Application for The European Population Conference 2026 (EPC 2026)

Theme: *Health, Morbidity & Wellbeing*

Health in Times of Crisis: Individual-Level Evidence of the Thomas Effect in Europe during the Great Recession

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Keywords

Thomas Effect; Healthy Recession Paradox; Great Recession; Health Inequality; Health Outcomes

EXTENDED ABSTRACT

Background

The so-called *Thomas Effect*—also known as the *healthy recession paradox*—describes a pro-cyclical relationship between mortality and the economic cycle. In other words, aggregate mortality rates tend to decline during economic downturns and increase during periods of economic expansion. This counterintuitive pattern, first observed by Thomas and Ogburn in the early twentieth century, has been the subject of intense scholarly debate. While some studies provide robust evidence supporting this pro-cyclical association, others question its generalizability and underlying mechanisms.
Recent empirical contributions, particularly those adopting causal inference approaches, have renewed interest in this phenomenon. Some studies using European and U.S. data have confirmed the presence of a "healthy recession effect" during the Great Recession, suggesting that macroeconomic contractions may indeed coincide with temporary health improvements. Explanations commonly proposed in the literature include reductions in air pollution, declines in work-related accidents, lower exposure to infectious diseases due to reduced mobility and social interaction, more time available for self-care, and decreases in costly and harmful habits such as smoking.
However, despite these advances, most existing research remains confined to aggregate data analyses, typically at the national or regional level. Such studies, while informative, are subject to potential ecological fallacies and fail to capture the heterogeneity of individual responses to macroeconomic shocks.
Our study seeks to bridge this gap by examining whether the Thomas Effect also holds at the individual level. Specifically, we investigate how the Great Recession affected self-reported health among adults aged 50 and over across European regions. By combining individual-level microdata from the Survey of Health, Ageing and Retirement in Europe (SHARE) with regional unemployment data from Eurostat, we provide a more nuanced perspective on the interplay between economic conditions and population health. In doing so, we contribute to the growing literature exploring the causal pathways linking economic cycles to health.

Data and Methods

A key challenge in studying the Thomas Effect lies in defining the intensity of local exposure to the Great Recession. In our design, the "treatment" corresponds to the economic shock associated with the 2009 European financial crisis. Measuring how severely each location experienced the crisis is, however, non-trivial and has been the subject of substantial debate in the literature.
Following the robust and already tested approach of Tapia Granados and Ionides, we quantify the intensity of the Great Recession by calculating the change in the unemployment rate between 2007 and 2010 for each location under scrutiny (see below). Based on this variation,

we divide individuals into three groups according to the tertiles of the local unemployment change distribution. The first tertile represents our control group, i.e. individuals residing in location not affected or only marginally affected by the crisis. The second and third tertiles constitute the treatment groups, corresponding respectively to moderate and severe exposure to the recession. This operationalization provides a coherent and empirically validated measure of crisis intensity across European regions.
A second major challenge concerns the spatial linkage of individuals to sub-national territories, as SHARE microdata are not directly geo-referenced at the local level. To overcome this limitation, we undertook an extensive data reconstruction process. Starting from the EasySHARE dataset, we used retrospective residential histories available in waves 3 and 7 to recover information on respondents' places of residence at the NUTS2 regional level, where possible. This allowed us to retroactively assign a NUTS code to individuals interviewed in Waves 1 and 2 (through linkage with Wave 3) and in Waves 4, 5, and 6 (through linkage with Wave 7). In doing so, we were able to locate individuals across European regions with a good level of granularity, a feature not so common for this type of analysis.
The resulting analytical sample comprises 41,909 individuals and 121,741 observations, distributed across 104 European NUTS regions, including 73 NUTS2 and 30 NUTS1 territories. This dataset enables us to explore regional variations in health outcomes during and after the Great Recession, accounting for both temporal and spatial heterogeneity at individual level.

Regarding the empirical strategy, we apply a difference-in-differences (DiD) approach to estimate the causal impact of local exposure to the Great Recession on individual health. We implement two complementary specifications:

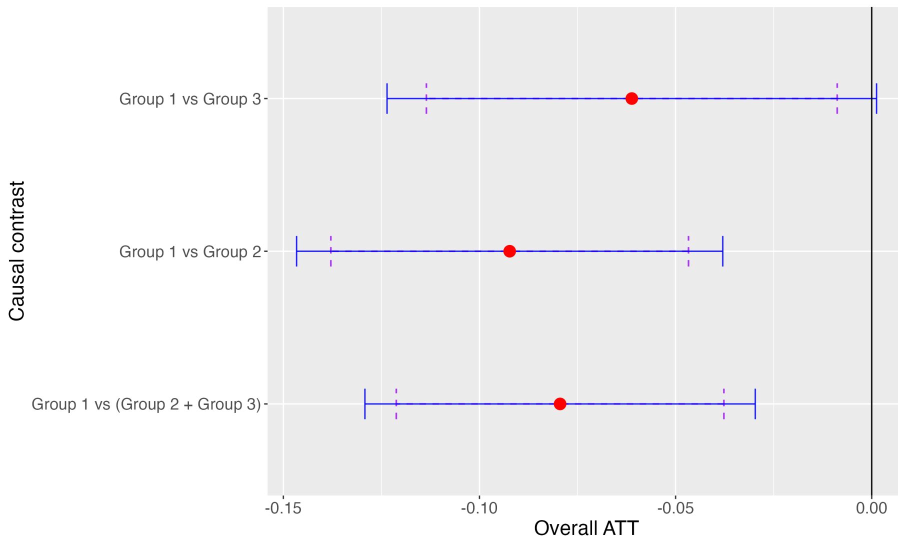
- an *overall DiD model*, contrasting pre- and post-crisis periods as two comprehensive time windows; and
- a *dynamic DiD model*, structured as an event-study design, estimating year-by-year treatment effects.

In both models, we include NUTS fixed effects, year fixed effects, and a set of individual-level control covariates.
Our main health outcome is multimorbidity, measured as the number of self-reported chronic diseases. This indicator captures a broad dimension of health status, allowing us to test whether the Thomas Effect—typically observed in mortality at the aggregate level—can also be detected in individual-level morbidity patterns during a major economic downturn.

Preliminary results, robustness checks, and conclusions

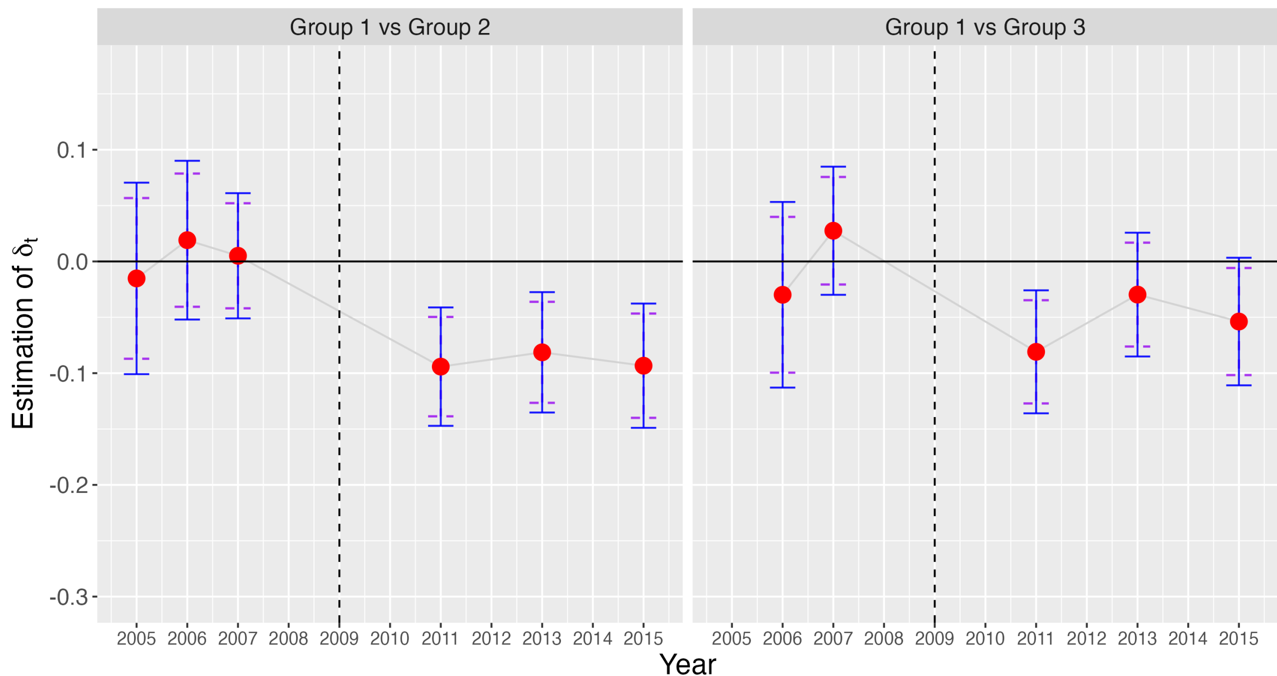
Figure 1 reports the overall difference-in-differences estimates, while Figure 2 illustrates the dynamic (event-study) specification. We conduct the analysis by first comparing the control group (first tertile) with the combined treatment group (second and third tertiles), and then separately contrasting Group 1 vs. Group 2 and Group 1 vs. Group 3.

Figure 1 - Overall Effect of the Great Recession on multimorbidity in 50+ Europe population at individual level



Note: Estimation of the Overall Average Treatment Effect on the Treated (ATT). Individuals have been classified into three main groups (No Crisis, Moderate Crisis and Severe Crisis) based on the change of unemployment rate across the Great Recession in their respective NUTS of residence: Group 1 first tertile; Group 2 second tertile; Group 3 third tertile. Vertical error lines: Solid 95% CI; Dashed 90% CI
Source: Our elaboration on SHARE data

Figure 2 - Dynamic Effect of the Great Recession on multimorbidity in 50+ Europe population at individual level



Note: Estimation of the Dynamic Average Treatment Effect on the Treated (ATT). Individuals have been classified into three main groups (No Crisis, Moderate Crisis and Severe Crisis) based on the change of unemployment rate across the Great Recession in their respective NUTS of residence: Group 1 first tertile; Group 2 second tertile; Group 3 third tertile. Vertical live indicates the start of the Great Recession in Europe. Horizontal error lines: Solid 95% CI; Dashed 90% CI
Source: Our elaboration on SHARE data

Across all specifications, the results consistently indicate a negative and statistically significant coefficient associated with exposure to the Great Recession. Although the sign of the coefficient is negative in a purely mathematical sense, it implies a beneficial health effect: individuals residing in regions more severely affected by the crisis experienced a larger post–pre reduction in multimorbidity compared to those in less affected regions. In other words, the Great Recession appears to have caused a decline in the average number of chronic conditions among the treated population—a finding consistent with the Thomas Effect at the individual level.

The magnitude of the effect is not strictly linear across treatment intensity levels. Estimates for Group 3 (severe exposure) tend to be noisier and less precisely estimated than those for Group 2 (moderate exposure), though the overall pattern remains negative and statistically significant in both cases.

Importantly, the event-study estimates provide evidence in support of the parallel trends assumption, as treatment and control groups are statistically indistinguishable throughout the pre-treatment period.

To validate these findings, we performed a series of robustness checks.

First, we tested for covariate balance between individuals retained in the analytical sample and those excluded due to missing retrospective residential information (i.e., individuals not participating in Waves 3 or 7). The results suggest that attrition does not systematically bias the composition of the analyzed sample.

Second, we examined pre-treatment balance between treatment and control groups across a wide set of individual covariates, confirming comparability prior to the crisis.

Third, we assessed pre-crisis trends in multimorbidity across age groups, verifying that the evolution of health outcomes was parallel between groups before the onset of the Great Recession. All these diagnostic tests confirmed the robustness of our identification strategy and the internal validity of the results.

Finally, as an ongoing extension of this work, we are re-estimating the full model using alternative health-related outcomes to explore potential causal mechanisms underlying the observed effect. Leveraging the individual-level nature of SHARE data, we aim to identify mediating behavioral pathways. Preliminary evidence points toward a possible reduction in smoking prevalence among individuals in more affected regions—a mechanism that could plausibly account, at least in part, for the observed improvement in health during the downturn. Further investigation of this channel is currently in progress.

Overall, our findings provide compelling evidence that the Thomas Effect holds not only at the aggregate level but also at the individual level, at least in Europe during the Great Recession.