Assessing the short term health impact of the Great Recession in the European Union: A cross-country panel analysis

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ABSTRACT

Background. There are great concerns and some initial country-specific, descriptive evidence about potential adverse health consequences of the recent Great Recession.

Methods. Using data for 23 European Union countries we examine the short-term impact of macroeconomic decline during the Great Recession on a range of health and health behaviour indicators. We also examine whether the effect differed between countries according to the level of social protection provided.

Results. Overall, during the recent recession, an increase of one percentage point in the standardised unemployment rate has been associated with a statistically significant decrease in the following mortality rates: all-cause-mortality (3.4%), cardiovascular diseases (3.7%), cirrhosis- and chronic liver disease-related mortality (9.2%), motor vehicle accident-related mortality (11.5%), parasitic infection-related mortality (4.1%), but an increase in the suicide rate (34.1%). In general, the effects were more marked in countries with lower levels of social protection, compared to those with higher levels.

Conclusions. An increase in the unemployment rate during the Great Recession has had a beneficial health effect on average across EU countries, except for suicide mortality. Social protection expenditures appear to help countries "smooth" the health response to a recession, limiting health damage but also forgoing potential health gains that could otherwise result.

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Introduction

Not surprisingly, the recent Great Recession has raised considerable concerns in the public health community about likely adverse health effects (WHO, 2009). Such fears were supported by, among others, a wealth of epidemiological and psychological evidence on the strong and positive associations – at the level of the individual – between lower income, unemployment and poor health (Catalano et al., 2011) and were expressed by other authors, too (Marmot and Bell, 2009).

With new data having become available in the meantime, a number of recent country-specific studies have examined – largely descriptively – what have been the early health effects

of the recent global economic decline (also called the "Great Recession" — henceforth we are using 'Great Recession' and 'global economic decline' as synonyms), generally defined in the economic literature as starting in 2008 in Europe (Bentolila et al., 2010; Burda and Hunt, 2011). In particular, it has been suggested that suicide rates have increased significantly as a result of the sharp deterioration of economic conditions in the USA (Reeves et al., 2012), the UK (Barr et al., 2012), Italy and Greece (De Vogli et al., 2013). At the same time, some of these early descriptive analyses have been criticised as potentially misleading in that their results may have been driven by outliers and/or by the assumed linearity of the model employed to establish the empirical relationship (Fountoulakis et al., 2013). In order to overcome some of the limitations of the initial descriptive single-country studies, in this paper – using a panel covering 23 European countries for the period 2003–2010 – we examine in some more depth the impact of macroeconomic decline during the Great Recession on a larger set of health indicators.

This study builds on a fairly considerable existing literature on the relationship between economic fluctuations and health prior to the recent recession. The overall findings of this literature have

been rather counter-intuitive ones: while recessions appear to be good for many health indicators (except for suicides), booms tend to entail mostly adverse health consequences (see for instance Catalano et al., 2011; Eyer, 1977b; Gerdtham and Ruhm, 2006; Ruhm, 2000 and Eyer, 1977a, and Bezruchka, 2009). The hypothetical mechanisms explaining these results that have been proposed but hardly rigorously tested in the literature (Catalano et al., 2011), can be summarised in four main pathways, following Ruhm (2000):

(1) With a decline in economic activity comes increased time for leisure activities which may include more physically active behaviours compared to what otherwise might predominantly be sedentary job-related activities; the increased leisure time may also be used to seek treatment that otherwise there might not be time for.

(2) During the economic downturn workers may benefit – as a result of reduced working hours – from lower stress levels.

(3) Work-related accidents are likely to decline during recessions, again as the result of lower workloads; other types of accidents, including motor vehicle traffic accidents, may decrease as well because of lower overall economic activity, affecting transport and potentially budget constraints, which in turn may reduce motorised transport as well as alcohol consumption.

(4) Economic recessions reduce the incentives for immigration, thereby potentially decreasing death rates in destination states through reduced crowding, because fewer immigrants might mean fewer imported diseases, or a lower risk of immigrants being unfamiliar with roads or the medical infrastructure. On the other hand, with migrants often being relatively young and hence likely healthy, lower immigration may induce a spurious negative correlation between economic conditions and mortality rates.

Bearing in mind the above suggested mechanisms, the approach we follow contributes to the recent literature on the health effects of the Great Recession in several ways: (1) We employ a log-linear model instead of a linear one, to obtain results more robust to outliers; (2) In contrast to the above-mentioned studies, we control for serial correlation of the mortality rates; (3) Our main results are based on data from 2003 onwards, pre-empting the influence of the 2001 crises — soon after 9/11. (4) We also explore whether – and if so, how – the health effects differ by countries' level of social protection.

Methods and data

The statistical model

In order to assess the relationship between macroeconomic fluctuation and health we follow the recent relevant economic and public health literature, using the unemployment rate as the main indicator for the macroeconomic fluctuation (see e.g. Tapia Granados, 2008) and as health indicator the overall mortality rate, selected cause-specific mortality rates, as well as health behaviour proxies.

To estimate the short-term effects of the Great Recession on health, we adopt in particular two approaches, building on the earlier seminal work by Gerdtham and Ruhm (2006):

In our basic specification we run linear regressions, using the following model (1):

$$M_{jt} = \alpha_t + X_{jt}\beta + E_{jt}\gamma + C_j + \psi_j T + \varepsilon_{jt} \qquad (1)$$

where M_{jt} is the natural logarithm of the outcome for country j and year t, E_{jt} is the standardised unemployment rate, X_{jt} represents a vector of regressors capturing demographic and socioeconomic characteristics (i.e. the country-specific percentage of males aged 65 or less out of the total population aged 65 or less and the logarithm of the GDP per capita in real terms), C_j represents country-specific effects, $\psi_j T$ represents a country-specific linear time trend and α_t represents a year-specific intercept. Since the time-trend is linear and not represented by dummy variables, we do not use any subscription for it, in line with Gerdtham and Ruhm (2006). Our coefficient of interest is γ which identifies the effects of macroeconomic fluctuations on health outcomes. We control for country-specific time trends by interacting the linear time trend with the country dummies. This allows us to control for factors that vary over time within countries.

In specification (2) we added a first order autocorrelation term, whose coefficient is represented by ρ, which gives the following dynamic model:

$$M_{jt} = \alpha_{2t} + X_{jt}\beta_2 + E_{jt}\gamma_2 + C_j + \psi_j T + M_{jt-1}\rho + \eta_{jt}. \qquad (2)$$

As argued by Neumayer (2004) this approach allows estimating a dynamic model without imposing a specific number of lags in the dependent variable to be included in the model, thereby circumventing a possible problem of multicollinearity.

In order to account for heteroscedasticity we weight the observations by the square root of the population (as in Ruhm, 2000 and Gerdtham and Ruhm, 2006). We also use robust standard errors to control for potential autocorrelation in the error term.

Data

We compile a dataset of annual data on country specific death rates (mortality rates refer to deaths per 100,000 of a European standard population aged less than 65), health behaviour indicators, socioeconomic and demographic indicators for 23 European Union (EU) member countries covering the period from 2000 to 2010, drawn from two WHO data sources, the European Health for All Database (HFA-DB), and the Mortality indicator database (MDB). (We have excluded five EU countries from the sample — Croatia due to missing data, and Cyprus, Malta, Czech Republic and Luxembourg as outliers, upon inspection of their data, and in order to prevent potential bias of our estimates.)

We use two different time periods in an effort to capture the effect of the economic decline during the recent recession: we start with a sample from 2003, in order to avoid distortion of the results by the effects of in particular the 2001 post 9/11 crisis, and subsequently examine whether the results are robust to enlarging the time period, starting from 2000 onwards.

In our sub-group analysis, we split the countries into three tertiles according to their respective share of social protection expenditure in GDP, in line with Gerdtham and Ruhm (2006), using the 2005 social expenditure data, which is the first year in which social expenditure data was available for the entire sample in the Eurostat database. (We also experimented with an alternative classification, using the welfare state classification by Esping-Andersen (Esping-Andersen, 1996), but we do not report the results as the sample size of some groups were too small. Results are available on request.)