6 AGEING AND THE LABOUR MARKET

6.1 OLD-AGE RETIREMENT AND HEALTH

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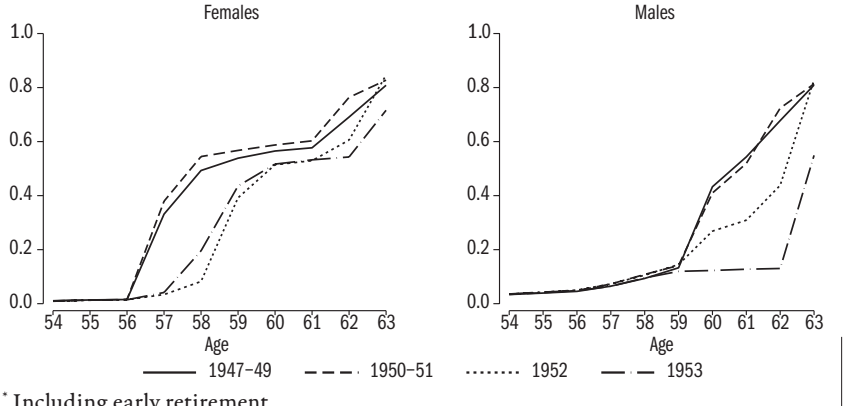
The ratio of the older population (aged above 65) is expected to increase relative to the active-age population (age 15–64) over the coming decades in Hungary. While this ratio was 0.24 in 2011, it will increase to 0.6 by 2060 according to baseline demographic projections. Thus, there will be less than two active aged people for each retirement aged person in forty years from today (*Földházi,* 2015). For the sake of the sustainability of the pension system, the employment rate at older ages should increase, and increasing the old-age retirement age is a basic policy tool for achieving this aim.

Since the middle of the 2000s, the statutory retirement age has significantly increased in Hungary. The early retirement age of females increased in 2009 from age 57 to 59. As a result, the ratio of pensioners at ages 57–58 decreased considerably among the cohorts born after 1951. The growth of the retirement age of females halted with the introduction of the so-called Women40 programme in 2011.[1] The early retirement age of males born between 1946–1951 was age 60. However, early retirement was abolished starting from 2012, hence younger male cohorts could retire only when reaching the statutory old-age retirement age (which was age 62.5 for the 1952 cohort and increases by a half year annually, reaching age 65 for the 1957 cohort). This also decreased considerably the rate of pensioners at ages 59–62 (*Figure 6.1.1*).

Figure 6.1.1: The ratio of old-age pensioners* in the population by age and year of birth



* Including early retirement.
Source: Own calculation based on CERS Admin3 data.

Considering the major changes in retirement age, it is important to understand how health status affects the retirement decision and how retirement

1 Based on the Women40 programme, females who were employed at least for 40 years could retire before reaching the statutory retirement age without a reduction in their pension benefit (*Simonovits–Tir,* 2018).

(and the increasing statutory retirement age) affects health. The first line of causation is that employees in worse or deteriorating health are less likely to remain employed and more likely to retire at a given age. This is because the productivity deteriorates and the disutility of labour increases with worsening health, hence, the utility derived from leisure increases.[2] The second line of causation is that retirement itself may influence health. Increasing leisure time may improve health but, on the other hand, the loss of social status and social network derived from employment may have negative health effects (for instance, on mental health). In addition, as income decreases with retirement, it might reduce the demand for healthcare services, also, after retirement, there are no incentives to maintain the capacity to work, thus health may deteriorate. Altogether, the majority of the related international empirical literature concludes that the health effects of retirement are generally positive.[3]

The role of health status in old-age employment

We use data from years 2009–2017 of the administrative dataset (Admin3) processed by the Databank of the Centre for Economic and Regional Studies (CERS), which includes linked labour market and health indicators of a random 50 percent of the Hungarian population.[4] We first analyse the relationship between health status and the probability of continued work at older ages. We look at two age groups, to examine the continued work before and after the statutory retirement age separately.

1) What is the probability that a person who is working at 54 is still working four years later (at age 58), *before* the statutory retirement age? Due to the time coverage of the data, we look at people born between 1955–1958. For these cohorts, the early retirement possibility at age 57 was no longer available, not even for females.

2) What is the probability that a man aged 59 or a woman aged 58, who is employed at this age (i.e., before the statutory retirement age) is still working four years later, thus *after* the statutory retirement age? We look at men born in 1950–1951 and women born in 1952–1954, due to the time coverage of the data and changes in the statutory retirement age.

We investigate with linear regression models (OLS regressions) the relationship between health at earlier ages and employment at later ages. We capture health status with the following indicators of healthcare use: whether the person was in hospital in the quarter of reaching the analysed age; and whether the number of his/her primary care visits, outpatient specialist care visits and spending on prescription drugs in the given quarter was in the top quartile of the age and gender specific distribution. As control variables we use the year of birth, region, one-digit occupation (ISCO) code, quarterly logarithmic earnings and the first level economic activity (NACE) code of the employer.

2 See *Cai* (2010) and *Disney et al.* (2006) for international empirical evidence.

3 The systematic review of *Van der Heide et al.* (2013) clearly shows this relation for mental health. For the recent literature, see the positive findings of *Grøtting–Lillebø* (2020), *Kolodziej–García-Gómez* (2019), *Rose* (2020). The impact of changing retirement age is ambigous (see for example, *Hagen,* 2018).

4 See the Appendix for a short introduction of the database and *Sebők* (2019) for further details.

According to the results presented in *Table 6.1.1,* higher usage of healthcare services (hence, supposedly worse health status) decreases the probability of continued work. This relationship is clearer and stronger before the statutory retirement age (first two numerical columns of the table) than after the retirement age (second two numerical columns). The probability that a 54-year-old employee still works four years later (before the retirement age) is, separately, 1–2 percentage points lower if the indicators of primary care use, outpatient specialist use and drug spending are in the top quartile. Having been in hospital decreases the probability by 4–7 percentage points. Continued work after the statutory retirement age is the most affected by primary care use (with a negative effect of 2–4 percentage points).

Table 6.1.1: Effect of health status on continued work

	Probability of continued work four years later			
	Before retirement age (54 years old employees)		After retirement age (58/59 years old employees)	
	males	females	males	females
Hospital stay	-0.066***	-0.042***	-0.033**	-0.015
	(0.0080)	(0.0076)	(0.015)	(0.011)
Outpatient specialist care visits in top quartile	-0.014***	-0.0055	0.015*	0.001
	(0.0033)	(0.0036)	(0.0076)	(0.0051)
Primary care visits in top quartile	-0.020***	-0.022***	-0.044***	-0.021***
	(0.0036)	(0.0038)	(0.0080)	(0.0052)
Drug spending in top quartile	-0.017***	-0.023***	0.018***	-0.011**
	(0.0030)	(0.0040)	(0.0069)	(0.0050)
Number of observations	88,932	103,017	29,768	62,439
Ratio of continued work	0.876	0.751	0.396	0.434

Notes: Linear probability model coefficients, robust standard errors in parentheses. Quarterly data.
Control variables: year of birth, region, one-digit occupation (ISCO) code, quarterly logarithmic earnings and the first level economic activity (NACE) code of the employer.
Sample: people reaching the analysed age in the given quarter.
Significant at the *** 1 percent, ** 5 percent, * 10 percent level.
Source: Own calculation based on Admin3 data.

Effect of continued work/retirement on health status

We have seen that poorer health (as measured by greater use of health services) reduces the likelihood of continued work. As a next step, we examine the other direction of the two-way relationship, i.e., the impact of continued work (or, conversely, of retirement) on health indicators. To this end, we have two increases in the retirement age (raising the early retirement age for women from 57 to 59 in 2009 and abolishing the 60-year early retirement age for men in 2012), which can be used as "exogenous shocks" to estimate the causal impact of retirement on health indicators. As *Figure 6.1.1* has already shown, cohorts with close birth years faced markedly different effective re-

tirement ages and therefore had different retirement patterns. By comparing health indicators from these very similar cohorts, we can estimate the causal impact of retirement in the short to medium term.

Formally, we estimate fixed-effects instrumental variable panel regression models in which the dependent variable is an individual's health indicator, the main explanatory variable is the dummy variable of being retired at a given time, and we control for age, calendar year, and individual fixed effects. Due to the two-way relationship between health status and retirement, the retirement variable is endogenous, so we use the dummy variable of whether the individual is above the (early) retirement age at a given time as an instrument.[5]

In our earlier paper (*Bíró–Elek,* 2018) we examined the year 2009 increase of the retirement age for women based on the Admin2 dataset, which was compiled by the CERS Databank, and contains individual-level labour market data as well as the annual outpatient, inpatient and prescription drug expenditures for a 50% random sample of the Hungarian population for years 2003–2011. *Table 6.1.2* shows that retirement reduces the probability that an individual uses the outpatient, inpatient and (prescribed) pharmaceutical care system at least once in a given year by 1.3–3.0 percentage points. Meanwhile, retirement typically does not have a significant effect on the size of (positive) expenditures provided that the patient used the given segment of the healthcare system. The heterogeneity analyses reported in the article also showed that the effects are stronger among those who are relatively healthy, among those who have previously been on sick pay and among the less educated.

Table 6.1.2: Effect of old-age retirement on annual health expenditure, females

	Outpatient		Inpatient		Drug	
	ratio	logarithm	ratio	logarithm	ratio	logarithm
Dependent variable	of positive expenditure		of positive expenditure		of positive expenditure	
Effect of old-age retirement	-0.030***	-0.027	-0.014**	-0.074	-0.013**	-0.035*
	(0.006)	(0.026)	(0.007)	(0.094)	(0.006)	(0.019)
Number of observations	186,296	157,637	186,296	8,789	186,296	159,248

Notes: Robust standard errors clustered on the individual level in parentheses.
Instrumental variable: being above the early retirement age.
Controls: individual fixed effects, age and its square, calendar year dummies.
Sample: women born in 1949–1953, aged 56–59 years and working at age 54.
Significant at the *** 1 percent, ** 5 percent, * 10 percent level.
Source: *Bíró–Elek* (2018), based on Admin2 data for years 2003–2011.

Based on the quarterly Admin3 dataset that contains more detailed health indicators for 2009–2017, and using the increase in the retirement age for men in 2012, we can gain more insight into why healthcare use decreases after retirement. *Table 6.1.3* shows the effect of retirement on more detailed case- and prescription-level indicators for men. The reduction of the use of outpatient specialist care, general practitioner care and pharmaceutical con-

5 For more details see *Bíró–Elek* (2018).

sumption can be seen here as well after retirement (the effect on hospital stay is not significant). Examining the consumption of different pharmaceutical ATC categories in more detail, the proportion of users of systemic antiinfectives (including antibiotics) and musculoskeletal, respiratory and nervous system agents (including antidepressants) is significantly reduced as a result of retirement.

Table 6.1.3: Effect of old-age retirement on quarterly health indicators, males

	Number of outpatient care visits	Number of GP visits	Number of inpatient days	Number of filled prescriptions
Old-age retirement	−0.177***	−0.343***	0.036	−0.130***
	(0.038)	(0.018)	(0.037)	(0.045)
Mean of dependent var.	1.98	1.95	0.567	6.03
	Probability of consumption of the given pharmaceutical (ATC) category			
	A	B	C	J
Old-age retirement	0.00096	0.00201	0.00122	−0.00560*
	(0.00276)	(0.00245)	(0.00280)	(0.00298)
Mean of dependent var.	0.259	0.176	0.551	0.104
	L	M	N	R
Old-age retirement	0.00121*	−0.0168***	−0.00337*	−0.00459**
	(0.000682)	(0.00285)	(0.00191)	(0.00203)
Mean of dependent var.	0.008	0.159	0.080	0.072
	antidiabetics	antihypertensives	psycholeptics	psychoanaleptics
Old-age retirement	0.00132	−0.00179	−0.00080	−0.00277**
	(0.00150)	(0.00274)	(0.00088)	(0.00119)
Mean of dependent var.	0.127	0.516	0.018	0.032

Notes: Robust standard errors clustered on the individual level in parentheses.
Instrumental variable: being above the early retirement age.
Controls: individual fixed effects, age and its square, calendar year effects.
Sample: men born in 1950–1954, aged 59–63 years and working at age 58. Period: 2009–2016.
Number of observations: 1,664,234, number of individuals: 92,973.
ATC drug categories: A – Alimentary tract and metabolism; B – Blood and blood forming organs; C – Cardiovascular system; J – Antiinfectives for systemic use; L – Antineoplastic and immunomodulating agents; M – Musculo-skeletal system; N – Nervous system; R – Respiratory system.
A10 – Drugs used in diabetes; C02–09 – Antihypertensives; N05 – Psycholeptics (including tranquilizers); N06 – Psychoanaleptics (including antidepressants).
Significant at the *** 1 percent, ** 5 percent, * 10 percent level.
Source: Own calculations based on Admin3 data.

Conclusions

In this subchapter we found that, after controlling for a number of other factors, workers with a high health expenditure at age 54 are significantly less likely to work four years later – but still before retirement age – than their counterparts with lower health expenditure. In the other direction, our results examining the health effects of retirement are largely in line with the interna-

tional literature by showing that retirement reduces the use of the healthcare system. There are partly institutional reasons for this: as long as the individual is employed, he or she has to go to the GP in order to receive sick pay, which can generate additional doctor visits and medication use (such as of antibiotics). The decline in the use of musculoskeletal drugs after retirement suggests that individuals are less interested in maintaining the health status they previously needed for work, while the reduction in the use of psychoanaleptics (including antidepressants) suggests an improvement in mental health. In addition to these, due to the limitations of the administrative data, our results provide little evidence of the net health impact of retirement in Hungary.

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