Transitions out of and back to employment among older men and women in the UK

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DWP Ministerial Seminar Series on Ageing and Pensions
4 September 2007

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Outline of my talk

1. Introduction and motivation

2. Modelling framework

3. Data and variables

4. Results

5. Conclusions and outlook

This paper is part of my PhD thesis at the University of Essex. The most recent publicly available version is SEDAP Research Paper No. 197 (May 2007):

http://socserv.mcmaster.ca/sedap/p/sedap197.pdf
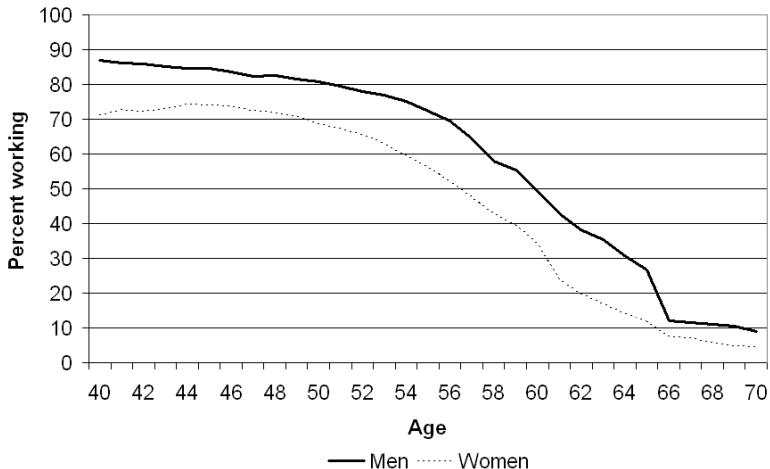
Figure: Proportion of men and women working in the UK, by age (source: own analysis using BHPS data)

Introduction and motivation I

- People live longer, work shorter: who will pay for pensions?
- Special feature of UK pension provision: importance of occupational pension (OP) schemes (BHPS 1990–2004, ages 40–70: 65% of men, 46% of women)
- Emerging questions:
    - When does somebody retire and why?
    - Who might return to work and why?
    - How are these transitions affected by potential income in and out of work?
- These are the questions that I address in this research

Introduction and motivation II

- Earlier work by Blau for the USA (data from 1961 to 1979), by Mastrobuoni for Germany (data from 1984 to 1996) and Italy (data from 1989 to 1995), and by Meghir and Whitehouse for the UK (data from 1968 to 1989)
- Blau and Meghir and Whitehouse only analysed men, Mastrobuoni also women
- Common result: importance of pension benefits (decreasing the probability of returning to work)
- What about older people's labour market transitions in the UK today?

Introduction and motivation III

- I attempt to build upon the work of Meghir and Whitehouse, extending it in four respects:

  1. I also analyse women: interesting to see whether the difference in the state pension age has any effects (I will use the monthly nature of my data to analyse exact timing of transitions)
  2. Meghir and Whitehouse excluded OP members (60% of their sample) from the regression analysis, I include them (I do not have information about the details of the pension plan, but argue that even a simple distinction can yield interesting results)
  3. Variables: more detailed health variables; effects of work experience; more detailed measures of marital status and the unemployment rate
  4. Data: much more recent (BHPS with transitions spanning from 1990 to 2004)

Modelling framework I

- I use a so-called discrete-time proportional-hazard regression model
- In this model, every person is, in each month, in one of the following two labour market states:
    - status=E if hours>0
    - status=N if hours=0
- The corresponding transitions that I analyse are called EN (exit from the labour market) and NE (entry or re-entry to the labour market, called 'return' for simplicity)

Modelling framework II

- I also take unobserved heterogeneity (UH) into consideration: two people with identical characteristics may not always have the same probability of making an EN or an NE transition

- I therefore use a model that allows for unobserved heterogeneity; I use a model that allows for two different groups of people and, both for men and for women, the results of the model will tell me which fraction of each sex is estimated to belong to which group

Data I

- British Household Panel Survey (BHPS): carried out by the Institute for Social and Economic Research, University of Essex, since 1991
- Was a representative sample of the population of Great Britain (south of the Caledonian Canal); a youth sample and a sample of Northern Ireland have been added since then
- Since 1991, adult members of these households have been interviewed annually even when forming a new household, including new adult members (who may have reached the age threshold or joined the household)

Data II

- I analyse labour market transitions taking place during the panel period (1990–2004) made by people aged 40–70 for whom I observe work history data (used to generate variable about employment experience)

- My final estimation sample includes 8,361 people (3,828 men and 4,533 women) with 14,412 spells (6,543 men's and 7,869 women's); slightly less than 700,000 person-months

- I use the Family Expenditure Survey (FES) to predict potential incomes in and out of work because endogenous, etc. (similar to what Meghir and Whitehouse do)

- (Side remark: because I predict these variables, I correct the standard errors of my transition models)

Dependent variable

- My dependent variables are the (monthly) transitions:
  - Whether somebody who is in E makes a transition to N or not
  - Whether somebody who is in N makes a transition to E or not

Explanatory variables

- My explanatory variables with which I want to explain these transitions:
    - Elapsed spell duration (in months)
    - Age and age squared (in months minus 479); additional variables for age 60 and age 65
    - Age $\times$ duration interaction variable
    - Marital status (five states)
    - Health status (five states)
    - Occupational pension variable (whether ever contributed to or received OP, or not)
    - Child variable (whether ever had child or children or not)
    - Employment experience = % of months worked when aged 15–40
    - Regional unemployment rate (12 UK regions, from National Statistics)
    - Predicted log income in employment ('earning power')
    - Predicted log income out of employment

Sample means (without marital status variables)

| Variable	Men	Women
Failure	0.0073	0.0075
(Age in years)	51.3580	51.6928
Duration	47.4213	46.9202
Employment experience	0.9068	0.6227
Ever had child	0.7654	0.8198
Ever had OP	0.6497	0.4633
(Excellent health)	0.2579	0.2249
Good health	0.4502	0.4501
Fair health	0.1990	0.2216
Poor health	0.0752	0.0813
Very poor health	0.0177	0.0221
Unemployment rate	6.4662	6.5982
Predicted income in work (Jan 04 GBP/wk)	399.9163	202.8809
Predicted income out of work (Jan 04 GBP/wk)	138.3641	58.1184
Person-months	310,287	369,193
Persons	3,828	4,533

Empirical hazard rates I

- Hazard rate: usually defined as the risk of making a certain transition conditional on being 'at risk' at the beginning of the time period
- An example: the annual hazard rate of making an EN transition 'at' age 65 is given by the number of people who make an EN transition between the month directly before their 65th birthday and 12 months later, divided by the number of people who are in E directly before their 65th birthday
- Analogously for the quarterly or the monthly hazard rate
- I also compute 95% confidence intervals
- Two side remarks:
    1. Hazard rates are usually defined depending on duration, but I defined them depending on age: more appropriate for my analysis
    2. I also correct for 'censoring'
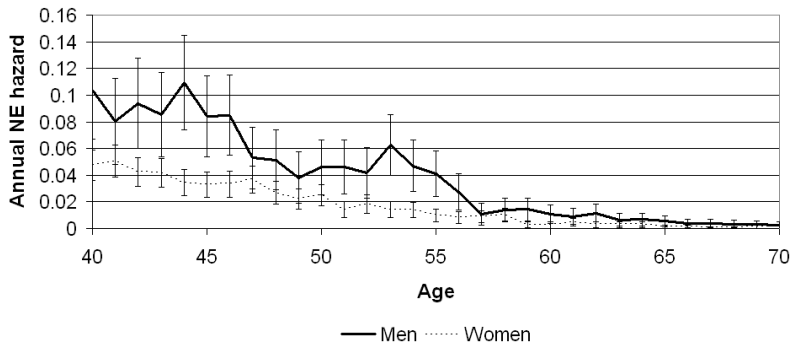
Empirical hazard rates II

- Some results:
    - Men have a major exit peak at age 65, women two less pronounced exit peaks at ages 60 and 65
    - One particularly striking example: if a man is working in the month prior to his 65th birthday, the risk of leaving work within one month equals 45% (13 times larger than the average of the two surrounding months)
    - Up to age 55, return hazard is higher for men than for women
    - OP members have a higher return probability (especially women)

Empirical annual exit hazard rate by sex
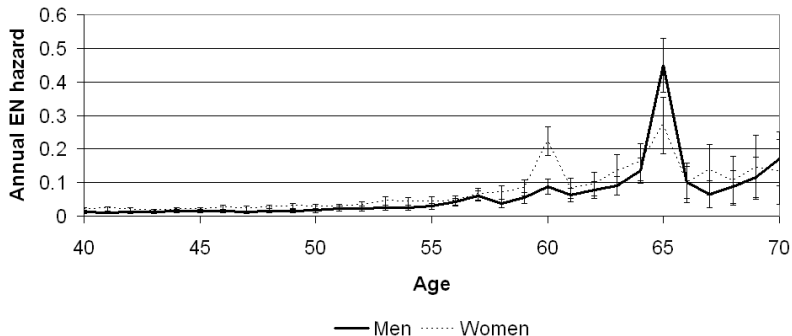
Empirical annual return hazard rate by sex

Hazard regression results I

- Of course, these empirical hazard rates are not a multivariate analysis: they only consider the data split into a few groups
- In what follows, I present the results of my multivariate analysis (singling out the effects of each variable included)

Hazard regression results II (model with UH)

Variable	M, EN	W, EN	M, NE	W, NE
Married	○	−	○	○
Separated	○	○	○	○
Divorced	○	−	○	○
Widowed	○	○	○	○
Age	+	+	inv. U	inv. U
Duration	−	−	−	+
Employment experience	−	−	+	+
Ever had child	○	−	○	○
Ever had OP	+	−	○	+
Poor health	+	+	−	−
Unemployment rate	○	−	○	−
Predicted income in work	−	−	+	+
Predicted income out of work	○	○	−	−

Hazard regression results II

Most important explanatory variables in terms of the size of the effects:

- Age 60 and age 65 dummy variables in the exit regression (hazard ratios = HRs at ages 60 and 65: 2.7 and 21.6 for men; 8.9 and 8.7 for women)
- In other words, comparing two working men who are otherwise completely identical, the man who is in his 65th birthday month has a probability of exiting the labour market within one month that is 21.6 times as large as that of the man who is not in his 65th birthday month
- Health (HRs for very poor health compared to excellent health: 4.1 for men EN, 3.2 for women EN, 0.25 for men NE, 0.15 for women NE)
- Predicted income out of work (reducing it by one third halves men's predicted median duration out of work; for women, even stronger)

Predicted effects on median exit age of somebody working at age 40

	Men	**Women**
Actual	53.4	50.5
REF: Predicted	53.6	51.2
Predicted with 2/3 of experience	−3.3***	−1.6***
Predicted with 4/3 of income in work	+1.6***	+1.2***
Predicted with 2/3 of income out of work	+0.6	−0.9
REF: With OP	53.5	52.5
Without OP	+2.1***	−1.5**
REF: Good health	54.2	52.4
Excellent health	+1.4**	+0.4
Fair health	−1.0***	−3.2***
Poor health	−7.4***	−7.4***
Very poor health	−9.8***	−8.1***
REF: With child/children	54.1	51.3
Without child/children	−1.1	−2.5***

Predicted effects on median return age of somebody not working at age 40

	Men	**Women**
Actual	42.3	43.3
REF: Predicted	42.6	43.3
Predicted with 2/3 of experience	+1.2***	+0.6***
Predicted with 4/3 of income in work	−0.5***	−0.6*
Predicted with 2/3 of income out of work	−1.3***	−1.5***
REF: With OP	41.2	41.5
Without OP	+0.3	+0.9***
REF: Good health	41.3	42.4
Excellent health	+0.2	±0.0
Fair health	+0.7*	+1.1**
Poor health	+4.8***	+7.2***
Very poor health	+5.4***	>+27.6***
REF: With child/children	42.9	43.3
Without child/children	+0.4	+1.9

Conclusions

- Strong evidence for birthday effects; for men, they are markedly bigger than Blau found for the USA
- Health and potential income out of work: most important factors apart from the birthday effects (again, the effects are larger than in literature)
- Marital status not very important
- Employment experience has the expected effects, but not as large as one may have expected
- OP membership: expected effects for women, but men's puzzle
- Potential income in work has the expected effects, but not that large
- UH stat. significant: twice as many women as men are 'movers' (in other words, even after controlling for a number of characteristics, women are still twice as likely as men to make frequent labour market transitions)

Some policy implications I

- The importance of birthday effects may be caused by pension incentives, by the loss of employment protection, or by social custom ('I retire at age 65 because everybody else does')
- Recent research by Banks, Emmerson, and Tetlow (presented at this year's annual conference of the Royal Economic Society) suggests that pension incentives play an important role—and they could of course be changed by policymakers

Some policy implications II

- Health has large effects; increasing older people's health will therefore have large effects on their participation in the labour market
- Reducing potential income out of work is unlikely to be feasible—but the 'New Deal 50 Plus' might potentially be modified so as to provide even larger incentives to work
- Even though the effects of employment experience on older people's labour market transitions are smaller than those of health or potential income out of work, employment experience is of course crucial to ensure a decent retirement income (not studied in this research), especially for women
- The fact that women are more likely to be 'movers' may be voluntary or involuntary
- It may lead to employers preferring to hire men (lower risk of losing the employee)

New questions. . .

- Questions arising from this paper:
    - What is the role of other household members' resources?
    - Do part-time work and self-employment really become more important for older Britons, as some people suspect? (There is surprisingly little empirical evidence so far.) If yes, what are the determinants?
    - What about the effects of assets/wealth?
    - Why do women make fewer exit and entry transitions in times of high unemployment?
    - Why do childless women face a higher risk of exiting the labour market than otherwise identical women with children?

. . . and some further research

- In a follow-up paper, I looked at spousal interactions in older couple's labour market decisions: how older men and women adjust their working hours in response to shocks to their partner's labour income (SEDAP Research Paper No. 198)
  - Men do not react as much to labour income shocks to their partner as women, but there are some observed effects on men
  - Interesting asymmetries, for instance for a health shock to the partner
- In a third paper, I analysed the effects of cognitive functioning (CF) on labour force participation among older men and women in England (SEDAP Research Paper No. 222)
  - Some minor effects of the CF level on the probability to work (most likely reverse causality)
  - In a dynamic model, *changes* in CF have no effect whatsoever on exits from or entries to the labour market
  - Somewhat surprising; contrasts with earlier research on younger age groups

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David Haardt (McMaster U and U of Essex)   Transitions out of and back to employment   DWP, 4 September 2007