The Effects of Economic Conditions Around Retirement on Later-Life Functional Health and the Mitigating Role of Social Protection Programmes

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Abstract

Purpose: This paper examines whether unemployment rates at ages 55-64 are associated with physical functioning at later-life among cohorts in 11 European countries. The paper also assesses whether specific social protection programmes mitigate potential health-effects of macroeconomic conditions.

Data and Methods: Data came from 6,036 participants in the Survey of Health, Ageing and Retirement in Europe (SHARE) aged 64-74 at baseline. Data on functional limitations, as well as employment, marriage and fertility retrospective histories were linked to national unemployment rates as well as quantitative information on different social protection programmes for ages 55-64.

Results: Higher unemployment rates at ages 55-57 and 63-64 were associated with more functional limitations at ages 50-74 among men and women. Preliminary results suggest that social protection programmes may mitigate negative health-effects of higher unemployment rates. Additional analyses will systematically assess the role of social protection programmes and potential mechanism linking economic conditions and health at later-life.

BACKGROUND

The most recent recession has led to sharp increases in unemployment rates in many European countries. Although unemployment itself has been linked with a worsening in health due to income losses and psycho-social stress, many studies have found that health – on a population level – higher unemployment are often associated with better health outcomes (Gerdtham and Ruhm 2006; Ruhm 2000). More recently studies by Miller et al. (1985) and Stevens et al. (1980) have shown that much of the so called procyclical relationship between the business cycle and health is driven by changes in health of older individuals.

Whereas all of these studies exclusively look at the short-term or contemporaneous effects of economic fluctuations on health, relatively little is known about the long-term effects of economic fluctuations on health beyond the period around birth. Nevertheless, numerous studies have analysed long-term effects of individual risk factors associated with economic decline such as unemployment and job-loss (e.g., Browning and Heinesen 2012; Coile, Levine and McKnight 2012; Eliason and Storrie 2009; Ferrie et al. 2002; Gallo et al. 2004; Gallo et al. 2006; Sullivan and von Wachter 2009). The majority of these studies conclude that involuntary job-loss or unemployment is associated with increases in the mortality-risks many years after the exposure.

Given the lack of evidence of long-term effects of economic conditions, we argue that the time around retirement may be another critical period with potential consequences for health. Experiencing more or less favourable economic conditions around retirement may trigger several social mechanisms which have been previously linked to health: 1) Several studies have found that unfavourable economic conditions have a significant effect on the chances of becoming unemployed (Coile and Levine 2011; Von Wachter 2007). Especially older displaced workers are significantly less likely to be in the labour force several years after displacement than non-displaced workers and also have lower earnings. 2) Another mechanism potentially linking macroeconomic conditions around retirement and health may be the relationship between recessions and housing prices. For example Banks et al. in a recent study find significant wealth shocks for older people due to the recent recession in England (Tarr 1988). Besides the effects of recessions on housing-wealth, Coile and Levine (2010) point out that more affluent household are significantly affected by declines in the stock market and show evidence (for the US) that the latter can have long-term consequences on retirement incomes. 3) As such, on the one hand individuals could be forced to work longer because their pension

benefits would otherwise be insufficient. Whereas no conclusive evidence exists on how retirement (ages) causally affects health (Behncke 2012; Coe and Zamarro 2011; Neuman 2008; Shim et al. 2010), the literature on this topic has argued/found that retirement can lead to changes in social networks, time spend for leisure/recreational activities or income, thus dimensions which have all been linked to health (Chung et al. 2009; Henkens, van Solinge and Gallo 2008; Lahti et al. 2011; Slingerland et al. 2007).

This study aims to bridge the gap between studies focusing on the short-term effects of economic cycles on population-health on the one hand and those studies on long-term health-effects of individual experiences of unemployment or job-loss on the other hand. Linking data on macroeconomic cycles during the period 1946-2001 to individual data for 11 countries participating in the Survey of Health, Ageing and Retirement in Europe (SHARE), we examine whether differential exposure to unemployment rates in the years nearing retirement (ages 55-64) has long-lasting cumulative effects on health at ages 65 to 74. We focus on measures of old-age physical functioning as measure of health at old age. In addition, we examine longitudinal changes in these outcomes over the follow-up periods. We also explore the relationship between recessions experienced during adulthood and potential mechanisms linking the former with later-life health such as labor market trajectories, marital status and health behaviours. Finally, we explore whether the potential health-effects of unemployment levels around retirement are attenuated by characteristics of social protection programmes including unemployment as well as sickness insurance.

DATA AND METHODS

Data Source

SHARE is a longitudinal survey designed to provide comparable information on the health, employment and social conditions of Europeans aged 50+. Detailed information about the methodology is available elsewhere (Börsch-Supan and Jürges 2005; Börsch-Supan and Schröder 2011a; Börsch-Supan and Schröder 2011b; Schröder 2011). Nationally representative samples in 13 European countries were drawn either from national or regional population registries, or from multi-stage sampling in Northern Europe (Sweden and Denmark), Western Europe (Austria, France, Germany, Switzerland, Belgium, and the Netherlands), Southern

Europe (Spain, Italy and Greece) and Eastern/Central Europe (Poland and the Czech Republic), as well as Ireland and Israel. Participants in each country were interviewed in 2004/5 and subsequently re-interviewed in 2006/7 and 2008/9. We included respondents who completed the retrospective life-histories expanding through early childhood until last interview assessed in 2008/9, and who had enrolled in the study in either 2004/5 or 2006/7. Data from the Czech Republic and Poland were not included due to lack of comparable data on unemployment rates before 1990. In addition, Ireland and Israel were excluded because they did not participate in the life history interview. The total sample included 20,780 participants in 11 Western European countries. We restricted the sample to participants aged 64 to 74 years at study entry and excluded individuals with missing information on relevant health outcomes or covariates. The final sample included 6,036 men and women from 11 countries.

Functional Health

Functional status was measured by self-reported difficulties with activities to maintain basic self-care needs (Tsae-Jyy 2004) using three scales: The Katz Activities of Daily Living (ADL) scale, assessing difficulties with six basic self-care tasks (bathing, dressing, toileting, transferring, continence, and eating) (Katz et al. 1970); the index of Instrumental Activities of Daily Living (IADL), assessing difficulties with more advanced activities (using a map, preparing hot meals, shopping, telephone use, taking medications, housekeeping tasks, and managing money) (Lawton and Brody 1969); and an index of mobility partly based on the Nagi-scale(Nagi 1976), which assessed difficulties with 10 mobility and fine motor control items such as walking 100 meters, sitting two hours and climbing stairs. We then constructed a summary score based on the number of difficulties reported for any of the three scales.

Macroeconomic conditions

We use historical time-series data on country-specific unemployment rates as a percentage of the economically active population derived from the International Labour Organization (ILO). More specifically we use age-specific unemployment rates for the age groups 50-54 as well as 55-64. Robustness checks are carried out using the unemployment rate for the entire working-age population. we separated the cyclical component from the increasing secular trend in the log of GDP for each country using a Hodrick-Prescott Filter (HP) (Hodrick and Prescott 1997),

an approach widely applied in the analysis of business cycles. Figure 1 shows the trends in deviations from the unemployment rate in two exemplary countries.

In order to be able to detect whether the exposure to economic fluctuations is particularly sensitive at specific age-intervals, we follow the approach previously used by Coile et al. (2012) and construct 2- and 3-year averages of the deviation from the unemployment rate. Thus the main indicators used in the subsequent analyses are averages of deviation from the unemployment rate at ages 55-57, 58-59, 60-62 and 63-64.

Control and Early Childhood Variables

Control variables included sex, year of birth, country of birth and educational attainment, based on three broad categories from the International Standard Classification of Education (ISCED) (UNESCO 2012). We incorporated extensive measures of childhood conditions to control for systematic differences in functional status between individuals, including: (a) self-rated health during childhood; (b) an index of childhood deprivation based on items available at the parental home (e.g. a fixed bath, water supply or central heating); (c) self-reported diagnosis of major childhood illnesses (infectious, non-communicable or mental/cognitive); (d) the occupation of the main breadwinner based on four major categories from the International Standard Classification of Occupations (ISCO) (ILO 2012); (e): the number of books in the parental home; (f): having missed school due to illness for more than one month; (g): having lost a parent before reaching age 16; (h): the occupation of the first job according to four major categories from the ISCO. Finally, we include a dummy variable whether individuals were employed at ages 50-54.

Potential Mechanisms

Based on the retrospective histories, we constructed a set of indicators of labor market, fertility and marriage outcomes at ages 55-64. Indicators included having employment gaps of at least one year at ages 55-64. We distinguished gaps due to lay-off or a worker's plant been closed down from gaps due to other reasons ('resigned', 'mutual agreement', 'a temporary job had been completed', 'retired', or 'other reason'). We also constructed indicators for whether individuals experienced fluctuations between full-time and part-time working hours at least once at ages 55-64; and the age of retirement. We furthermore incorporated measures of whether individuals were married at the time of interview, whether they reported drinking more than two

glasses of alcohol almost every or 5/6 days a week at the time of interview, and whether they currently smoked.

In subsequent analyses we plan to assess whether unemployment rates at ages 55-64 are associated with these outcomes.

Social Protection Programmes

To explore whether specific social policies mitigate potential health-effects of different levels of unemployment at ages 55-64, we linked annual data from the Comparative Welfare Entitlements Dataset (Scruggs, Jahn and Kuitto 2013) to the individual records. Following the approach for coding the deviations from the unemployment rates, we constructed averages at ages 55-57, 58-59, 60-62 and 63-64 for the following policies:

1) Unemployment insurance - Replacement rate: Single (100%)
2) Unemployment insurance - Replacement rate: Family (100%/0%)
3) Sickness insurance - Replacement rate: Single (100%)
4) Sickness insurance - Replacement rate: Family (100%/0%)
5) Sickness insurance - Coverage: Percentage of the labor force with sickpay insurance
6) Minimum pension replacement rate: Single (100%)
7) Minimum pension replacement rate: Family (100%/0%)
8) Standard pension replacement rate: Single (100%)
9) Standard pension replacement rate: Family (100%/0%)
10) "Standard" number of years of pension insurance to be considered fully covered
11) Ratio of employee pension contributions to employer and employee pension
12) Male retirement age
13) Female retirement age

To assess whether any of these policies mitigated the potential health-effects of unemployment rates, we plan to interact the age-specific indicators for each of the above policies with the respective unemployment deviation at the same age-interval.

Analytical Strategy

We implemented a country-fixed effect Poisson model, which regressed the number of functional limitations on country-specific economic conditions at age-intervals between 55-64. In this model, the impact of macroeconomic fluctuations is identified by within-country variations in unemployment rates at ages 55-64, relative to changes occurring in other countries. These estimates automatically control for cross-country differences in determinants of health that are time-invariant (e.g., lifestyles, geographic factors), as well as determinants that vary over time but spread rapidly across countries (e.g., medical technologies) (Gerdtham and Ruhm 2006).

The basic model was as follows:

$$Ln(D_i) = \alpha_i + X_i\beta + E_{ct}\gamma + C_c + T_t + \varepsilon_i$$

where $Ln(D_i)$ is the natural logarithm of the index of functional limitations for individual *i*, α_i is the intercept, X_i is a vector of individual-level controls, $E_{ct}\gamma$ is a proxy for economic conditions (annual deviations from the unemployment trend at ages 55-64) for country *c* at year *t*, and ε_i is the error term. The country-fixed effect C_c controls for all unmeasured differences across countries such as institutional characteristics or levels of functional health, while the year fixed-effect T_t controls for time-varying factors that changed homogenously across countries

Analyses were first conducted for the entire sample and subsequently stratified according to gender to examine differential effects for these groups. Regression estimates were exponentiated to obtain risk ratios (RR) and 95% confidence intervals (CI).

The primary analysis focused on functional limitations as measured at study enrolment. In addition, we examined whether unemployment deviations experienced at ages 55-64 were associated with longitudinal changes in functional limitations over a two-year follow-up period. Changes were defined as the onset of a new limitation with between waves 1 and 2.

RESULTS

Table 1 shows estimates of the effect of an increase in unemployment in at different age-intervals between 55-64 on functional limitations at ages 65-74, incorporating controls for confounders, country- and year-fixed effects. Among men and women (column 1), a one-point increase in the unemployment rate at ages 55-57 (RR=1.07, 95%CI=1.03-1.12) as well as at ages 63-64 (RR=1.15, 95%CI=1.07-1.25) were associated with a higher number of functional limitations at ages 65-74 (RR=1.07, 95%CI=1.03-1.12). Column 2 shows the stratified results for men showing that for the latter higher unemployment rates at ages 55-57 are associated with more functional limitations at ages 65-74 (RR=1.11, 95%CI=1.05-1.18). Form women (column 3) increases in the unemployment rate at ages 55-57 (RR=1.07, 95%CI=1.03-1.12) as well as at ages 63-64 (RR=1.05, 95%CI=1.00-1.09) were associated with a higher number of functional limitations at ages 65-74 (RR=1.18, 95%CI=1.07-1.31).

Table 2 shows estimates for the effect of an increase in unemployment at ages 55-64 on the on the odds of an increase in the number of functional limitations between baseline and follow-up at ages 65-74. The results suggest that for men (column 2) higher unemployment rates at ages 58-59 increase the odds of experiencing an additional limitation (RR=1.20, 95%CI=1.05-1.36). For women (column 3), the same effect is found for unemployment rates at ages 63-64 (RR=1.25, 95%CI=1.02-1.53).

For demonstration Table 3 shows the association between the interaction term of unemployment deviations at various age-intervals and the unemployment insurance replacement rate (for a family) at the same age-interval with the number of functional limitations at ages 65-74. As the results suggest, higher levels of unemployment insurance replacement rate have may mitigate the negative health-effects of higher unemployment rates at ages 63-64 (RR=0.13, 95%CI=0.02-0.78).

CONCLUSIONS

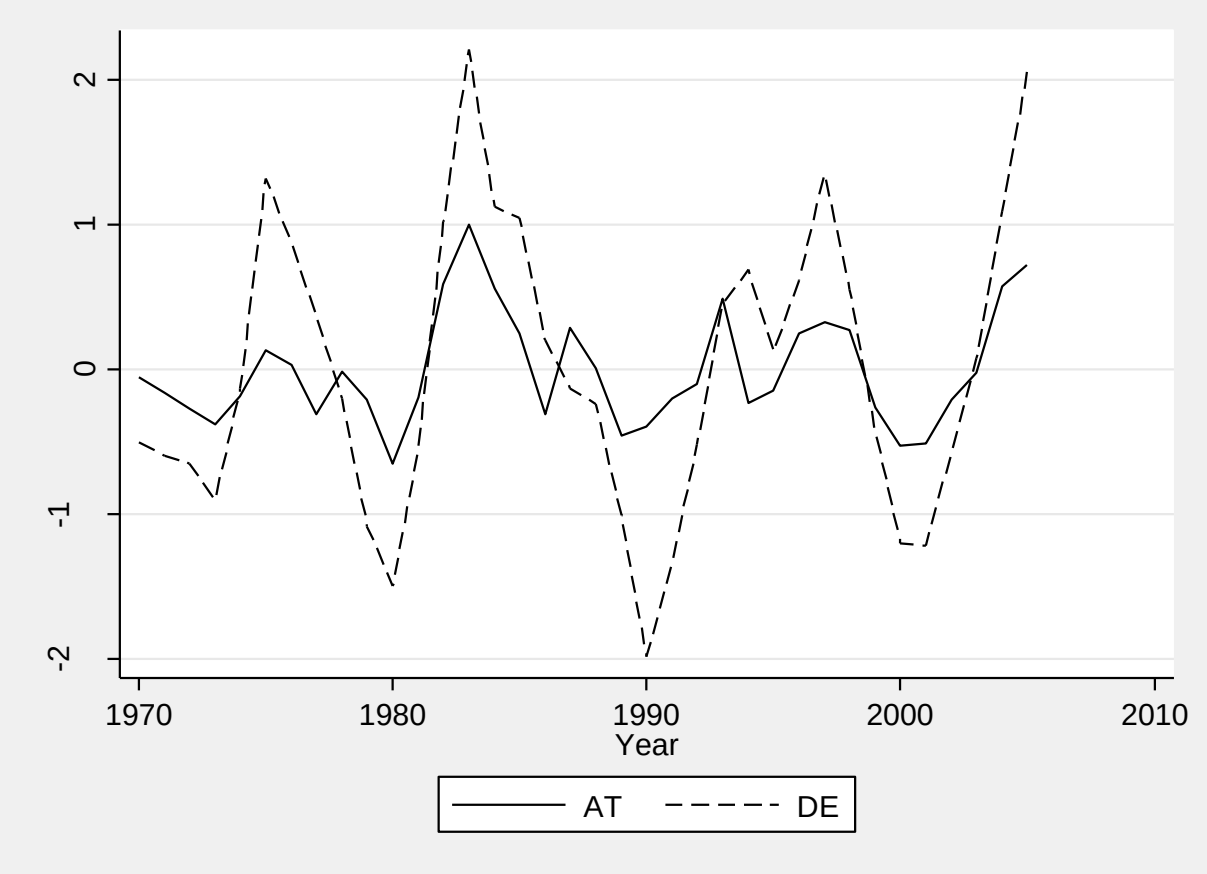
Our preliminary results suggest that higher unemployment rates at ages 55-57 and 63-64 were associated with more functional limitations at ages 50-74 among men and women. We also find some evidence that this pattern also exists for the onset of additional limitations at ages 65-74.

In additional analyses we plan to assess whether unemployment rates at ages 55-64 are associated with potential mechanisms explaining these associations such as labour market trajectories, health behaviours and marital status.

Preliminary results suggest that social protection programmes may mitigate negative health-effects of higher unemployment rates, whereas our plan is to systematically assess the role of social policies in affecting the relationship between unemployment rates and health at later-life.

TABLES AND FIGURES

Figure 1: Deviations from the unemployment rate in two European countries: 1970-2005



Note: The figure shows the deviations from the unemployment rate for ages 55-65 obtained by the Hodrick-Prescott filter with a smoothing parameter of 100.

Table 1: The effects of unemployment rates at ages 55-64 on functional limitations at ages 65-74

	Men & Women		Men		Women	
	RR	*CI*	*RR*	*CI*	*RR*	*CI*
Unempl. deviation 55-57	1.07	(1.03-1.12)	1.11	(1.05-1.18)	1.05	(1.00-1.09)
Unempl. deviation 58-59	0.93	(0.84-1.02)	0.94	(0.87-1.01)	0.91	(0.81-1.03)
Unempl. deviation 60-62	1.04	(0.93-1.16)	1.09	(0.89-1.34)	1.02	(0.94-1.11)
Unempl. deviation 63-64	1.15	(1.07-1.25)	1.10	(0.91-1.34)	1.18	(1.07-1.31)
Female	1.63	(1.37-1.93)				
Age	1.07	(1.04-1.10)	1.07	(1.04-1.09)	1.07	(1.03-1.11)
1st occupation ISCO						
Low skill blue (ref.)		1.00		1.00		1.00
High skilled blue collar	0.97	(0.80-1.17)	1.07	(0.79-1.46)	0.92	(0.72-1.18)
Low skilled white collar	1.03	(0.79-1.34)	0.93	(0.64-1.37)	0.97	(0.75-1.26)
High skilled white collar	1.19	(1.02-1.38)	0.93	(0.70-1.24)	1.27	(1.04-1.56)
Education						
Primary (ref.)		1.00		1.00		1.00
Secondary education	0.92	(0.76-1.10)	0.66	(0.55-0.78)	1.05	(0.86-1.29)
Post-secondary education	0.67	(0.57-0.79)	0.46	(0.34-0.61)	0.71	(0.53-0.94)
Bad SRH as child (yes)	1.30	(1.03-1.63)	1.13	(0.87-1.45)	1.37	(1.07-1.75)
Childhood infectious diseases (yes)	1.00	(0.88-1.14)	1.42	(1.13-1.78)	0.82	(0.61-1.11)
Childhood physical injuries (yes)	1.14	(0.97-1.35)	1.40	(1.25-1.57)	1.00	(0.76-1.31)
No. of books at home						
None or very few (0-10 (ref.)		1.00		1.00		1.00
Enough to fill one shelf (11-25)	0.77	(0.67-0.88)	0.84	(0.67-1.06)	0.77	(0.70-0.84)
Enough to fill one bookcase (26-100)	0.91	(0.87-0.95)	0.94	(0.80-1.09)	0.89	(0.82-0.96)
Enough to fill two bookcases (101-200)	0.94	(0.68-1.31)	0.83	(0.66-1.05)	0.98	(0.63-1.52)
Enough to fill two or more bookcases (more than 200)	0.56	(0.37-0.85)	0.32	(0.15-0.68)	0.68	(0.47-0.97)
Main breadwinner ISCO						
Low skilled blue collar) (ref.)		1.00		1.00		1.00
High skilled blue collar	0.87	(0.80-0.96)	0.88	(0.71-1.09)	0.86	(0.79-0.93)
Low skilled white collar	0.83	(0.76-0.92)	0.76	(0.66-0.88)	0.89	(0.79-1.01)
High skilled white collar	0.91	(0.86-0.97)	0.78	(0.54-1.12)	0.98	(0.80-1.21)
Non-employed at ages 50-54	0.99	(0.99-1.00)	1.03	(1.01-1.05)	0.99	(0.99-1.00)

Notes: Models include fixed-effects for country of birth (results not shown).

Table 2: The effects of unemployment rates at ages 55-64 on the onset of additional functional limitations at ages 65-74

	Men & Women		Men		Women	
	OR	*CI*	*OR*	*CI*	*OR*	*CI*
Unempl. deviation 55-57	0.95	(0.77-1.18)	0.93	(0.74-1.16)	0.98	(0.77-1.24)
Unempl. deviation 58-59	1.02	(0.92-1.14)	1.20	(1.05-1.36)	0.90	(0.72-1.12)
Unempl. deviation 60-62	1.17	(0.97-1.41)	1.36	(0.91-2.02)	1.09	(0.91-1.32)
Unempl. deviation 63-64	1.17	(0.99-1.39)	1.14	(0.91-1.43)	1.25	(1.02-1.53)

Note: Models include fixed-effects for country of birth as well as the same covariates as in Table 1 (results not shown).

Table 3: Interaction of unemployment rates at ages 55-64 with unemployment insurance replacement rates (family) at the same age-intervals and their effect on functional limitations at ages 65-74

	Men & Women		Men		Women	
	OR	*CI*	*OR*	*CI*	*OR*	*CI*
Interaction ages 55-57	1.11	(0.42-2.92)	2.06	(0.47-9.05)	0.62	(0.21-1.78)
Interaction ages 58-59	0.82	(0.30-2.25)	0.52	(0.20-1.33)	0.72	(0.23-2.24)
Interaction ages 60-62	0.39	(0.04-4.34)	1.76	(0.03-10.76)	0.18	(0.01-2.23)
Interaction ages 63-64	0.13	(0.02-0.78)	0.16	(0.00-46.92)	0.14	(0.01-2.36)

Note: Models include fixed-effects for country of birth, the same covariates as in Table 1 as well as the main effects of both unemployment rates as well as the unemployment insurance replacement rates (results not shown).

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