

Erasmus School of Economics

The Effect of the Financial Crisis on the Elderly in Spain and Italy compared to Elderly in The Netherlands and Germany

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- (1) Summary**
- This study compares the effect of the recent financial crisis on the self-perceived health of elderly in Spain and Italy as compared to those in the Netherlands and Germany.
 - Test whether non-working elderly were: (1) more affected than employed elderly as they are more vulnerable to cutbacks in health budgets, or, (2) if they might be less affected as many of the effects of the financial crisis on health are channeled via the labor market.
 - Using a difference-in-difference approach, compare self-perceived health in the ‘pre-crisis’ period (using the first two waves of SHARE) with data the ‘post-crisis’ period (using the SHARE waves 4 and 5)
 - Comparing the results of different models, there is evidence that the recent crisis has affected the self-perceived health of people in all four countries.
 - Spain has been hit hardest, followed by the Netherlands, Italy and Germany, in that order.
 - That the Netherlands was more affected by the crisis than Italy was unexpected. (See section 6 below)
 - The working population is relatively less affected then the non-working population. This may be related to the cutbacks in public policy programs such as health spending.

- (4) Method**
- Difference In Difference approach (Hessel et al. 2014)
- Estimate treatment effects comparing the pre- and post-treatment differences in the outcome of a treatment and a control group.
- Treatment :financial crisis
 - Treatment groups: Italy, Spain, the Netherlands, Germany
 - Control group: Poland (one of the less affected countries in Europe, according to the OECD the best performing OECD country since 2007)
 - Dependent variable “y”: self-perceived health (see section 5)
 - Explanatory variables “X”: Demographics, life-style factors, factors which indicate an optimist/pessimist, health related factors (see section 5)
 - Most important assumption; “*The common trend assumption*”:
- The outcome in treatment and control group would follow the same time trend in the absence of the treatment.
- Assumed to be true, using the self-perceived health variable from the European Statistics of Income and Living Condition (EU-SILC) survey

- (6) Results**
- Each country (Italy, Spain, the Netherlands and Germany) is separately compared with the control country (Poland).
 - Table 1 presents odds ratios from the Difference-In-Difference estimation. The odds ratio (OR) in this case is a measure of association between exposure to the crisis and an outcome (self-perceived health). All estimates of the odds ratios for the treated groups are less than one, meaning a decline in the self-perceived health relative to the self-perceived health in Poland, due to the financial crisis. Thus, the self-perceived health of respondents is significantly lower post-crisis.
 - Ordering the odds ratios from lowest to highest, it would appear that Spain has been hit hardest, followed by the Netherlands, Italy and Germany, in that order.
 - The post-crisis decline in self-perceived health is positively correlated with age, alcohol consumption, number of doctor visits and a perceived inability to make ends meet.
 - The working population is relatively less affected then the retired people.
 - People who are permanently sick or disabled and thus cannot work, experience more detrimental effects of the crisis on their self-perceived health.
 - In all countries except for the Netherlands, effects were slightly more pronounced among those with a lower income.
 - People with higher out of pocket care expenses in Spain, the Netherlands and Germany are slightly more affected.
 - Less educated in Italy and Spain suffered harder from the crisis.

Germany		Italy		Netherlands		Spain	
OR	p-value	OR	p-value	OR	p-value	OR	p-value
0.3901	0.000	0.3548	0.000	0.3130	0.000	0.3087	0.000

Table 1- Odds ratios for the DID estimates in the different countries, obtained in the baseline model

- (7) Caveats and further research**
- The DID model only gives true results if four strict assumptions hold. These assumptions should be formally tested in further research. 1) “*One unit’s outcomes are unaffected by another unit’s treatment assignment*”. This assumption implies that Poland was not influenced by the financial crisis through the other countries. 2) “*Exogeneity of the explanatory variables X. The components of X are not influenced by the treatment.*” Tested in the robustness section, but can be extended. 3) “*In the pre-treatment period, the treatment had no effect on the pre-treatment population.*” Judging from GDP per capita and the unemployment rate in the different countries (Figures 1, 2), there does not seem to be evidence of a pre-treatment effect. 4) “*The common trend assumption.*” SHARE did not provide enough data to check this assumption. Therefore, I applied a graphical test on the self-perceived health variable from the European Statistics of Income and Living Condition (EU-SILC) survey for the different countries. It appears that the trends of Germany, Italy, the Netherlands and Spain were similar to the trend of the self-perceived health in Poland, but it is not formally tested in this analysis.
 - The self-perceived health question in Wave 1 was asked twice of each respondent, using different scales. In this paper, I averaged the two different responses together. However, Lumsdaine and Exterkate (2013) documented that the two scales are not necessarily interchangeable. In further research, this should be taken into account.

- (2) Motivation for this research**
- A comparison of self-perceived health in the ‘pre-crisis’ period (using the first two waves of SHARE) with the ‘post-crisis’ period (using the SHARE waves 4 and 5).
- The response options were given from 1 (excellent) to 5 (poor).

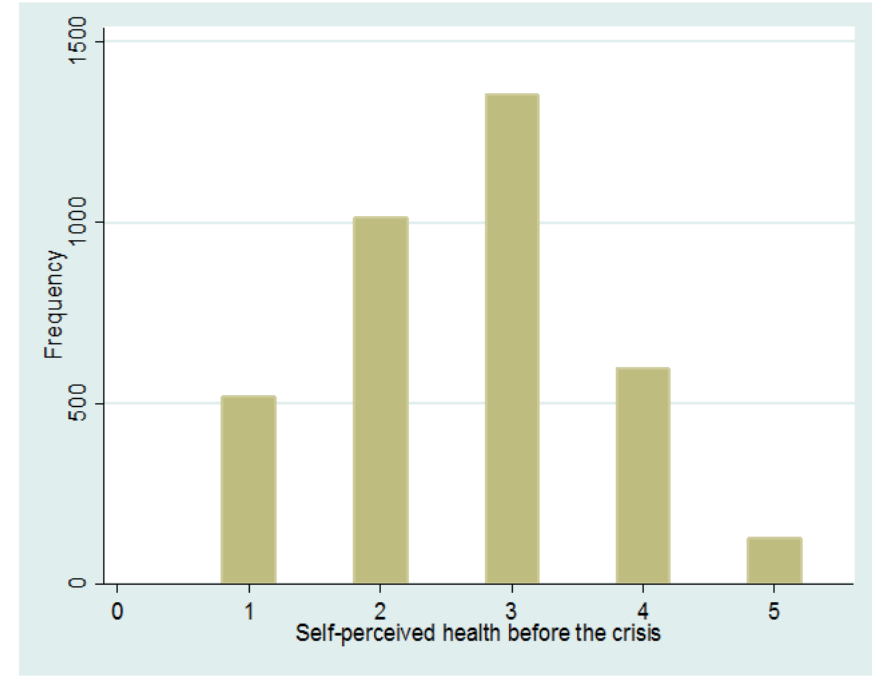


Figure 1 - Self-perceived health response frequencies for Germany and the Netherlands before the crisis

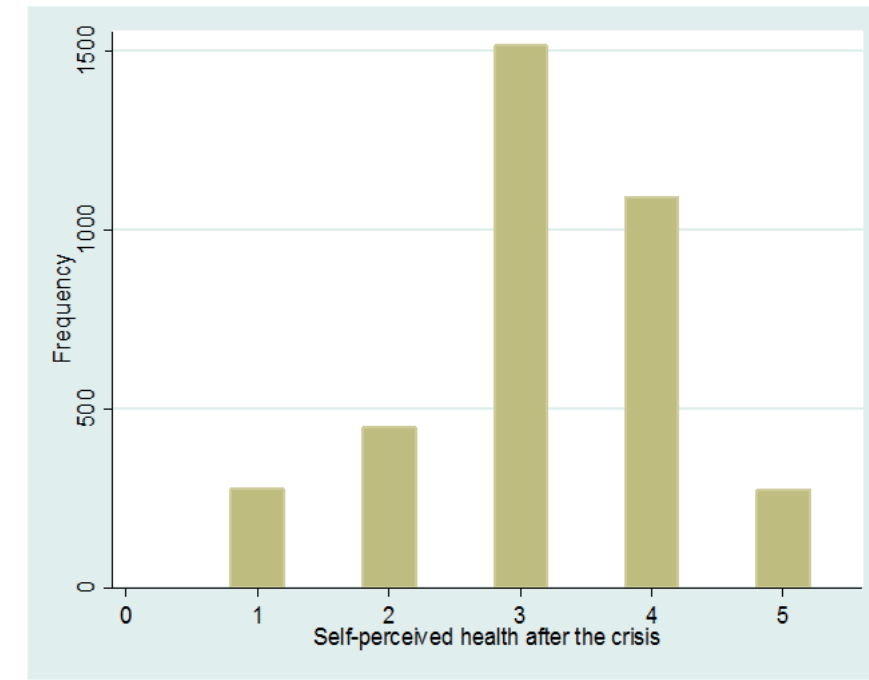


Figure 2 - Self-perceived health response frequencies for Germany and the Netherlands after the crisis

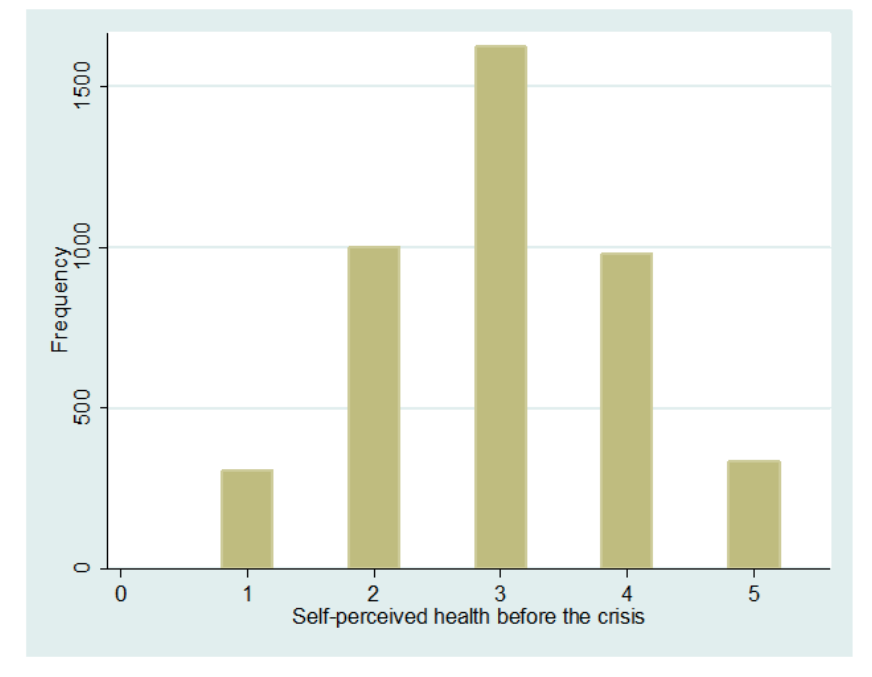


Figure 3 - Self-perceived health response frequencies for Spain and Italy before the crisis

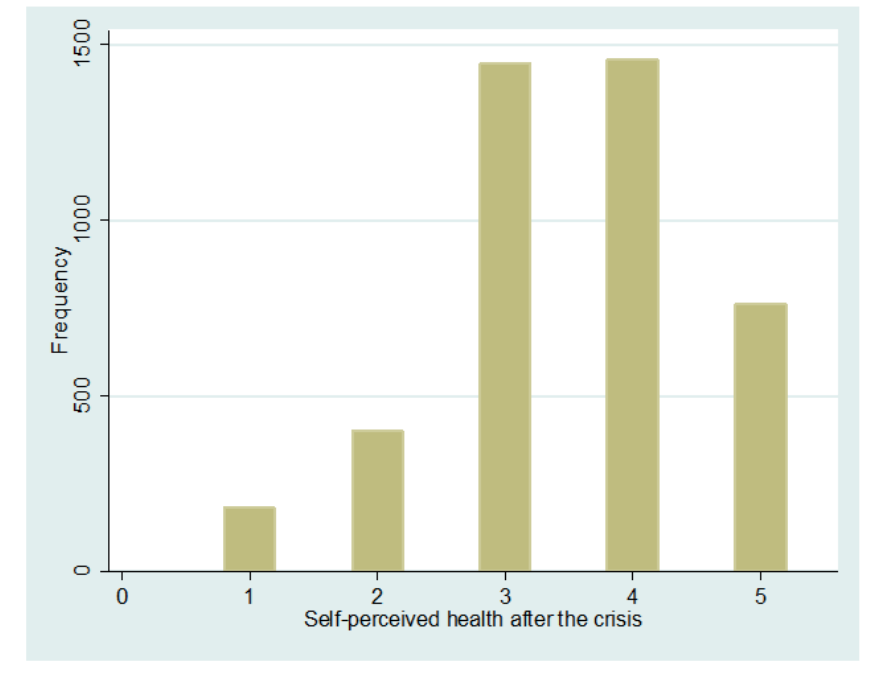


Figure 4 - Self-perceived health response frequencies for Spain and Italy after the crisis

$$y = X\beta + \beta_1 Post + \beta_2 Treat + \beta_{12}(Post * Treat) + u$$

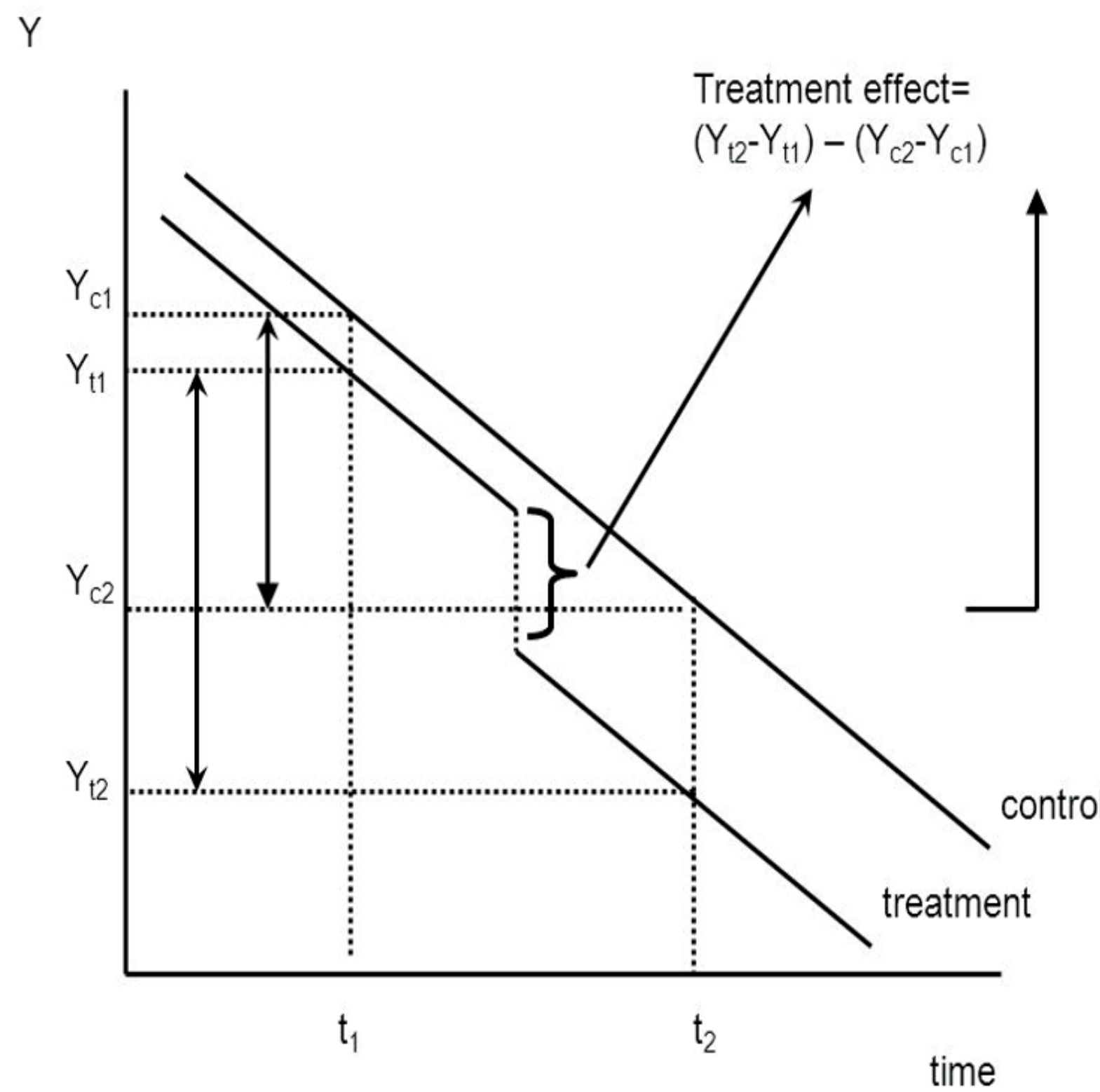


Figure 7 - Graphical illustration of the DID estimator (Evans 2008)

- (3) Measures of the financial crisis for the different countries**

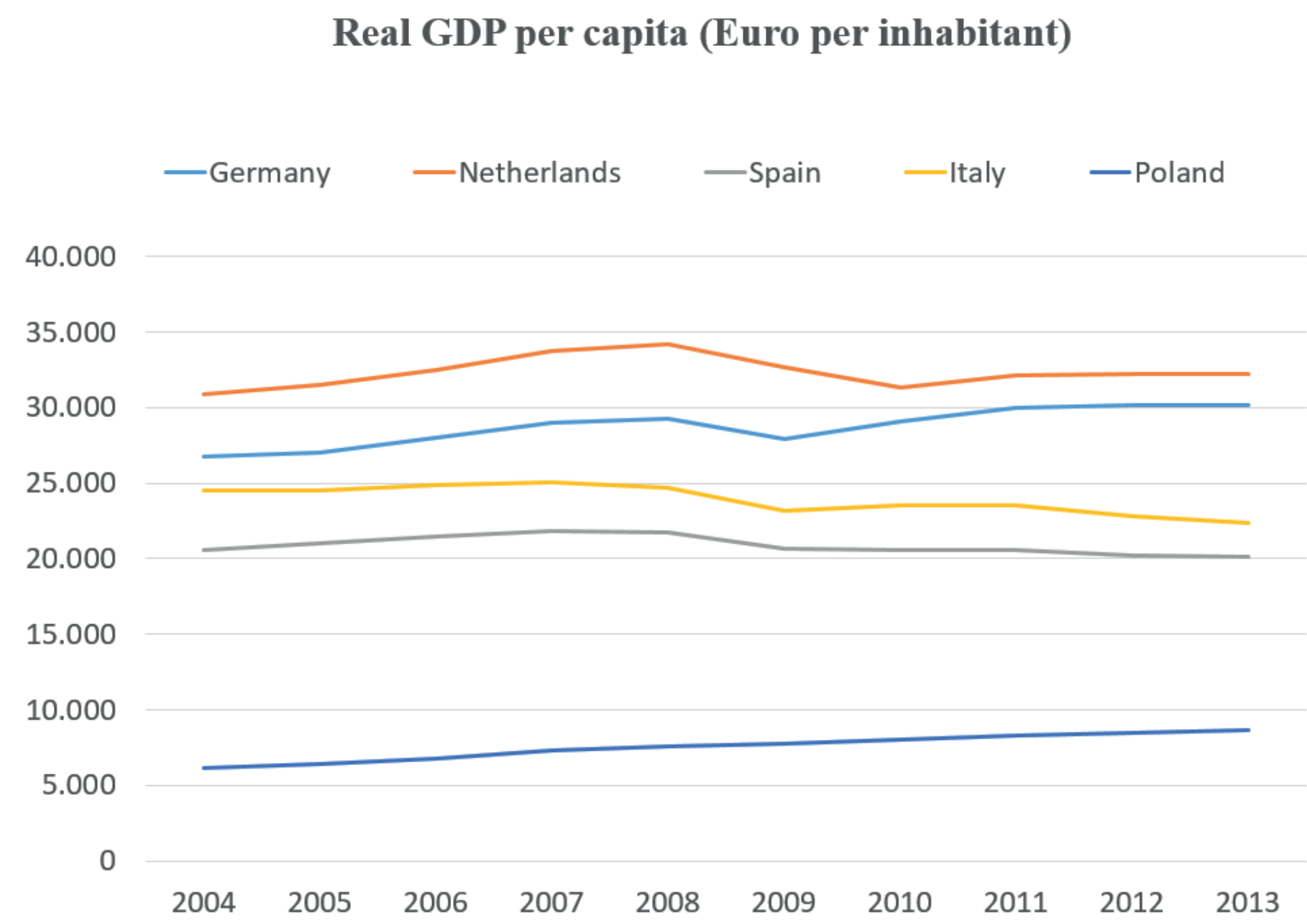


Figure 5- A graphical illustration of the government debt to GDP rates in the different years considered in this study for the countries Germany, Italy, the Netherlands and Spain. Data is obtained from Eurostat.

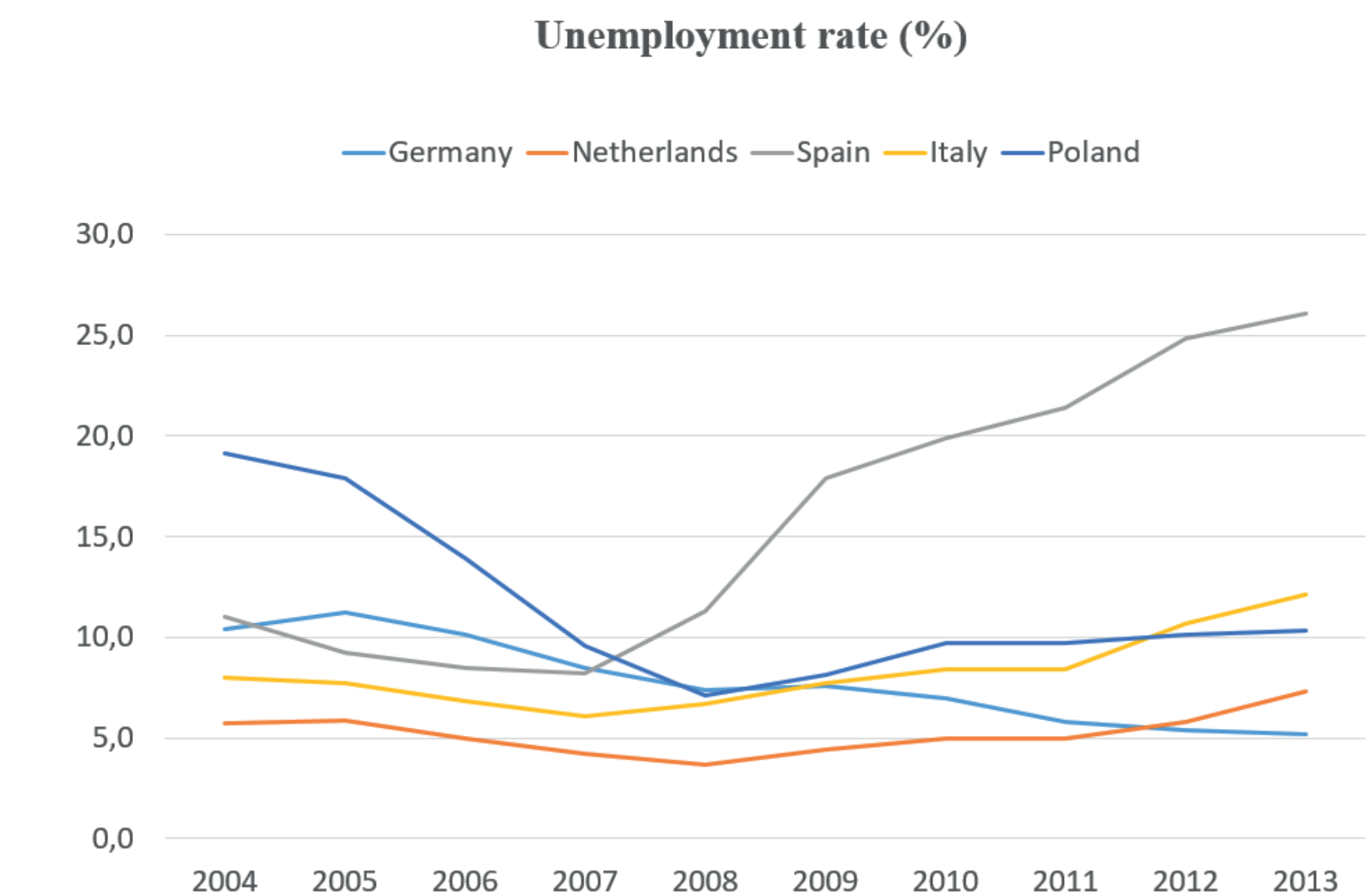


Figure 6 - A graphical illustration of the unemployment rates in the different years considered in this study for the countries Germany, Italy, the Netherlands and Spain. Data is obtained from Eurostat.

- (5) Data and Descriptive statistics**
- SHARE Waves 1,2,4 and 5 for the countries Germany, Italy, the Netherlands, Poland and Spain.
 - Wave 1 & 2 and Wave 4 & 5 were merged to obtain the ‘before’ and ‘after’ crisis samples.
 - Only the respondents who participated before and after the crisis are included in the sample, leading to a sample of 9,360 individuals.
 - Dependent variable: Self-perceived health. Dummy variable which takes the value 1 if the respondent answered with (1) excellent, (2) very good, or (3) good; and 0 if the he/she answered with (4) fair or (5) poor.
 - Explanatory (X) variables:
 - Demographics: Gender, Income, Education, Marital status, Native born, Age and Work status.
 - Life-style factors: “*Do you smoke*”, and “*Days a week consumed alcohol*”.
 - Optimist/pessimist: “*Is household able to meet ends*”, “*Life expectancy*” and “*Hopes for the future*”
 - Health related factors: “*How often have you seen or talked to a medical doctor in the last twelve months*”, “*Have you been in a hospital overnight during the last twelve months*”, and “*Out of pocket care expenses*”.

- (8) Robustness**
- 1)Test the assumption of independence between treatment and explanatory variables of the DID-model.
- Tested the exogeneity assumption by including only demographics in model. There are no major difference between the baseline model and this more simplified model. Therefore, the exogeneity assumption appears not to be violated.
- 2)Tested if the variables GDP per capita, unemployment rate and debt to GDP are correlatedwith the financial crisis.
- Including the variables in the model gives large differences between this extended model and the baseline model. Results confirm that these variables indeed are correlated with the crisis.

- (9) References**
- Evans B. (2008). ‘Difference In Difference Model’. Available at: <http://www3.nd.edu/~wevans1/econ47950/Difference%20in%20difference%20models.ppt> ; exccessed on 28 June 2015.
 - Hessel, P., Vadoros, S., Avendano, M. (2014). ‘The differential impact of the financial crisis on health in Ireland and Greece: a quasi-experimental approach’. Public Health 128, 911-919.
 - Lumsdaine, L., Exterkate, A. (2013). ‘How survey design affects self-assessed health responses in the Survey of Health, Ageing and Retirement in Europe (Share)’. European Economic Review 63, 299-307.