

20 The recent economic crisis and old-age health in Europe

-
- ▶ The current crisis had a negative effect on old-age health
 - ▶ One per cent increase in unemployment has a negative effect on health equivalent to more than one additional year of age
 - ▶ Effects are stronger for individuals who are still in the labour force
 - ▶ Effects are stronger in the Northern countries due to the high labour force participation of the older population
-

20.1 Economic crises and health

European countries experience turbulent times: the 2007/2008 financial crisis was followed by a severe economic downturn in many countries and most recently the European Union members struggle from the sovereign debt crisis. Even though many countries have taken quick policy measures to prevent the worst impact, unemployment rates increased dramatically and, more recently, budget crises are demanding grave cuts in government expenditure. Concerns have been raised that the recent shock to the macroeconomic conditions might have negative consequences for public health. There are various potential channels through which this crisis may adversely affect individuals' health. Income losses, job losses, and higher risk of unemployment, for instance, might increase levels of stress, lead to the adoption of unhealthy life-styles, and have negative effects on mental health. Furthermore, individuals might delay seeking care due to cost concerns and tight public budgets might lead to poorer health services. On the other hand economic downturns decrease economic activity which might result in lower opportunity cost of health investments and an improvement of health due to less job-specific medical problems. In that sense economic downswings can also improve population health. Therefore, empirically the effect of macroeconomic shocks on individuals' health is not clear (see Ruhm 2005b for a literature review). While there is evidence that in developing countries economic downturns adversely affect health (e.g. Leon et al. 1997; Cutler et al. 2002) the evidence from developed countries is more controversial. For example, Ruhm (2000, 2005a) finds a procyclical relationship between unemployment and mortality across the United States, where procyclical means that when unemploy-

ment rates decrease mortality increases. Similar evidence is provided, for example, for 23 OECD countries (Gerdtham & Ruhm 2006), for Germany (Neumayer 2004), and for Sweden (Gerdtham & Johannesson 2005). Contrary to that Deaton and Paxson (2004) find no relationship between mortality and income in the UK and the US. Common explanations for the procyclical relationship are that job related stress is higher and job and car accidents increase in times of economic upturns. However, results vary by country and the generosity of social safety nets (e. g. Gerdtham & Ruhm 2006; Stuckler et al. 2009) and for different population sub-groups.

In this chapter we analyse the effects of the most recent adverse macroeconomic conditions on health outcomes across European countries in order to shed light on the relationship between macro-shocks and health among the older population. We think this is particularly interesting because on the one hand older people might be more vulnerable to adverse shocks with respect to their health. They might, for example, suffer more from cuts in public health budgets. On the other hand, older individuals might be less affected as many of the effects of crises on health are channelled via the labour market. Older people are less likely to participate in the labour market, they do not have to worry about labour market fluctuations and have relatively stable retirement incomes. For this reason we analyse individuals' health outcomes with a specific focus on their labour force participation.

More specifically, we match information about the severity of the current crisis at the regional level measured by the changes in the age-specific employment rates, i. e. employment among the 55 to 64 year old, at NUTS (*Nomenclature des unités territoriales statistiques*) 1 level to the SHARE data and analyse the relation between macro-conditions and individuals' subjective health of the population aged 50 to 70. Thus, in contrast to most of the empirical studies cited before we do not use aggregate but micro-data to analyse the effect of the recent recession on health. We look at the overall effect of the economic crises on changes in health among older persons. Therefore, we measure health before the start of the crisis in 2006 (Wave 2) and again in 2010 (Wave 4). The effects are analysed for specific subsets of countries, by labour market status, and by education.

Our contribution is organised as follows. In section two we will introduce the data and variables used for our analysis. Section three contains our estimation strategy and the results regarding the effect of macro-economic fluctuations on health in old age. We conclude in section four by giving starting points for possible policy interventions.

20.2 Measuring crises and health outcomes

20.2.1 Regional variation in economic crises

We measure economic crises by using a trend and cycle decomposition of the time series of age-specific employment rates from 1999 to 2010. The data are provided by Eurostat. We apply the Hodrick-Prescott filter with a smoothing parameter of ten to that time-series. In contrast to previous studies we do not use unemployment, because especially for the population 55+ unemployment is not necessarily informative about the labour market situation. Many countries and firms offer generous early retirement windows if they want to reduce their work force. Therefore regional changes in employment are in our view more informative. Our measure for the severity of the crisis is the deviation of the regional employment from its ten-year trend. Figure 20.1 presents the regional distribution of our crisis measure in 2008 for all SHARE countries included in the analysis. We pick 2008 because it is the year in the middle of our observation period (2006 to 2010) and marks the onset of the crisis. In regions shaded in dark orange there was a severe negative deviation of the employment rate among the 55–64 year old from the trend in 2008. We interpret this as a negative macro-economic climate. In contrast in regions with lighter shade the deviation from the ten-year trend was less negative or even positive. There is substantial variation of the macro-economic measure within countries. We also construct a similar measure based on general employment rates for the population 15–64. (As alternative crisis indicators we use first differences in the employment rates and the deviation of the employment rate from a quadratic country specific trend. Our results are robust using these alternative measures. The results are not included in the paper and available upon request).

20.2.2 Self-reported health

In all SHARE waves respondents evaluate their health on a self-rating scale. The specific question is “Would you say your health is 1 – excellent, 2 – very good, 3 – good, 4 – fair, 5 – poor”. We use changes in self-reported health between waves as dependent variable. Thus our dependent variable can take values from four to minus four, where positive values refer to an improvement in health (For further information on the changes in self-reported health between waves see Vestergaard et al. in this volume).

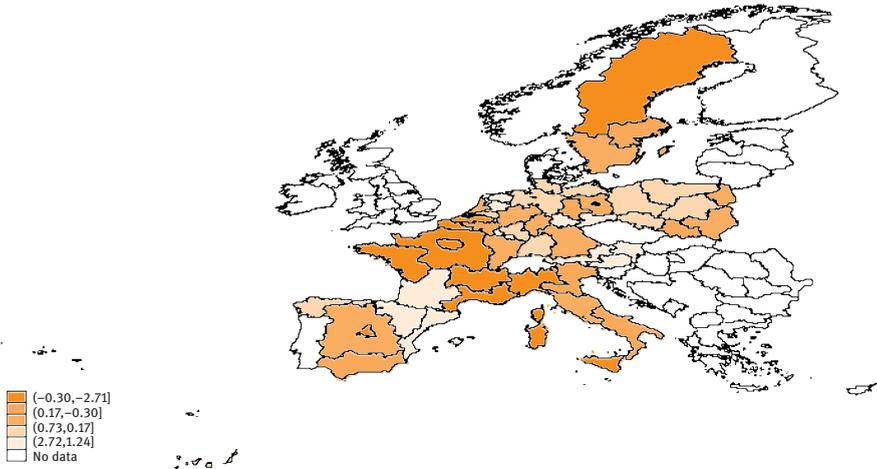


Figure 20.1: Changes in employment rates

Notes: Map of the changes in employment rates for the population 55–64 in 2008 by NUTS 1 regions in Europe; deviations of the employment rate from its ten-year trend are calculated using a Hodrick-Prescott filter with a smoothing parameter of ten.

Source: Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

20.3 The European crisis and old-age health

20.3.1 Econometric specification

We estimate the following linear regression specification:

$$\Delta H_{ijc} = \alpha + \beta X_{ijc} + \gamma R_{jc} + \delta_c + \varepsilon_{ijc},$$

where ΔH_{ijc} is the change in the health status between waves for individual i living in region j and country c ; X_{ijc} is a vector of individual specific variables including age; R_{jc} is the region specific macroeconomic indicator as described before; δ_c is a country fixed effect. Since the model is specified in first differences controlling for country fixed effects in this regression is equivalent to allowing for linear country specific time trends in health levels. The intercept α measures the baseline decline in health in the four year period 2006 to 2010; ε_{ijc} is an error term. The estimation is heteroskedasticity robust using the Huber-White sandwich estimator.

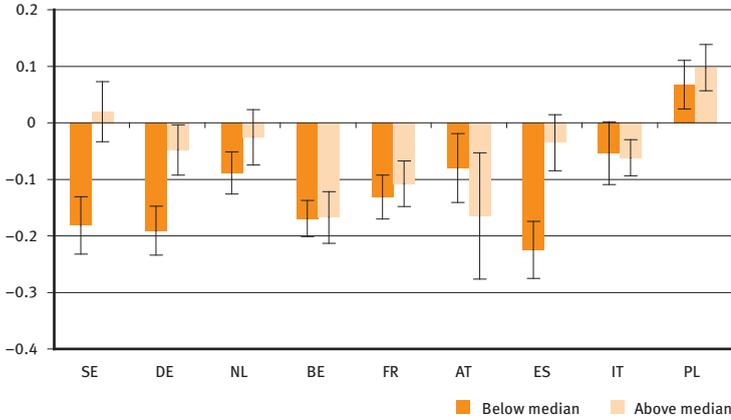
Since the macro-economic indicators are age-specific for the population 55–64 we restrict our estimation sample to individuals between age 50 and 70 in Wave 4. However, for robustness we also estimate the effects on the whole sample. Finally, we explicitly allow for heterogeneity of the effects by employment status in 2006, levels of education (high school dropout, high school, college), and for three European macro-regions (Northern, Central and Mediterranean). The selection of countries included in our analysis depends on participation in SHARE Waves 2 (2006) and 4 (2010) as well as the availability of NUTS 1 level indicators, because the identification of the crisis depends on variation across regions within countries. Sweden and the Netherlands (Northern), Germany, Belgium, France, and Austria (Central), Spain and Italy (Mediterranean), and Poland are included in our analysis. Poland is the only transitioning economy included and we do not construct the respective macro region.

20.3.2 Effect of the economic crisis on self-reported health

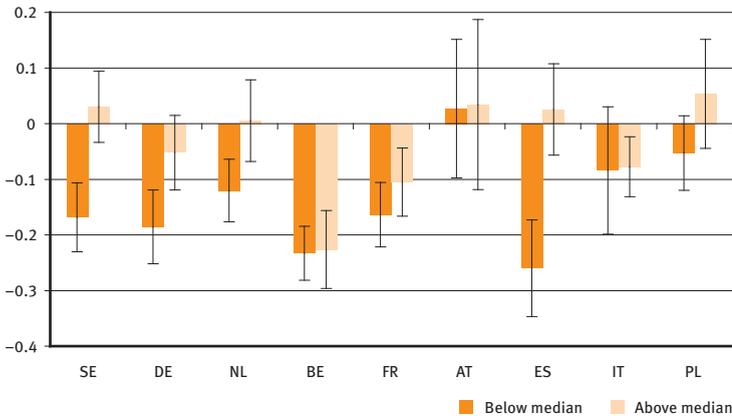
Figure 20.2 shows the changes in self-reported health between Wave 2 and 4 for all the countries. On average we find a decrease in health in the four year period among those aged between 50 and 70, which is not surprising because people become older. The only exception to this trend is Poland. However, understanding health trends in transitioning economies can be an interesting topic for future investigations.

We split regions into those with above and below median trend deviation in employment within countries. In regions which were more affected by the economic crisis, i. e. in which the negative deviation from the long term trend in employment rates is stronger (“below median”), individuals show a stronger decline in self-reported health between 2006 and 2010 compared to regions with above median deviation from the long-term trend. The differences are particularly large and significant in Sweden, Germany and Spain for those aged 50–70 (see Figure 20.2a). Conditional on labour market participation the picture is very similar, and the difference for the Netherlands is now also significant (see Figure 20.2b). Overall, we find a negative correlation between the severity of the crisis and changes in self-reported health.

Our results are confirmed in a multivariate regression specified as described above. In Panel A of Table 20.1 we report results using the deviation in the age-specific employment rates. A one percentage point increase in employment (from its trend) reduces the decline in health over the four-year period by around 0.057 standard deviations. In other words, a one percentage point lower employment rate compared to its ten-year trend implies an average decline in health approxi-



(a) Mean changes in self-reported health among individuals aged 50–70 by country between 2006 and 2010 for regions with below and above median trend deviation in employment rates (N= 10,862)



(b) Mean changes in self-reported health among individuals aged 50-70 by country between 2006 and 2010 for regions with below and above median trend deviation in employment rates, conditional on employment in 2006 (N= 3,605)

Figure 20.2: Regional changes in self-reported health by country

Source: Eurostat data on regional employment and SHARE Waves 2 and 4

mately equal to 1.2 additional years of aging. What is more, the negative effect of the crisis on health is lower if we drop the age restriction and also include respondents older than 70. It becomes more severe if we only include individuals who reported to be in the labour force in 2006. This is an indication that some of

the effects of the recent economic crisis on health seem to be channelled through the labour market.

In Panel B of Table 20.1 we use general instead of age-specific employment rates. We find no effect of the region specific decline in employment rates on health of the older population. The effects are smaller compared to the effects reported in Panel A and not significant. We take this as evidence, that there is no general effect of the macro-economic climate on health of the population we investigate, but that there are negative effects of difficult labour market conditions.

Table 20.1: Linear regression: The effect of employment rate on changes in self-reported health

Panel A: Age specific employment rates			
Sample:	Full sample	Age restricted	Employed W2
gamma	0.043 ***	0.057 ***	0.078 ***
(s. e.)	(0.012)	(0.015)	(0.023)
<i>N</i>	14,178	8,289	3,605
Panel B: Total employment rates			
Sample:	Full sample	Age restricted	Employed W2
gamma	0.022	0.029	0.083
(s. e.)	(0.027)	(0.035)	(0.083)
<i>N</i>	14,178	8,289	3,605

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: Controlled for gender, age and a full set of country dummies; s.e. = standard error.

Source: SHARE Wave 2 release 2.5.0, Wave 4 release 1

In Table 20.2 we separate the sample according to three levels of education: high school drop-outs, high school and college. Including all respondents between age 50 and 70 we find the largest effect on the college educated, followed by a smaller but still significant effect for those with the lowest level of education (Panel A). This result seems puzzling at first glance as usually those with lower levels of education are more affected by labour market turbulences. However, if we focus on individuals in the labour market in 2006 (Panel B), the effects among the college educated are almost of equal size. We are dropping about 40 per cent of the sample. At the same time, among the high-school drop-outs the effect doubles and is highly significant, while the sample is reduced by around 70 per cent. Thus, the different effects of the crisis on health by education seem to be partly driven by differences in labour market participation among older people depending on education levels.

Table 20.2: The effect of employment rate on changes in self-reported health by levels of education

Panel A: Age restricted			
	High school dropouts	High school	College
gamma	0.052 **	0.052 **	0.102 ***
(s. e.)	(0.025)	(0.026)	(0.032)
<i>N</i>	3,336	2,995	1,852
Panel B: Age restricted & Employed			
	High school dropouts	High school	College
gamma	0.103 **	0.054	0.099 **
(s. e.)	(0.044)	(0.037)	(0.040)
<i>N</i>	1,033	1,382	1,141

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: Controlled for gender, age and a full set of country dummies; s.e. = standard error.

Source: SHARE Wave 2 release 2.5.0, Wave 4 release 1

In Table 20.3 we report the effects by groups of countries. The population between 50 and 70 seems to be most affected in the Northern countries. There is a small but only marginally significant effect of the crisis on health of the residents in Central Europe and no effect in the South. As before the results seem to be driven by labour market participation. In fact, when we condition on labour market participation in 2006 the effects in the Northern and Central European countries remain almost stable (about 43 per cent of the respondents in North and 55 per cent in Central Europe are not participating in the labour market in 2006). For the Mediterranean countries the effect more than doubles its size and becomes significant. In the Mediterranean countries about two-thirds of the population were not participating in the labour force in 2006. Overall, we find consistent evidence that negative labour market conditions have an adverse effect on health of older individuals, in particular of those who are still participating in the labour force.

Table 20.3: The effect of employment rate on changes in self-reported health by macro-region of residence

Panel A: Age restricted			
	Mediterranean	Central	Northern
gamma	0.037	0.041 *	0.14 ***
(s. e.)	(0.025)	(0.022)	(0.042)
<i>N</i>	1,838	3,496	1,949
Panel B: Age restricted & Employed			
	Mediterranean	Central	Northern
gamma	0.083 *	0.057 *	0.118 **
(s. e.)	(0.046)	(0.030)	(0.059)
<i>N</i>	623	1,585	1,114

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: Controlled for gender, age and a full set of country dummies; s.e. = standard error.

Source: SHARE Wave 2 release 2.5.0, Wave 4 release 1

20.4 Conclusions: a case for policy interventions?

We evaluate the cost of the current crisis in terms of public health and find consistent evidence that adverse labour market conditions have a negative effect on the old-age population. More specifically, we find that a one percentage point negative deviation of employment from its trend enhances the decline in health equivalent to about 1.2 years of aging. The effects are even stronger for groups that are still participating in the labour market and are thus more exposed to macro-economic fluctuations.

For policy makers this result can be interesting from various perspectives. First, the health consequences of the current crisis should be considered when designing policies to overcome the crisis. In particular budgetary cuts in health expenditure have to be examined very carefully. Second, side effects of current policies aimed at increasing labour market participation of older persons should be discussed. If older workers remain in the labour market their exposure to macroeconomic fluctuations is increased with potentially negative effects on their health. However, before jumping to conclusions more research regarding the underlying mechanisms is necessary. So far we have looked at the reduced form effects of macro-economic conditions on health. Further work should focus on exploring how economic downturns negatively affect individuals' health and

how such effects can be prevented. In that respect it will be important to investigate how economic fluctuations affect income, and how they influence retirement decisions and unemployment. Moreover, it will be interesting to analyse the effects of economic crises on health behaviour and the likelihood to suffer from specific diseases. Furthermore, it is crucial to look at the heterogeneity of the effects across a wider set of sub-populations to identify vulnerable groups and propose concrete policy interventions.

Finally, one caveat of our approach is that including country fixed effects in a regression of changes in health eliminates all country specific variation in health policies over time, such as, for example, the effects of cuts in public health budgets. In future work we plan to overcome this limitation by collecting information on country specific policies. This might allow us to point out how health policies could prevent adverse effects of macro-economic fluctuations.

References

- Cutler, David, Knaul, Felicia, Lozano, Rafael, Mendez, Oscar, Zurita, Beatriz (2002): “Financial crisis, health outcomes and ageing: Mexico in the 1980s and 1990s”. In: *Journal of Public Economics* 84(2), p. 279–303.
- Deaton, Angus, Paxson, Christina (2004): “Mortality, income, and income inequality over time in Britain and the United States”. In: Wise, David (Ed.): *Perspectives on the economics of aging*. Chicago: University of Chicago Press, p. 247–286.
- Gerdtham, Ulf-Göran, Johannesson, Magnus (2005): “Business cycles and mortality: results from Swedish microdata”. In: *Social Science & Medicine* 60, p. 205–218.
- Gerdtham, Ulf-Göran, Ruhm, Christopher (2006): “Deaths rise in good economic times: evidence from the OECD”. In: *Economics and Human Biology* 4, p. 298–316.
- Leon, David, Chenet, Laurent, Shkolnikov, Vladimir, Zakharov, Sergei, Shapiro, Judith, Rakhmanova, Galina, Vassin, Sergei, McKee, Martin (1997): “Huge variation in Russia mortality rates 1984–94: artefact, alcohol or what?”. In: *The Lancet* 350, p. 383–388.
- Neumayer, Eric (2004): “Recessions lower (some) mortality rates: evidence from Germany”. In: *Social Science & Medicine* 58, p. 1037–1047.
- Ruhm, Christopher (2000): “Are recessions good for your health?”. In: *Quarterly Journal of Economics* 115(2), p. 617–650.
- Ruhm, Christopher (2005a): “Healthy living in hard times”. In: *Journal of Health Economics* 24(2), p. 341–363.
- Ruhm, Christopher (2005b): “Commentary: mortality increases during economic upturns”. In: *International Journal of Epidemiology* 34(1), p. 1206–1211.
- Stuckler, David, Basum, Sanjay, Suhrcke, Marc, Coutts, Adam, McKee, Martin (2009): “The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis”. In: *The Lancet* 374, p. 315–323.