Mental health and retirement

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Extended abstract

Introduction

Population aging and the lower labor force participation at older age have risen concerns about the financial stability of social security programs all over the world. The seminal project initiated by of Jonathan Gruber and David Wise (Gruber and Wise, 1998) has shown that financial incentives that were inherent in most of the countries' pension systems have been very important in explaining early withdrawal from the labor force. Therefore, in the past decades many countries have changed retirement systems such that continued work is rewarded and earlier retirement is discouraged. These changes have proved to be successful: participation rates of workers in all OECD countries have increased substantially, in particular in the EU. Recent policies are expected to lead to further increases in the participation rates of older workers. These policies assume a rational decision maker that responds to financial incentives to maximize their welfare. However, this policy might have deleterious impact on individual (financial) well-being if people don't respond properly to changes in the financial structure of the social security and pension system. Recent literature shows that there is a large concentration of retirement behavior around statutory retirement ages that cannot be explained by financial incentives. This literature explains this behavior with the importance of labeling or reference points for retirement behavior (Seibold 2021, Gruber et al. 2020). In this paper we argue that poor mental health may play an important role.

One of the obstacles for further increase in labor force participation rates is poor health. Those in poor health have substantially lower employment rates, even at middle ages. More specifically, beyond age 50 health problems are the major cause of inactivity. This holds for physical health problems, but in the past decades even more so for mental health problems. According to the National Health Service (NHS) in the UK, 17,6% of adults are mentally ill, which compares with over a third of adults suffering from long-term physical conditions such as cardiovascular disease, respiratory disease, musculoskeletal problems, or diabetes (Naylor et al., 2012). This makes mental problems the largest single source of disability in the United Kingdom. No other health condition matches mental illness in the combined extent of prevalence, persistence, and breadth of impact.

In this paper we investigate whether those with mental health problems respond differently to retirement incentives. We use the English Longitudinal study of Ageing (ELSA) to study the retirement transitions of a representative sample of people aged 50+ living in England. We document retirement patterns of workers with mental health disorders and contrasts these with the retirement behavior of workers without mental health problems. We find large differences in retirement patterns: Those with mental health problems have substantially higher retirement rates and more often retire at the earliest possible retirement date (see figure 1 below). These

differences persist even if we control for an extensive set of controls including indicators of other (chronic) health conditions (see table A2 below). We next draw on the insights of Stock and Wise (1990), Coile & Gruber (2006) in constructing forward looking measures of financial incentives that can be included in models for individual retirement behavior. We include these financial measures in our models and find that individuals respond in a significant way to the option of future benefit increments, but this holds only for workers who do not have depressive symptoms (see Table 1 below). We also investigate the potential channels behind our findings. A large psychological literature has shown how mental disorders negatively affect economic decision, by directly affecting cognitive function, preferences, and beliefs (see Ridley et al. 2020 for a recent review). Following this insight, we analyze whether our results are mediated by differences in subjective life expectancies, cognitive abilities, and financial literacy.

Data

Data are from the first four waves (2002-2009) of the English Longitudinal Study of Ageing (ELSA)**.**
Sample selection We focus on the retirement transition of respondents aged 50+ who declared to be in paid work in the first wave up to their retirement. The final sample consists of 2,872, which corresponds to 5,639 observations in all four waves.
Depression We measure depression using the 8 items version of the so-called Center for Epidemiologic Studies - Depression Scale (CES-D) that asks the respondents to rate how often over the past week they experienced symptoms associated with depression (Radloff, 1977). Since for each depression symptom the answer ranges from 0 (none or almost none of the time) to 3 (all or almost all the time), the total score ranges from 0-24. Following previous literature (Doshi et al., 2008), we use a cut-off value of 3 to construct an indicator for probable clinical depression.
Retirement incentives We use specifics of the UK institutions to calculate the individual financial retirement incentive variable as suggested by Coile and Gruber (2007), the so-call Peak Value Accrual (PVA). The PVA compares the present value of pension wealth when retiring today with the present value at its maximum level at another future retirement date. We rely on Banks, Emmerson & Tetlow (2005), who have calculated these for the ELSA data.
Other control variables In our analysis we also consider the following variables: age, education, sex, marital status, number of children and grandchildren, household size, wealth and income deciles, number of cardiovascular diseases (CVD), other health problems, subjective life expectancy and the results of two cognitive tests (numeracy and total recall). In the Appendix we report descriptive statistics by depression status (Table A1).

Empirical strategy

We estimated the probability of retirement conditional on being in the paid work in the previous wave (t-1) with a linear probability model (LMP).[1] We controlled for a variety of demographic and social-economic factors, as well as other chronic diseases. All explanatory variables are

[1] LPM was chosen throughout for computational convenience and straightforward interpretation of its coefficients, although logistic regression model yielded qualitatively similar results.

considered in the t-1 to limit simultaneous bias. Our main variables of interest are the index of depression (D) and pension plans' financial incentives (PVA). We are interested whether individuals suffering mental problems respond differently to these incentives. In order to disentangle that, we included an interaction term (PVA*D), and calculated the effect of pension incentives for people with (D=1) and without (D=0) depression. In addition, in order to address potential endogeneity of depression, we fit a panel-data model to estimate the depression fixed effects which we consequently added to the main specification.

We also study two main channels via which depressed people could respond differently to the financial incentives. First, to proxy whether individuals' have private information about their survival probability we have used their life expectancy measure. Further, to proxy the ability to understand the financial trade-offs of pension plans we used a measure of cognitive abilities. We and added these measures sequentially and then simultaneously to the main specification.

Preliminary results

Figure 1 show the cumulative distribution of actual retirement by age and mental status.
People with mental health problems (according to our depression indicator) retire much earlier than people without mental health problems. This descriptive evidence holds if we control for a large set of socio-demographic variables and for other physical health problems and cognitive abilities (Table A.2).
Figure 2 and 3 shows that depressed respondents report, respectively, lower subjective life expectancy and lower numeracy skills than people without depression (see also Table A.2).

Table 1 reports our main findings. The table reports the results of a OLS regression of the probability of retirement (conditional on being in the paid work in the previous wave) on our measure of financial incentives (PVA). Column (1), we show that our measure of financial incentive to retire (PVA) largely predicts the probability of retirement, even after controlling for a large set of socio-demographic characteristics, depression status and other health variables. In Columns (2) we add to the previous specification an interaction term between PVA and the depression indicator showing that depressed people do not respond to financial incentives. The column reports marginal effects separated for depressed (D=1) and non-depressed respondents (D=0). Results do not change if we add individual fixed effects to the model (Column 3 and 4).
Despite depressed individuals shows lower subjective life expectancy and lower cognitive abilities, their inclusion in the model does not affect our main results (Table 2).

Figures and Tables

Figure 1 Cumulative distribution of actual retirement by age and mental status (ELSA wave 1-4)

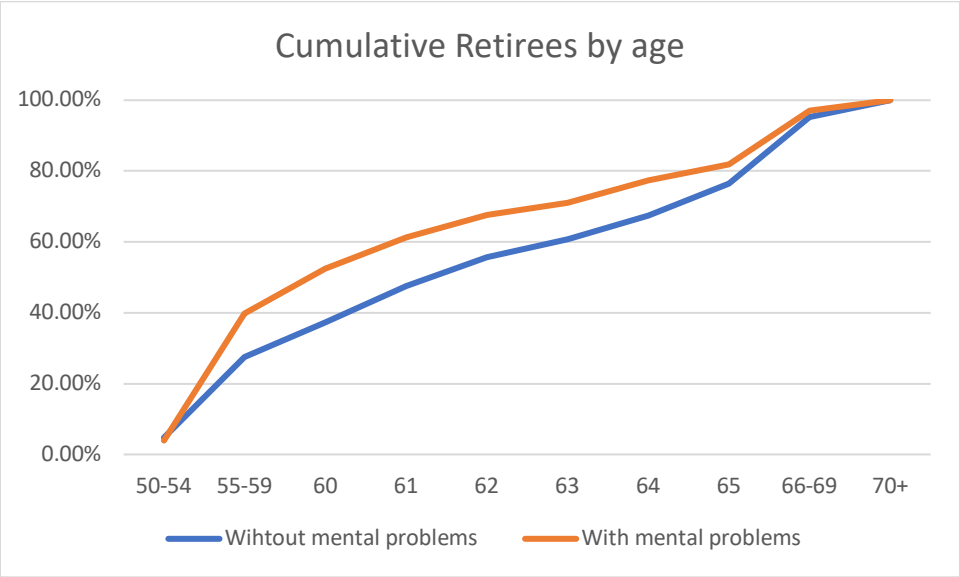


Figure 2 Subjective life expectancy by mental health status

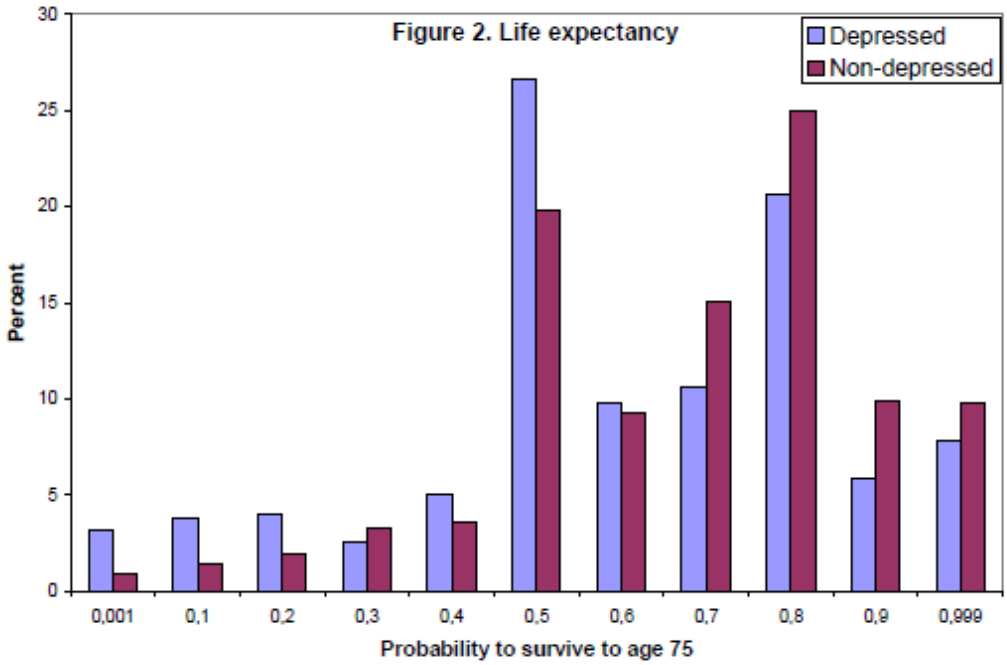


Figure 3 Cognitive abilities by mental health status

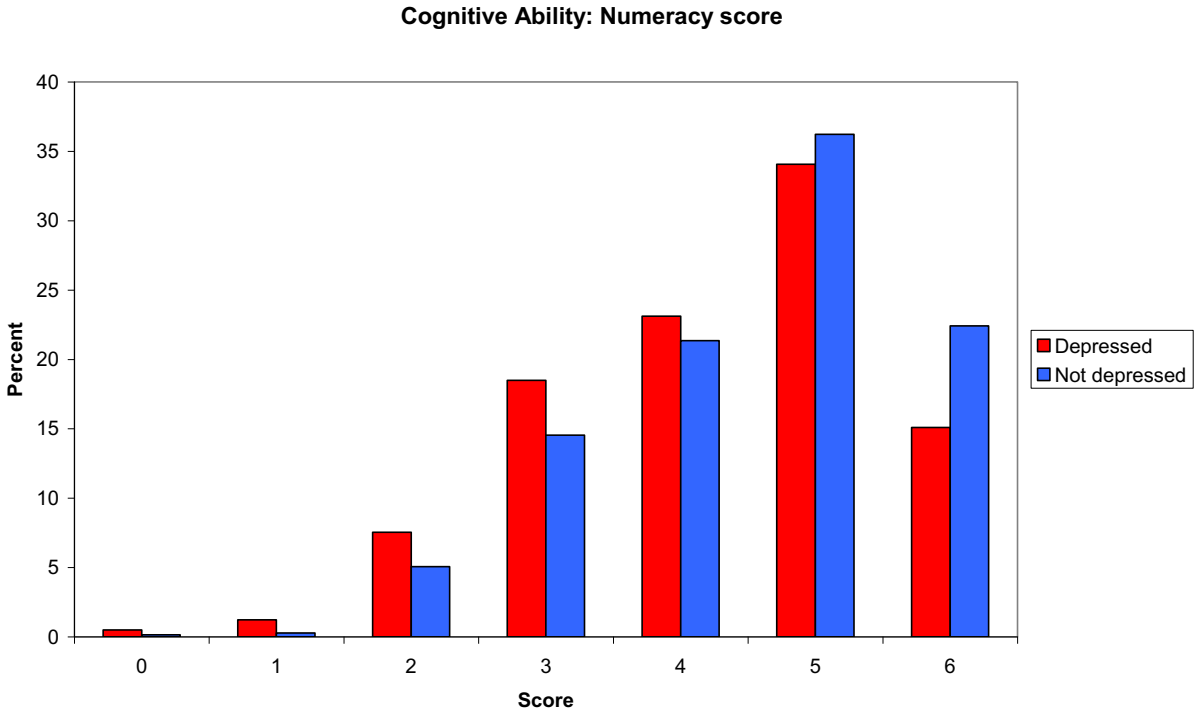


Table 1 Retirement Mental Health and Financial incentives

	(1)	(2) (marginal effects)		(3)	(4) (marginal effects)	
Depressed	0.02767**			0.01649		
	(0.01384)			(0.01932)		
Cardiovascular diseases	0.01113			0.01071		
	(0.00701)			(0.00702)		
Other chronic conditions	0.00718			0.00688		
	(0.00782)			(0.00782)		
Peak Value Accrual (PVA)	-0.00049***	D=0	-0.00052***	-0.00049***	D=0	-0.00052***
	(0.00016)		(0.00016)	(0.00016)		(0.00016)
		D=1	-0.00024		D=1	-0.00022
			(0.00058)			(0.00058)
Fixed effects	NO		NO	YES		YES
Socio-demographic controls	YES		YES	YES		YES
N	5,639		5,639	5,639		5,639

Table 2. Probability to retire (LPM), including life expectancy and cognition information

PVA for D=0	-0.00052***	-0.00052***	-0.00052***
	(0.00016)	(0.00016)	(0.00016)
PVA for D=1	-.0002423	-.0002416	-.0002422
	(.0005816)	(.0005814)	(.0005818)
Life expectancy	-0.00638		-0.00630
	(0.02282)		(0.02296)
Numeracy score		-0.00011	-0.00007
		(0.00169)	(0.00170)
N	5,639	5,639	5,639

Appendix

Table A1. Descriptive Statistics

Variable	No mental problems Mean	Mental problems Mean	T-test p-value
Retirement prob %	0.176	0.182	0.7654
Peak Value Accrual (1000 GBP)	17.75	15.77	0.1596
Financial wealth decile	5.97	5.02	0.0000
Income decile	7.38	6.96	0.0014
Age	56.40	55.86	0.0287
Male %	50.02	37.28	0.0000
Single %	16.64	30.08	0.0000
Number of grandchildren	1.45	1.59	0.2467
Degree %	34.12	26.22	0.002
Household size	2.41	2.25	0.0018
CVD	0.44	0.52	0.0266
Other health problems	0.36	0.51	0.0000
N	2,043	389	

Table A.2 Controlling for other factors does not change picture

Depression Index	0.02970**	0.02766**	0.02721*	0.02720*
	(0.01378)	(0.01383)	(0.01390)	(0.01389)
Number of CVD		0.01130	0.01107	0.01108
		(0.00700)	(0.00703)	(0.00704)
Number of other chronic conditions		0.00757	0.00740	0.00741
		(0.00783)	(0.00786)	(0.00787)
Life expectancy			-0.00715	-0.00706
			(0.02283)	(0.02297)
Numeracy score				-0.00008
				(0.00171)
Age	0.01172***	0.01143***	0.01143***	0.01142***
	(0.00201)	(0.00202)	(0.00202)	(0.00203)
Sex	0.00820	0.00796	0.00773	0.00769
Wave indicator	Yes	Yes	Yes	Yes
HSE year indicator	Yes	Yes	Yes	Yes
Income deciles	Yes	Yes	Yes	Yes
Financial wealth deciles	Yes	Yes	Yes	Yes
N (Individuals= 2,872)	5,639	5,639	5,639	5,639

Table A.3 Life expectancy, cognition and depression (OLS regression).

	Life expectancy	Numeracy score
Depressed	-0.06252***	-0.25808**
	(0.00954)	(0.11823)
Cardiovascular diseases	-0.03173***	0.02389
	(0.00535)	(0.06851)
Other chronic conditions	-0.02434***	0.16904**
	(0.00602)	(0.07350)
N	5,639	5,639