflage ed., pp. 45-65). London: Macmillan Academic and Professional Ltd.

Soskice, D. (1999). Divergent production regimes: Coordinated and uncoordinated market economies in the 1980s and 1990s. In

H. Kitschelt, P. Lange, G. Marks & J. D. Stephens (Eds.), *Continuity and change in contemporary capitalism* (1 ed., pp. 101-134). New York: Cambridge University Press.

Table 1: Risk of the first unemployment after age of 50 (exponential piecewise constant model)

	Women				*Men*			
	Mod 1	Mod 2	Mod 3	Mod 4	Mod 1	Mod 2	Mod 3	Mod 4
Baseline								
Age 50-52	-5.56***	-5.80***	-2.41**	-2.68***	-5.49***	-5.76***	-1.04	-1.31+
Age 52-54	-5.46***	-5.70***	-2.31**	-2.59***	-5.41***	-5.67***	-0.82	-1.12
Age 54-56	-5.41***	-5.66***	-2.17**	-2.51***	-5.58***	-5.84***	-0.96	-1.29
Age 56+					-5.59***	-5.89***	-1.09	-1.52+
Cohorts (ref: 1990-94)								
1995-1997	-0.33+	-0.28	-0.29	-0.35+	-0.73**	-0.73**	-0.68**	-0.70**
1998-2005	0.26	0.30+	0.37*	0.24	-0.51*	-0.49*	-0.57**	-0.56*
Occupational class (ref: Service class)								
Qualified routine non-manual		-0.06	-0.20	-0.22		0.86**	0.37	0.32
Unqualified routine non-manual		0.30	0.08	0.02		0.47	0.29	0.24
Skilled manual workers		0.82**	0.78*	0.56+		0.40*	0.33	0.36
Unskilled manual workers		0.64**	0.30	0.23		0.28	0.09	0.07
Full vs. part			-0.77***	-0.65***			-1.42***	-1.36**
Self employed			-1.39***	-1.23***			-2.37***	-2.16***
Permanent			-1.42***	-1.34***			-1.70***	-1.58***
Size								
24-200			-0.18	-0.13			0.03	0.07
200-1000			-0.09	-0.01			-0.46	-0.42
1000 and more			-0.59+	-0.57			-0.08	-0.06
Branch of industry (ref: Public)								
Transformative			0.12	0.09			0.25	0.20
Distributive			0.36	0.33			0.29	0.21
Production service			0.11	0.06			0.00	-0.05
Social and personal service			0.04	-0.03			-0.06	-0.10

	Women				*Men*			
	Mod 1	Mod 2	Mod 3	Mod 4	Mod 1	Mod 2	Mod 3	Mod 4
Married			-0.06	-0.06			-0.26	-0.19
Health (ref. bad)			-1.21***	-1.24***			-1.76***	-1.79***
White			-0.24	-0.31			-0.02	-0.06
Region (ref: South)								
Middle			-0.41*	-0.37+			0.21	0.17
North			-0.10	-0.04			0.20	0.21
Scotland			0.20	0.16			0.31	0.31
Regional unemployment rate				-0.13+				0.07
Employer change (time varying)				0.15*				0.20*
Inactivity experience before at risk:								
Inactivity				0.00				-0.02
Family care				0.00***				0.00
Unemployment				0.01***				0.01**
Subjects	744	744	744	744	712	712	712	712
Failure	200	198	198	198	141	140	140	140
Log likelihood	-581.79	-570.29	-521.36	-511.40	-441.41	-435.86	-384.98	-379.74
AIC	1173.58	1158.59	1092.72	1080.81	894.82	891.72	821.96	819.47
BIC	1206.69	1218.19	1258.28	1272.86	934.78	958.32	995.12	1019.27

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 2: Probability of upward income mobility (exponential piecewise constant model with time varying covariates)

	Women upward				*Men upward*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Baseline								
Age 50-52	-3.853***	-3.606***	-3.965***	-3.992***	-3.787***	-3.641***	-4.756***	-4.818***
Age 52-54	-3.625***	-3.375***	-3.715***	-3.737***	-3.629***	-3.483***	-4.576***	-4.637***
Age 54-56	-3.732***	-3.479***	-3.799***	-3.815***	-3.656***	-3.503***	-4.567***	-4.630***
Age 56-58	-3.535***	-3.284***	-3.572***	-3.582***	-3.584***	-3.429***	-4.449***	-4.513***
Age 58+	-3.613***	-3.359***	-3.621***	-3.623***	-3.530***	-3.375***	-4.341***	-4.415***
Hourly earnings	-0.074***	-0.091***	-0.101***	-0.105***	-0.061***	-0.071***	-0.070***	-0.072***
Cohort, metric	0.061***	0.063***	0.087***	0.113***	0.134***	0.139***	0.183***	0.199***
Cohort metric square					-0.008***	-0.008***	-0.009***	-0.009***
Occupational class (ref: Service class)								
Qualified routine non-manual		-0.306***	-0.223**	0.093		-0.068	-0.137	-0.054
Unqualified routine non-manual		-0.155+	-0.095	0.086		-0.068	-0.091	0.125
Skilled manual workers		-0.300*	-0.130	0.514+		-0.220**	-0.216*	0.041
Unskilled manual workers		-0.205+	-0.179	-0.180		-0.165	-0.186	-0.369+
Cohort x Occupation (ref: Service class)								
Qualified routine non-manual				-0.046*				-0.013
Unqualified routine non-manual				-0.027				-0.039
Skilled manual workers				-0.103**				-0.040*
Unskilled manual workers				0.004				0.028
Part (ref. full)			-0.020	-0.018			0.130	0.132
Permanent			-0.104	-0.101			0.290	0.278
Size								
24-200			-0.037	-0.047			0.140	0.140
200-1000			-0.107	-0.131			-0.015	-0.019
1000 and more			0.128	0.125			0.025	0.036

	Women upward				*Men upward*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Branch of industry (ref: Public)								
Transformative			0.043	-0.066			0.022	-0.002
Distributive			0.183	0.095			0.079	0.053
Production service			0.184	0.076			0.169	0.145
Social and personal service			0.326+	0.258			-0.093	-0.116
Married			-0.002	-0.009			0.053	0.061
Health (ref. bad)			-0.169	-0.183			-0.056	-0.048
White			0.077	0.051			0.126	0.138
Region (ref: South)								
Middle			0.037	0.025			-0.083	-0.081
North			0.032	0.024			-0.108	-0.099
Scotland			0.087	0.085			0.010	-0.011
Regional unemployment rate				0.003				0.067**
Employee change (time varying)			0.103***	0.109***			0.099**	0.101**
Subjects	686	686	686	686	579	579	579	579
Failure	901	901	901	901	713	713	713	713
Log likelihood	-1049.967	-1044.538	-1032.326	-1028.396	-825.552	-822.693	-808.289	-806.253

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 3: Probability of downward income mobility (exponential piecewise constant model with time varying covariates)

	Women downward				*Men downward*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Baseline								
Age 50-52	-4.636***	-5.092***	-3.883***	-3.752***	-4.690***	-5.281***	-5.595***	-5.648***
Age 52-54	-4.604***	-5.069***	-3.830***	-3.692***	-4.425***	-5.013***	-5.302***	-5.357***
Age 54-56	-4.556***	-4.995***	-3.758***	-3.624***	-4.616***	-5.229***	-5.496***	-5.552***
Age 56-58	-4.699***	-5.149***	-3.908***	-3.780***	-4.555***	-5.182***	-5.436***	-5.494***
Age 58+	-4.527***	-5.021***	-3.774***	-3.633***	-4.546***	-5.186***	-5.453***	-5.515***
Hourly earnings	0.052***	0.069***	0.067***	0.069***	0.041***	0.068***	0.068***	0.068***
Cohort, metric	0.005	0.007	0.025	0.002	0.042	0.033	0.080*	0.098*
Cohort, metric square					-0.004+	-0.004	-0.005+	-0.006*
Occupational class (ref: Service class)								
Qualified routine non-manual		0.348**	0.370**	0.325		0.657***	0.561***	0.616*
Unqualified routine non-manual		0.477***	0.417**	0.161		0.548***	0.478***	0.567**
Skilled manual workers		0.943***	0.853***	0.670*		0.695***	0.672***	0.822***
Unskilled manual workers		0.670***	0.569***	0.179		0.794***	0.760***	1.169***
Cohort x Occupation (ref: Service class)								
Qualified routine non-manual				0.005				-0.008
Unqualified routine non-manual				0.038				-0.013
Skilled manual workers				0.030				-0.023
Unskilled manual workers				0.064+				-0.069+
Part (ref. full)			0.297*	0.316**			0.598+	0.605+
Permanent			-0.574**	-0.559**			-0.383*	-0.396*
Size								
24-200			-0.164+	-0.165+			-0.014	-0.017
200-1000			-0.048	-0.056			-0.120	-0.126
1000 and more			-0.190	-0.179			-0.302+	-0.325+

	Women downward				*Men downward*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Branch of industry (ref: Public)								
Transformative			-0.108	-0.115			0.167	0.168
Distributive			-0.040	-0.026			0.278*	0.273*
Production service			-0.209	-0.206			0.016	0.029
Social and personal service			-0.064	-0.064			0.132	0.154
Married			-0.080	-0.088			0.119	0.117
Health (ref. bad)			0.037	0.045			-0.046	-0.041
White			-0.585***	-0.590***			0.080	0.060
Region (ref: South)								
Middle			0.185+	0.167			-0.097	-0.091
North			0.148	0.149			-0.092	-0.084
Scotland			0.124	0.123			0.087	0.095
Regional unemployment rate				-0.003				0.045*
Employee change (time varying)			0.062	0.066			0.122**	0.123**
Subjects	686	686	686	686	579	579	579	579
Failure	573	573	573	573	505	505	505	505
Log likelihood	-922.786	-905.382	-883.796	-881.870	-759.618	-736.992	-720.190	-719.051

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 4: Transition into retirement: Gompertz and exponential piecewise constant model

	Women				*Men*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Cohorts (ref: 1990-94)								
1995-1997	0.06	-0.06	-0.20	-0.19	-0.15	-0.40*	-0.31+	-0.28
1998-2005	-0.11	-0.16	-0.33*	-0.38*	-0.30*	-0.52**	-0.48*	-0.44*
Occupational class (ref: Service class)								
Qualified routine non-manual		-0.47	-0.52+	-0.71*		-1.20	-1.30+	-1.15
Unqualified routine non-manual		-0.61*	-0.60+	-0.70*		-1.03+	-1.00+	-0.84
Skilled manual workers		-2.28***	-2.43***	-2.64***		-1.56***	-1.26**	-0.90*
Unskilled manual workers		-0.96**	-1.34***	-1.25**		-0.75	-0.62	-0.38
Full			-0.34**	-0.35**			0.30	0.28
Self employed			-0.40	-0.26			-0.31	0.02
Permanent			-0.10	-0.23			0.12	0.06
Branch of industry (ref: Public)								
Transformative			0.63*	0.69*			-0.33	-0.40
Distributive			0.55+	0.49			-0.06	-0.07
Production service			0.71*	0.72*			0.18	0.15
Social and personal service			0.84**	0.76*			0.37	0.27
Health (ref. bad)			-0.26	-0.22			-0.43+	-0.47*
White			-0.10	-0.02			-0.45	-0.31
Region (ref: South)								
Middle			-0.02	-0.04			-0.15	-0.14
North			-0.17	-0.18			0.15	0.08
Scotland			-0.72**	-0.88**			-0.55+	-0.65*
Regional unemployment rate				0.04				0.03
Employer change since 1978 (time varying)[a]			-0.02	-0.03			-0.02	0.00

	Women				*Men*			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Working experience before at risk								
Self-employed			0.00	-0.00			-0.00*	-0.00*
Self-employee with employers			0.00	0.00			-0.00	0.00
Part-time			0.00***	0.00*			-0.00	-0.00
Full-time			0.00***	0.00***			-0.00	-0.00
Incidence at risk								
Inactivity				0.40**				0.38+
Unemployment				0.08				-0.10
Family care				-0.23+				0.51
Pension paid in while working (ref. state pension)								
Occupational scheme				0.61*				1.75***
Private personal pension				-0.41*				-0.93***
Financial situation (ref. bad)				0.68*				0.42*
Constant	-5.39***	-5.60***	-6.10***	-5.98***	-4.61***	-5.27***	-5.01***	-6.22***
Gamma								
Occupational class (ref: Service class)								
Qualified routine non-manual		0.02***	0.02***	0.02***		0.01	0.01	0.01
Unqualified routine non-manual		0.02***	0.02***	0.02***		0.01	0.01	0.01
Skilled manual workers		0.05***	0.06***	0.06***		0.01**	0.02**	0.01*
Unskilled manual workers		0.02***	0.03***	0.03***		0.01	0.01	0.01
Pension paid in while working (ref. state pension)								
Occupational scheme				-0.01*				-0.00+
Private personal pension				0.01				0.01**
Financial situation (ref. bad)				-0.01**				
Constant	0.03***	0.03***	0.03***	0.03***	0.00*	0.02***	0.02***	0.03***
Subjects	830	830	830	830	703	703	703	703
Failure	477	477	477	477	335	335	335	335
Log likelihood	-652.27	-617.29	-581.22	-570.32	-796.72	-775.58	-721.96	-701.95

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 5: Growth curve models for pension growth after retirement for men and women

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Pension at retirement						
Cohort, metric	12.92***	11.15***	11.23***	33.68***	29.34***	28.70***
Age at retirement	-0.49	2.26	2.31	2.49	2.57+	3.81*
Women	-303.05***	-281.42***	-267.68***	-269.81***	-268.81***	-123.72***
Education (ref. tertiary)						
Primary education		-421.12***	-391.64***	-177.08*	-196.64**	-167.87*
Basic vocational education		-369.51***	-338.61***	-136.66+	-156.80*	-150.58*
Technical secondary		-257.34***	-234.88***	-37.19	-60.05	-65.76
Academic secondary		-189.17***	-166.73***	28.06	8.99	6.13
Cohort x Education (ref. tertiary)						
Primary education				-25.21***	-21.24**	-18.16**
Basic vocational education				-23.32**	-18.56*	-15.72*
Technical secondary				-22.88**	-17.93*	-15.35*
Academic secondary				-22.13**	-17.89*	-17.27*
Inactivity gaps since age 50						
Inactivity duration						-0.24+
Family duration care						-0.38
Unemployment duration						-1.95**
Number of employee changes						2.60
Health (1=good)						19.97
White						110.23+
Married						44.65+
Married women						-174.97***
Lambda						146.10
Branch of industry (ref. Public)						
Transformative						-15.17
Distributive						-3.51
Production service						77.41*
Social and personal service						-20.84

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Region (ref. South)						
Middle						-15.29
North						-36.05+
Scotland						-30.89
Permanent						13.25
Full vs. part						85.48***
Self employed						6.13
Constant	518.19***	670.45***	633.32***	427.24***	442.00***	154.36
Rate of change						
Women x time			-1.31***	-1.32***	-1.34***	-1.47***
Education x Time (ref. tertiary)						
Primary education			-1.97***	-1.99***	-0.12	-0.16
Basic vocational education			-1.95***	-1.98***	0.26	0.16
Technical secondary			-1.38**	-1.39**	0.79	0.74
Academic secondary			-1.47**	-1.49**	0.41	0.31
Cohort x Education x Time (ref. tertiary)						
Time x Cohort					0.43***	0.40***
Primary education					-0.39***	-0.37***
Basic vocational education					-0.48***	-0.45***
Technical secondary					-0.47***	-0.44***
Academic secondary					-0.39***	-0.35**
Time	2.23***	2.19***	4.63***	4.66***	2.66***	2.76***
Level 1 (l s.e.)	0.27**	0.27**	0.01	0.00	-0.05	-0.12
Level 2 RI (l s.e.)	5.72***	5.64***	5.64***	5.64***	5.64***	5.58***
Level 2 RS(l s.e.)	0.58***	0.41**	0.65***	0.62***	0.71**	0.66**
Cov	5.46***	5.46***	5.46***	5.46***	5.46***	5.46***
Number of subjects	1250	1250	1250	1250	1250	1250
Number of cases	9088	9088	9088	9088	9088	9088
Log likelihood	-64222.22	-64141.19	-64094.28	-64087.97	-64076.24	-63998.98

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Appendix A

Table A 1: Logistic regression for probability to belong to the sample

	Women			*Men*		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Cohort, metric	0.03 *	0.09 +	-0.00	-0.00	-0.07	-0.03
Cohort, metric square		-0.00			0.00	
Education (ref: tertiary)						
Primary			-1.89 ***			-1.26 **
Basic vocational education			-1.37 ***			-0.95 *
Technical secondary			-0.88 *			-0.66
Academic secondary			-0.64			-0.04
Constant	0.74 ***	0.52 *	2.31 ***	1.90 ***	2.17 ***	2.85 ***
Subjects	1168	1168	1168	959	959	959
Log likelihood	-670.32	-669.40	-636.33	-376.81	-376.37	-364.25
AIC	1344.64	1344.80	1284.67	757.63	758.75	740.51
BIC	1354.76	1359.98	1315.05	767.36	773.35	769.70

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table A 2: Upward (exponential piecewise constant model)

	Women upward				Men upward			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Baseline								
Age 50-52	-3.668***	-3.853***	-3.935***	-4.168***	-3.517***	-3.577***	-3.790***	-4.298***
Age 52-54	-3.474***	-3.625***	-3.724***	-3.936***	-3.341***	-3.378***	-3.636***	-4.103***
Age 54-56	-3.594***	-3.732***	-3.837***	-4.031***	-3.358***	-3.381***	-3.663***	-4.082***
Age 56-58	-3.395***	-3.535***	-3.639***	-3.815***	-3.290***	-3.306***	-3.591***	-3.964***
Age 58+	-3.482***	-3.613***	-3.701***	-3.854***	-3.256***	-3.301***	-3.537***	-3.845***
Cohorts (ref. 1990-94)								
1995-1997	0.272***				0.256**			
1998-2005	0.457***				0.231**			
Cohort, metric		0.061***	0.098***	0.110***		0.030***	0.134***	0.158***
Cohort, metric square			-0.003	-0.003			-0.008***	-0.008***
Hourly earnings	-0.070***	-0.074***	-0.074***	-0.076***	-0.060***	-0.061***	-0.060***	-0.060***
Regional unemployment rate				0.035				0.055**
Subjects	686	686	686	686	579	579	579	579
Failure	901	901	901	901	714	714	714	714
Log likelihood	-1054.339	-1049.967	-1049.218	-1048.492	-830.983	-831.908	-827.081	-824.122
AIC	2124.678	2113.935	2114.436	2114.985	1677.966	1677.817	1670.161	1666.244
BIC	2176.476	2159.257	2166.234	2173.257	1728.027	1721.620	1720.222	1722.563

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table A 3: Downward (exponential piecewise constant model)

	Women downward				Men downward			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Baseline								
Age 50-52	-4.603***	-4.636***	-4.673***	-4.707***	-4.612***	-4.561***	-4.677***	-5.271***
Age 52-54	-4.569***	-4.604***	-4.647***	-4.679***	-4.329***	-4.277***	-4.419***	-4.967***
Age 54-56	-4.511***	-4.556***	-4.602***	-4.631***	-4.520***	-4.462***	-4.618***	-5.106***
Age 56-58	-4.638***	-4.699***	-4.746***	-4.772***	-4.469***	-4.400***	-4.558***	-4.989***
Age 58+	-4.489***	-4.527***	-4.566***	-4.589***	-4.460***	-4.414***	-4.548***	-4.900***
Cohorts (ref. 1990-94)								
1995-1997	-0.082				0.027			
1998-2005	0.071				-0.131			
Cohort, metric		0.005	0.022	0.024		-0.014	0.046	0.072*
Cohort, metric square			-0.001	-0.001			-0.005+	-0.004+
Hourly earnings	0.052***	0.052***	0.053***	0.053***	0.040***	0.041***	0.041***	0.041***
Regional unemployment rate				0.005				0.065**
Subjects	686	686	686	686	579	579	579	579
Failure	573	573	573	573	508	508	508	508
Log likelihood	-921.974	-922.786	-922.685	-922.674	-764.295	-764.626	-763.450	-760.328
AIC	1859.948	1859.572	1861.370	1863.348	1544.591	1543.252	1542.899	1538.657
BIC	1911.746	1904.894	1913.167	1921.621	1594.652	1587.056	1592.960	1594.976

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table A 4: Transition into retirement (exponential piecewise constant model)

	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Baseline						
Age 55-57	-5.11***	-5.09***		-4.84***	-4.82***	
Age 57-59	-6.13***	-6.15***		-5.53***	-5.52***	
Age 59-62	-3.90***	-3.98***		-4.96***	-4.96***	
Age 62-64				-5.17***	-5.15***	
Age 64+				-3.45***	-3.43***	
Cohorts (ref. 1990-94)						
1995-1997	-0.16			-0.14		
1998-2005	-0.42***			-0.38*		
Cohort, metric		0.06	-0.04*		-0.02	-0.04*
Cohort, metric square		-0.01**			-0.00	
Constant			-5.39***			-5.34***
Gamma						
Constant			0.02***			0.01***
Subjects	831	831	831	703	703	703
Failure	386	386	386	252	252	252
Log likelihood	-629.81	-623.76	-630.95	-575.77	-576.04	-604.97
AIC	1269.63	1257.52	1267.90	1165.54	1166.08	1215.95
BIC	1302.36	1290.24	1286.82	1211.04	1211.58	1234.73

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table A 5: Transition into retirement for women: comparison piecewise constant with Gompertz distribution models

	Model 1	Model 2	Model 3	Model 4	Model 5
Baseline					
Age 55-57	-4.76***	-6.06***	-6.20***		
Age 57-58	-5.86***	-5.85***	-6.02***		
Age 58+	-3.41***	-3.41***	-3.57***		
Cohorts (ref: 1990-94)					
1995-1997	-0.03	-0.08	-0.16+	-0.09	-0.19
1998-2005	-0.32***	-0.45***	-0.60***	-0.24+	-0.38*
Occupational class (ref: Service class)					
Qualified routine non-manual		0.17	0.23	0.69***	-0.71*
Unqualified routine non-manual		0.02	0.16	0.62***	-0.70*
Skilled manual workers		0.12	0.24	0.82***	-2.64***
Unskilled manual workers		-0.03	0.06	0.52**	-1.25**
Full			-0.23*	-0.24+	-0.35**
Self employed			-0.16	-0.08	-0.26
Permanent			-0.08	-0.25	-0.23
Branch of industry (ref: Public)					
Transformative			0.09	0.23	0.69*
Distributive			-0.00	0.06	0.49
Production service			0.13	0.09	0.72*
Social and personal service			0.16	0.40	0.76*
Married			-0.05	0.04	-0.10
Health (ref. bad)			-0.13	-0.23	-0.22
White			0.05	0.14	-0.02
Finacial situation (1=good)			0.06	-0.07	-0.07
Region (ref: South)					
Middle			-0.04	-0.09	-0.04
North			-0.07	-0.31*	-0.18
Scotland			-0.25+	-0.50*	-0.88**
Employer change since 1978 (time varying)[a]			-0.00	-0.03	-0.03
Working experience before at risk					

Self-employment without employees			-0.00	-0.00	-0.00
Self-employment with employees			0.00	0.00	0.00
Part-time			0.00	0.00**	0.00*
Full-time			0.00***	0.00***	0.00***
Incidence at risk:					
Inactivity			0.35***	0.36**	0.40**
Unemployment			-0.01	0.16	0.08
Familiy care			0.05	-0.08	-0.23+
Pension paid in while working (ref. state pension)					
Occupational scheme			0.32**	0.30*	0.43
Private personal pension			-0.02	0.06	-0.41
Constant				-7.15***	-5.98***
Gamma					
Pension paid in while working (ref. state pension)					
Occupational scheme					-0.00+
Private personal pension					0.01
Occupational class (ref: Service class)					
Qualified routine non-manual					0.02***
Unqualified routine non-manual					0.02***
Skilled manual workers					0.06***
Unskilled manual workers					0.03***
Constant				0.05***	0.03***
Subjects	830	732	732	732	732
Failure	477	387	387	387	387
Log likelihood	-656.35	-337.12	-321.96	-286.76	-251.76
AIC	1322.69	692.23	709.92	637.52	579.51
BIC	1354.67	749.60	920.27	832.89	811.51

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Appendix B:

Figure B 1: Survivor function for transition into retirement for men and women