

Retirement and Unexpected Health Shocks

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Motivation

- Workers plan to retire as soon as they are entitled to leave with the full pension
- Massive demonstrations when a government attempts to postpone the time of retirement
- Belief: retirement will be a source of greater wellbeing
- Is it actually the case?
- Behavioural economics: possibility of incorrect expectations
- Is retirement associated with incorrect expectations?
- Impact of retirement on *unexpected* health shocks
- What we do not try to do: measuring the causal impact of retirement on health

Related literature

- Large literature on the effect of retirement on health
 - Prior: retirement should make people happier and healthier
 - But retirement could also have a negative impact on health (anomia, disaffiliation)
- Methodological challenge: endogeneity
 - Reverse causation running from health to retirement (individuals in poor health are more likely to retire)
 - Third common hidden factors (time preference)
 - → Instrumentation using the countries' legislation concerning pension eligibility age

Related literature

- Mixed results
- Negative impact of retirement on health outcomes
 - US: Dave et al. (2008), Goldman et al. (2008), Bonsang et al. (2012), Coe et al. (2012)
 - Europe: Godard (2016), Mazzonna and Peracchi (2012), Behncke (2012)
- Positive impact of retirement on health outcomes
 - Israel: Shai (2015)
 - Australia (HILDA): Zhu (2016) (women), Mavromaras et al. (2013), Atalay and Barrett (2014)
 - Germany: Hallberg et al. (2015)
 - Sweden: Hallberg et al. (2015)
- Differences could be due to differences in econometric specifications, control variables, and countries of interest (Motegi et al., 2016)

Objective

- Measuring the unexpected effect of retirement on health
- Focus on unexpected health transitions
 - → We do not confuse the cause and the consequence of retirement

Data - Health

- Household, Income and Labour Dynamics in Australia (HILDA)
- 2001-2014
- Individuals aged 50-75
- 36-item Short Form Health Survey (SF-36)
 - 35 questions capturing 8 health concepts: physical functioning (PF), physical role functioning (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social role functioning (SF), mental health (MH), and emotional role functioning (RE)
 - + 1 question on health transition

Data - Health

- Health expectation
 - “How true or false is [each of] the following statement for you?” “I expect my health to get worse”
 - Definitely true / Mostly true / Don’t know / Mostly false / Definitely false
 - Recoding: True / Don’t know / False
- Health transition
 - Question about health transition in the past year
 - Much better now than 1 year ago / Somewhat better than 1 year ago / About the same as 1 year ago / Somewhat worse than 1 year ago / Much worse than 1 year ago
 - Recoding: Better / Same / Worse
- We combine health expectation reported at $t-1$ with health transition reported at t

Outcome	Expectation (t-1)	Transition (t)
Unexpective negative	Doesn't know whether health will get worse	Worse health
-	Expects same or better health	Worse health
Unexpected same	Doesn't know whether health will get worse	Same health
Unexpected positive	Expects worse health	Same health
-	Expects worse health	Better health
-	Doesn't know whether health will get worse	Better health
Expected	Expects worse health	Worse health
(mix of unexpected negative and expected)	Expects same or better health	Same health
(mix of unexpected positive and expected)	Expects same or better health	Better health

Table 1. Descriptive Statistics, for ages 50-75

Variables	Males Proportion (%) or mean	(standard errors)	Females Proportion (%) or mean
Overall health expectations			
Expects worse health (t-1)	29.55%		21.71%
Doesn't know whether health will get worse (t-1)	36.52%		37.96%
Expects same or better health (t-1)	33.93%		40.33%
Overall health transition			
Worse health (t)	17.27%		19.22%
Same health (t)	72.70%		67.47%
Better health (t)	10.03%		13.31%
Unexpected shocks for overall health and other cases			
<i>Unexpected negative</i>			
Doesn't know whether health will get worse (t-1) & Worse health (t)	8.64%		11.09%
Expects same or better health (t-1) & Worse health (t)	5.76%		7.19%
Expects same or better health (t-1) & Worse health (t)	2.88%		3.90%
<i>Unexpected same: Doesn't know whether health will get worse (t-1) & Same health (t)</i>	27.25%		26.09%
<i>Unexpected positive</i>			
Expects worse health (t-1) & Same health (t)	24.35%		17.97%
Expects worse health (t-1) & Same health (t)	18.86%		11.32%
Expects worse health (t-1) & Better health (t)	1.99%		1.99%
Doesn't know whether health will get worse (t-1) & Better health (t)	3.50%		4.67%
Expected negative: Expects worse health (t-1) & Worse health (t)	8.63%		8.23%
Expects same or better health (t-1) & Same health (t)	27.02%		30.35%
Expects same or better health (t-1) & Better health (t)	4.11%		6.27%

- More than 1/3 of individuals do not have a precise idea about the evolution of their health
- Women are more optimistic than men
- More than 2/3 of individuals think that their health will remain the same
- 9% of males experience negative shocks and 24% positive shocks
- For females: 11% and 18%

Data – Health and life satisfaction

- Additional measures of unexpected changes, using the scores from the SF-36
 - By comparing expectations regarding the evolution of general health with the evolution of the scores between two consecutive years
- Life satisfaction: “How satisfied are you with your life?”
 - From 0 (“Totally dissatisfied”) to 10 (“Totally satisfied”)

Data - Retirement

- Labor market status: Employed / Unemployed / Not in the labor force
- Individuals who are over 45 years of age and who are not working:
 - “Have you retired (completely) from the workforce?”
 - Yes / No / Never in the workforce
 - In every wave except in 2003, 2004, 2007, and 2011
- → Explanatory variable:
 - Employed (reference)
 - (Unemployed or not in the labor force and) not completely retired
 - Completely retired
 - Never in the workforce
- 55% of males and 42% of females are employed
- 39% of males and 50% of females are completely retired

Data - Retirement

- Transition in the labor market status:
 - Remains employed (t-1, t) (reference)
 - Moves from employed (t-1) to completely retired (t)
 - Moves from not completely retired (t-1) to completely retired (t)
 - ... etc...

Empirical strategy

- Effect of labor market status on health shocks (OLS-FE)

$$Y_{i,(t-1,t)} = \beta.LMS_{i,t} + \theta.X_{i,t} + \alpha_i + \varepsilon_{i,t}$$

- Y: Unexpected shocks
- LMS: Labor market status (completely retired, etc...)
- X: Control variables
 - Age, marital status, family size, education, the logarithm of household income, year dummies
- Re-estimation using labor market transitions (t-1, t)

Empirical strategy

- Dynamics of shocks around retirement
- Groups of people who are not yet completely retired:
 - Those who will retire in 5 year or more / in the next 3-4 years / in the next 2-3 years / in the next 1-2 years / in the next 0-1 year
- Groups of people who are completely retired:
 - Those who have been retired for 0-1 year / 1-2 years / 2-3 year / 3-4 year / 4-5 years / 5 years or more
- Regression of health shocks on group dummies:

$$Y_{i,(t-1,t)} = \beta_{-4}R_{-4,i,t} + \beta_{-3}R_{-3,i,t} + \beta_{-2}R_{-2,i,t} + \beta_{-1}R_{-1,i,t} \\ + \beta_0R_{0,i,t} + \beta_{+1}R_{+1,i,t} + \beta_{+2}R_{+2,i,t} + \beta_{+3}R_{+3,i,t} + \beta_{+4}R_{+4,i,t} + \beta_{+5}R_{+5,i,t} \quad (2) \\ + \theta X_{i,t} + \alpha_i + \varepsilon_{i,t}$$

Results – Expectations and transitions

Table 3. Correlation between retirement, expectations and overall health transition

	(1) Expectations Expects worse health (t-1)	(2) Expectations Doesn't know whether health will get worse (t-1)	(3) Expectations Expects same or better health (t-1)	(4) Transition Health is worse (t)	(5) Transition Health is the same (t)	(6) Transition Health is better (t)
Males						
Not completely retired (t)	0.011 (0.016)	0.015 (0.019)	-0.026 (0.016)	0.027* (0.016)	-0.044** (0.018)	0.017 (0.014)
Completely retired (t)	0.035*** (0.013)	0.000 (0.015)	-0.035*** (0.013)	0.009 (0.011)	-0.031** (0.013)	0.022** (0.009)
Observations	23,624	23,624	23,624	26,373	26,373	26,373
R-squared	0.005	0.002	0.009	0.011	0.007	0.004
Number of Persons	4,047	4,047	4,047	4,433	4,433	4,433
Females						
Not completely retired (t)	0.009 (0.013)	0.011 (0.017)	-0.020 (0.015)	0.059*** (0.014)	-0.072*** (0.016)	0.012 (0.013)
Completely retired (t)	-0.003 (0.010)	0.020 (0.014)	-0.017 (0.012)	0.020* (0.011)	-0.032** (0.014)	0.012 (0.010)
Observations	25,997	25,997	25,997	29,081	29,081	29,081
R-squared	0.003	0.003	0.008	0.009	0.005	0.003
Number of Persons	4,398	4,398	4,398	4,803	4,803	4,803

Notes. Control variables are included: age, age square, marital status, household size, the number of years of education, the logarithm of household income, and year dummies. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Males: complete retirement is correlated with worse expectations and better transitions

Females:

- Retired women do not form any specific expectations concerning the evolution of their health
- Complete retirement is correlated with worse transitions

Results – Unexpected changes

Table 4. The effect of retirement on health shocks

	(1) Unexpected negative (t-1 / t)	(2) Unexpected no shock (t-1 / t)	(3) Unexpected Positive (t-1 / t)
Males			
Not completely retired (t)	0.028* (0.014)	-0.012 (0.018)	0.019 (0.018)
Completely retired (t)	-0.002 (0.009)	-0.021 (0.014)	0.042*** (0.013)
Observations	22,667	22,667	22,667
R-squared	0.004	0.002	0.003
Number of Persons	3,905	3,905	3,905
Females			
Not completely retired (t)	0.044*** (0.014)	-0.022 (0.015)	-0.004 (0.015)
Completely retired (t)	0.003 (0.009)	0.016 (0.013)	-0.016 (0.011)
Observations	24,973	24,973	24,973
R-squared	0.004	0.002	0.001
Number of Persons	4,269	4,269	4,269

Males: Complete retirement increases the probability of unexpected positive changes.

Females: They form more precise expectations around the time of complete retirement. Complete retirement does not have any impact.

Both genders: Incomplete retirement increases unexpected negative changes.

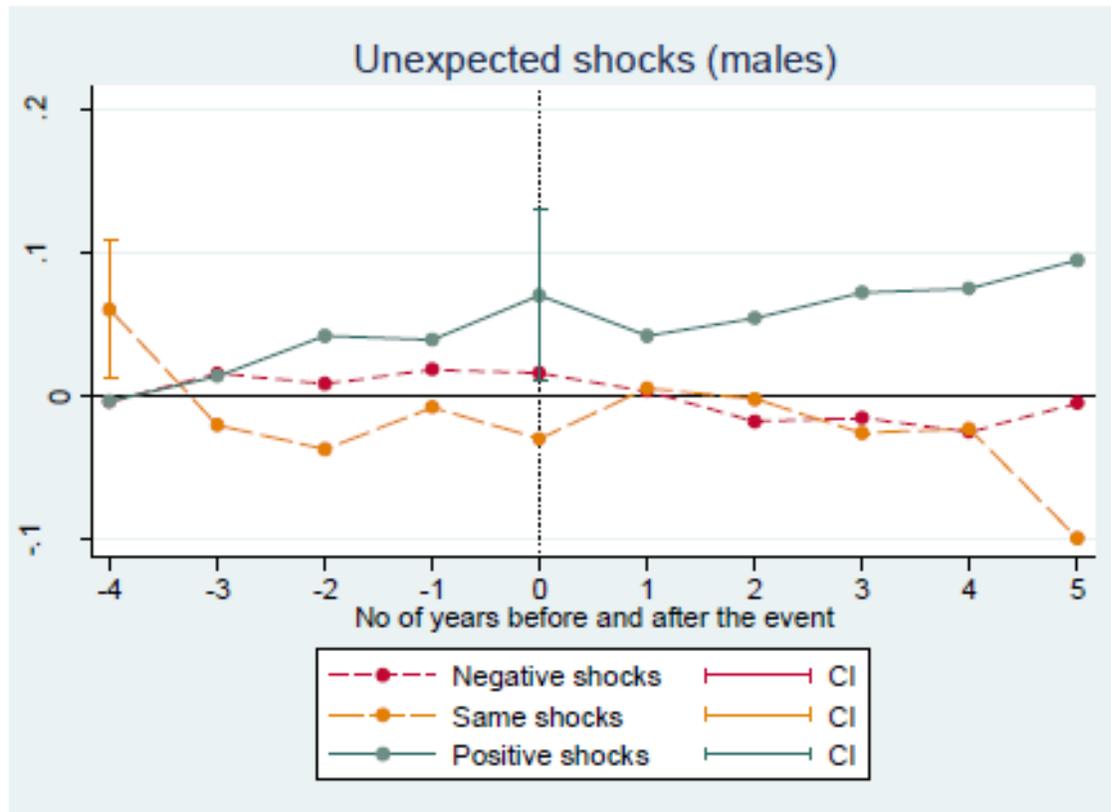
Table 3. Correlation between retirement, expectations and overall health transitions

	(1) Expectations Expects worse health (t-1)	(2) Expectations Doesn't know whether health will get worse (t-1)	(3) Expectations Expects same or better health (t-1)	(4) Transitions Health is worse (t)	(5) Transitions Health is the same (t)	(6) Transitions Health is better (t)
Males						
Employed (t)	Ref	Ref	Ref	Ref	Ref	Ref
Not completely retired (t)	0.006 (0.014)	0.013 (0.017)	-0.019 (0.015)	0.030** (0.014)	-0.047*** (0.017)	0.016 (0.013)
Completely retired (t)	0.034*** (0.013)	0.000 (0.015)	-0.035*** (0.013)	0.010 (0.011)	-0.032** (0.013)	0.022** (0.009)
Observations	23,799	23,799	23,799	26,555	26,555	26,555
Number of persons	4,047	4,047	4,047	4,434	4,434	4,434
Males						
Remains employed (t-1, t)	Ref	Ref	Ref	Ref	Ref	Ref
Employed (t-1) & Not completely retired (t)	0.011 (0.018)	-0.005 (0.022)	-0.006 (0.020)	0.054*** (0.019)	-0.064*** (0.022)	0.010 (0.016)
Employed (t-1) & Completely retired (t)	0.012 (0.019)	0.020 (0.023)	-0.032* (0.019)	0.029 (0.018)	-0.059*** (0.021)	0.030** (0.014)
Not completely retired (t-1) & Employed (t)	-0.032* (0.019)	0.014 (0.024)	0.017 (0.023)	-0.041** (0.019)	-0.015 (0.024)	0.057*** (0.019)
Remains not completely retired (t-1, t)	-0.009 (0.025)	0.026 (0.030)	-0.018 (0.025)	0.013 (0.027)	-0.030 (0.031)	0.017 (0.025)
Not completely retired (t-1) & Completely retired (t)	0.046 (0.034)	0.014 (0.041)	-0.060* (0.033)	-0.055* (0.030)	0.032 (0.037)	0.024 (0.027)
Completely retired (t-1) & Employed (t)	0.038 (0.029)	-0.004 (0.033)	-0.034 (0.029)	0.025 (0.027)	-0.060* (0.032)	0.035 (0.022)
Completely retired (t-1) & Not completely retired (t)	-0.003 (0.047)	0.082 (0.055)	-0.079* (0.044)	-0.088* (0.053)	0.013 (0.061)	0.076 (0.048)
Remains completely retired (t-1, t)	0.040** (0.016)	-0.005 (0.019)	-0.035** (0.017)	-0.016 (0.015)	-0.018 (0.018)	0.034*** (0.012)
Other cases (t-1, t)	0.462*** (0.171)	-0.484*** (0.169)	0.022 (0.021)	-0.552*** (0.044)	0.589*** (0.100)	-0.038 (0.059)

Males: transition to complete retirement is correlated with worse expectations and better transitions

	(1) Unexpected negative (t-1, t)	(2) Unexpected same (t-1, t)	(3) Unexpected positive (t-1, t)
Males			
Employed (t)	Ref	Ref	Ref
Not completely retired (t)	0.024* (0.013)	-0.016 (0.016)	0.015 (0.016)
Completely retired (t)	-0.003 (0.009)	-0.021 (0.014)	0.041*** (0.013)
Observations	22,836	22,836	22,836
Number of persons	3,905	3,905	3,905
Males			
Remains employed (t-1, t)	Ref	Ref	Ref
Employed (t-1) & Not completely retired (t)	0.037** (0.017)	-0.038* (0.021)	0.019 (0.020)
Employed (t-1) & Completely retired (t)	0.025 (0.015)	-0.027 (0.021)	0.046** (0.021)
Not completely retired (t-1) & Employed (t)	-0.005 (0.016)	-0.007 (0.023)	0.051** (0.021)
Remains not completely retired (t-1, t)	0.012 (0.021)	0.001 (0.029)	0.024 (0.026)
Not completely retired (t-1) & Completely retired (t)	-0.035 (0.026)	-0.013 (0.038)	0.104*** (0.037)
Completely retired (t-1) & Employed (t)	0.032 (0.025)	-0.033 (0.029)	0.067** (0.031)
Completely retired (t-1) & Not completely retired (t)	-0.030 (0.049)	0.055 (0.051)	0.060 (0.054)
Remains completely retired (t-1, t)	-0.024** (0.011)	-0.010 (0.018)	0.052*** (0.017)
Other cases (t-1, t)	-0.254* (0.148)	-0.178*** (0.041)	0.704*** (0.023)

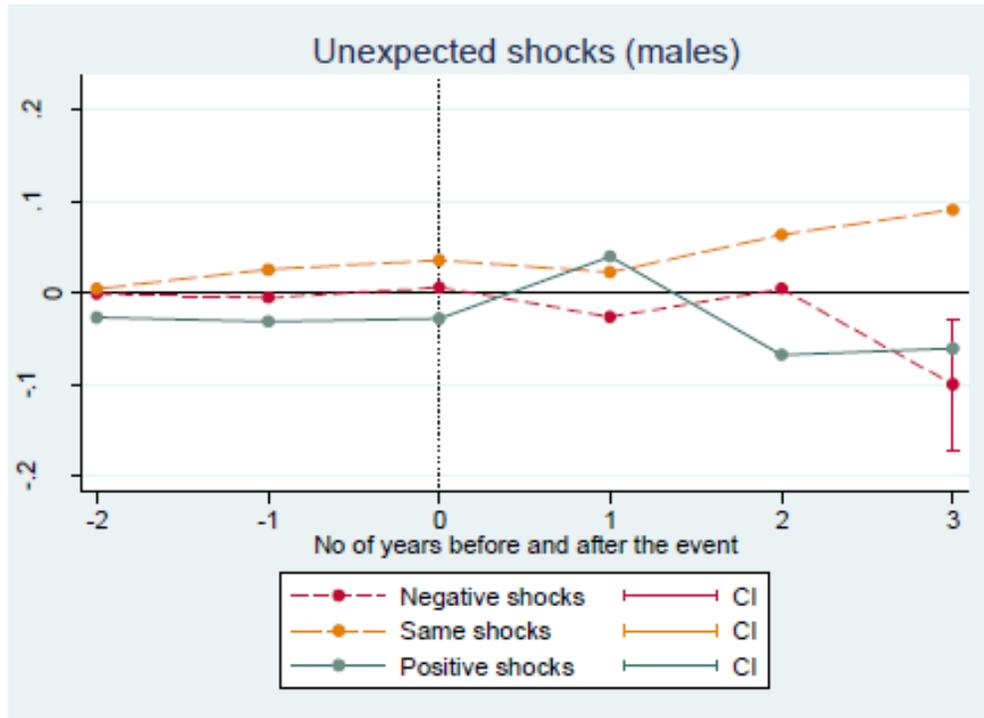
Results – Dynamics (around the time of retirement, for males)



- Sample of people who retire at some point
- Reference: situation where people will retire in 5 years or more
- Males: More and more likely to experience an unexpected positive shock as they get closer to retirement
- Females: unclear

Results – Unemployment (males)

- Re-estimation of the model, but looking at the effect of unemployment, for males: no effect



- Dynamics: Nothing around the start of an unemployment spell
- NB: This does not mean that health does not improve or deteriorate around these events, but that people are able to anticipate the changes
- The effect for males is specific to retirement

Additional results

- Different segments of the population; no evidence of heterogeneity
 - By partners' occupation
 - For blue collars vs white collars
- Results for males are robust to the use of other variables for health transition
 - Scores for physical or mental health
- Effect of shocks on wellbeing:
 - Negative (resp. positive) unexpected shocks are negatively (resp. positively) correlated with wellbeing

Conclusion

- Impact of retirement on unexpected health changes
- Australian data
- Around the time of complete retirement,
 - Clear results for males: rise in positive shocks / unexpected changes
 - Males do not anticipate well the impact of retirement on their health / too pessimistic
 - Retirement exerts a positive causal impact on health
 - Unclear results for females
- This is specific to retirement
 - Unemployment does not have any impact on unexpected changes
- Future research: understanding the asymmetry across genders

Thank you!

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