Original Article

Austerity, precariousness, and the health status of Greek labour market participants: Retrospective cohort analysis of employed and unemployed persons in 2008–2009 and 2010–2011

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Abstract Greece implemented the deepest austerity package in Europe during the Great Recession (from 2008), including reductions in severance pay and redundancy notice periods. To evaluate whether these measures worsened labour market participants' health status, we compared changes in self-reported health using two cohorts of employed individuals in Greece from the European Union Statistics on Income and Living Conditions. During the initial recession (2008–2009) we found that self-reported health worsened both for those remaining in employment and those who lost jobs. Similarly, during the austerity programme (2010–2011) people who lost jobs experienced greater health declines. Importantly, individuals who remained employed in 2011 were also 25 per cent more likely to experience a health decline than in 2009. These harms appeared concentrated in people aged 45–54 who lost jobs. Our study moves beyond existing findings by demonstrating that austerity both exacerbates the negative health consequences of job loss and worsens the health of those still employed.

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Introduction

Greece is widely regarded as the European country most adversely affected by recession and austerity measures. Between 2008 and 2011, its Gross Domestic Product (GDP) fell by 13.4 per cent while the officially recorded unemployment rate rose from 10.1 to 17.9 per cent,

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one of the highest in Europe. ¹ Since 2010, the so-called troika (comprising the International Monetary Fund, European Commission, and European Central Bank) led a bailout programme requiring large reductions in government spending. These measures coincided with changes in a range of health indicators, between 2009 and 2011 including a 10-fold increase in the incidence of HIV, a 2.5-fold increase in prevalence of major depression, a 43 per cent increase in infant mortality, and a 36 per cent increase in the number of people attempting suicide. ²⁻⁵ Each of these measures captures the potential impact of austerity on specific groups within the population, such as drug users, those with a propensity to mental illness, and those who have lost jobs. Thus, a repeated cross-sectional survey of mental health in Greece between 2008 and 2011 revealed that the 1-month reported prevalence of major depression rose by about 5 percentage points, concentrated among unemployed persons. ⁶

It is largely accepted that those who are already vulnerable, for whatever reason, are most at risk of adverse health consequences during major economic changes. However, this does not necessarily mean that there will be adverse consequences for the health of the population overall. Thus, a consistent finding, at least in countries where rates are not already very low, is that economic crises are associated with declines in road traffic deaths, thought to be because people drive less.^{2,7} Some researchers have argued that overall health is actually procyclical, improving in downturns and deteriorating in upturns.8-10 Consistent with this view, one recent study from Spain reported that health status improved during the imposition of austerity. In contrast, in a recent study of health in Greece, Vandoros and colleagues found that Greeks were 16 per cent more likely to report poor health than were a control group of Polish respondents. II In that study the observed difference was particularly large among men. Another study from Greece, by Drydakis, examined the periods 2008-2009 and 2010-2013 and found that, while unemployment was associated with worse health in both periods, the difference was greater in the second period, when unemployment was higher. 12 In that case, women were most affected. These contrasting findings on the role of gender reflect the wider literature, which also finds differences. 13,14

To understand the health consequences of the crisis for the Greek population overall, it is necessary to look at both those who remain in employment and those who lose jobs. While most previous attention has focused on the latter, there are grounds for concern about both in Greece. Starting in 2010, the Greek government, under pressure from the troika, began withdrawing employment protection, creating increased economic insecurity. Measures included diluting obligations on employers planning collective dismissals and reducing severance pay (see Web Appendix 1).^{15,16} By increasing job insecurity, these policies would be expected to be deleterious to mental health not only of those who lost jobs but also those who remained in work.^{17–20} Moreover, because the existence of safety nets, such as unemployment insurance, has been found to mitigate the negative health consequences of job loss,^{7,21} policies that weaken such safety nets are likely to exacerbate the negative health consequences of job loss.

These features of the crisis in Greece suggest that increasing economic insecurity and precarious employment could worsen the health of both those remaining in work and those who lost jobs. Yet, so far, it has not been possible to investigate this topic rigorously in Greece. Much of the existing scholarship has relied heavily on repeated cross-sectional data, which creates potential for unobserved confounding. It has also yet to differentiate the effects of job loss and insecurity in the context of recessions and austerity.

In this study, we use two retrospective cohorts of employed persons from the EU Statistics on Income and Living Conditions (EU-SILC), to our knowledge the only longitudinal data source containing health data in a population that is representative of the Greek labour market. We test the hypotheses that (i) austerity measures have worsened the health consequences of job loss and that (ii) austerity measures increase precariousness, increasing the health risks in persons who remain employed.

Data and Methods

Source of data

The research team conducted analyses using data from Greece from the EU-SILC. This survey includes a longitudinal component (longitudinal follow-up rate: 99.3 per cent, 2008–2009) conducted using a 4-year rotational panel design, where 25 per cent of the sample are removed after 4 years and replaced with new respondents. The two cohorts comprised those recruited in 2008 and followed up in 2009 and those



recruited in 2010 and followed up in 2011. The periods were selected because, although the recession was continuing in both periods, the austerity measures that eroded employment protection began only in the later period.

The initial sizes of each cohort were 7633 for 2008-2009 and 6914 for 2010-2011. To account for potential selection effects, we restricted the sample to a baseline of individuals employed in 2008 and 2010 (leaving 7107 in 2008 and 6059 in 2010). One hundred and forty-five cases were missing education data and were removed (59 in 2008 and 86 in 2010). Although the number with missing educational data is small, we checked whether their exclusion could give rise to bias. In the 2008–2009 cohort there was no association between missing data on education variables and the probability of a health decline (test of independence between missing data and experiencing a health decline: χ^{2} (1) = 0.86, P = 0.35). However, in the 2010–2011, cases with missing education data were more likely to report a health decline (test of independence between missing data and experiencing a health decline: χ^2 (1)=7.45, P=0.006), creating a potential downward bias in our hypothesis testing. Following existing studies, we excluded inactive persons, including those who were retired, disabled, studying, or vounger than 18 or over 64 (not of working age). This left a final sample size of 4534 for 2008–2009 and 3761 for 2010–2011. We use a dummy to indicate becoming unemployed, based on self-reports of economic activity consistent with ILO usage.

Table 1 displays descriptive statistics for the two samples.

Health outcomes

We measured health status using a dichotomous indicator for whether health status declined during the study period. Self-reported health is a widely used health measure that is predictive of subsequent mortality and correlates with objective measures of health. ^{22–24} In the EU-SILC, self-reported health is measured on a 5-point scale (1 = very good, 5 = very bad) and highly correlates with the presence of chronic disease and reporting limitations in activity because of health problems (see Web Appendix 2). ²⁵ By examining changes in health status, we adjust for potential 'healthy worker effects', that is, individuals in poorer health are more susceptible to becoming unemployed which could lead to reverse causality. This method also controls for time invariant factors that may

Table 1: Descriptive statistics: Individual variables (2008–2009 and 2010–2011)

	2008–2009			2010-2011				
	n	Percentage	Standard deviation	n	Percentage	Standard deviation	z-test	P-value ^a
N	4534	_	_	3761	_	_	_	_
Experienced a health decline	370	8.16	0.27	403	10.72	0.31	-3.98	0.00
Became unemployed	233	5.13	0.22	559	14.86	0.36	-8.96	0.00
Remained employed	4301	94.87	0.22	3202	85.14	0.36	8.96	0.00
Age								
18-24	224	4.93	0.22	316	8.39	0.20	1.40	0.16
25-34	1065	23.49	0.42	645	17.14	0.41	2.88	0.00
35-44	1380	30.44	0.46	885	23.54	0.46	0.91	0.36
45-54	1208	26.65	0.44	987	26.24	0.46	-3.07	0.00
55-64	657	14.49	0.35	929	24.70	0.36	-1.49	0.14
Highest education level								
Primary education	870	19.18	0.39	1138	30.26	0.46	-11.82	0.00
Secondary education	2043	45.05	0.11	1558	41.42	0.18	3.32	0.00
Tertiary education	1622	35.77	0.48	1065	28.32	0.45	7.24	0.00
Sex								
Female	1941	42.82	0.50	1614	42.91	0.50	-0.08	0.93
Male	2593	57.18	0.50	2147	57.09	0.50	-0.08	0.93
Marital status								
Single	1202	26.52	0.46	863	22.94	0.46	-0.06	0.94
Married	3082	67.97	0.47	2692	71.58	0.45	-3.55	0.00
Separated	250	5.51	0.23	206	5.48	0.23	0.06	0.95

^az-values and P-values refer to difference in proportions tests, testing H_o: $P_{2010-2011} - P_{2008-2009} = 0$.





affect health and which cannot be controlled with the limited number of other variables in the EU-SILC.²⁶

Model

To further correct for potentially confounding factors, we used multivariate logistic regression models, as follows:

Health decline_{ijt} =
$$\alpha_{ijt} + \beta$$
 Job Loss_{ijt} + β Age group_{ijt} + β Female_{ijt}
+ β Education_{ijt} + β Marital_{ijt} + ε_{ijt} (1)

Here, i is individual, j is gender, and t is year in which the model is estimated. We estimated three separate models to capture the different effects of gender: pooled, male, and female. In addition, two separate models were estimated for each period, one for 2008–2009, a period in which Greece experienced a recession, and one for 2010-2011, a period in which the recession continued and austerity measures were implemented. Health decline is the probability of experiencing a decline in selfreported health during the study period for each cohort. Although for clarity of interpretation we tested our hypotheses comparing the probability of a health decline, none of our results was qualitatively changed when using the full scale. *Job Loss* is the measure of becoming unemployed. Age group is a series of age band dummies (18-24, 25-34, 35-44, 45-54, and 55-64) with 18-24 as the baseline. Female is 1 if female, o male. Education is a series of dummy variables coding highest education level achieved into three categories: 'primary' for attaining pre-primary and primary education, 'secondary' for lower and upper secondary education, and 'tertiary' for post-secondary and tertiary education. Primary is the baseline. Marital is the measure of marital status, also coded into three categories: 'single', 'married', (legal or non-legal union, and/or cohabiting) and 'separated' (divorced, widowed, or separated). Single is the baseline. Changes in marital status were also initially calculated to examine the potential mediating and moderating association between changing employment status, becoming divorced, and changing health. However, we excluded this variable from the analysis owing to the small number of cases in these categories (13 in 2008–2009, 44 in 2010–2011). All models were estimated using robust standard errors. We also performed a series of robustness checks for changes in health among the employed, selection into unemployment,

and whether the continuation of the recession explains the results in the austerity period.

Initially we show the overall trend in population health in Greece between 2006 and 2011 and then estimate the association between job loss and experiencing poorer health in the recession cohort (2008–2009) and the austerity cohort (2010–2011). For each cohort, we examine whether the association between job loss and experiencing poorer health varies by age and sex. We performed all analyses using STATA version 12.0.

Results

Figure 1 shows the overall trends in population health status in Greece. As shown in the figure, across the Greek population, the proportion of people reporting 'good' health has declined steadily between 2008 and 2011 from 73.7 to 70.8 per cent, corresponding to a fall of 325 000 people. These health declines varied between regions. In the Attiki region where Athens is located, 10.7 per cent of the sample reported a health decline 2008–2009 rising to 22.9 per cent 2010–2011, compared with a mean across all regions of 7.93 per cent in 2008–2009 and 11.3 per cent in 2010–2011.

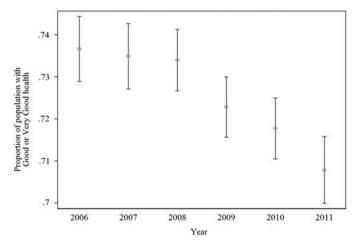


Figure 1: Proportion of the Greek population in good health (2006–2011). *Notes:* Vertical lines are 95 per cent confidence intervals. Each year represents one cross-sectional survey.



Table 2: Logistic regression results: association between becoming unemployed and the probability of experiencing a health decline

	$Odds\ ratio\ of\ becoming\ unemployed\ on\ the\ probability\ of\ reporting\ a\ decline\ in\ health$							
Year	All sexes	Male	Female					
2008–2009	1.17 (0.70–1.94)	0.59 (0.23–1.49)	1.85*					
2010-2011	1.61** (1.21-2.14)	1.59* (1.05-2.39)	1.59* (1.10–2.36)					

Notes: Confidence intervals in parentheses. *P*-values: **P*<0.05, ***P*<0.01. Coefficients shown refer to final model after controlling for age group, sex, education level and marital status. Full results in Web Appendices 3 and 4.

Table 2 reports a series of logistic regressions assessing the correlates of the decline in health status. In the first cohort, covering the initial recessionary period, there was no significant association of job loss with worse health (OR = 1.17, 95 per cent CI: 0.70–1.94). In Figure 2, we show the predicted probability of experiencing poorer health for those who remained employed and those who lost their jobs between 2008 and 2009. In 2009 self-reported health worsened in both groups to approximately the same extent. We then further disaggregated this decline in health status by age and sex, finding no association with age (Web Appendices 3-5) and only a mild association with sex. Women who lost their jobs were at a slightly greater risk of poorer health than women who remained employed (AOR = 1.85, 95 per cent CI: 1.00-3.43) but no association was observed for men (AOR = 0.59, 95 per cent CI: 0.23-1.49) (Table 2). The differences between these two models in the job loss coefficient were significant (test of effect heterogeneity: γ_2 (1) = 4.08, P = 0.04).

In the second cohort, covering the austerity period, health status continued to worsen in Greece (Figure 1). However, in this period, the negative trends were concentrated in persons who lost jobs (see Table 2). Comparing the two waves, we found that persons remaining employed in 2011 were estimated to be 36 per cent more likely to experience a health decline than those who had remained employed in 2009 (Difference in predicted probabilities: 95 per cent CI: 1.17–1.57, P<0.001), whereas individuals who lost jobs in the second cohort were 73 per cent more likely to experience a health decline than similar persons in the first cohort (difference in predicted probabilities: 95 per cent CI: 1.00–2.97,

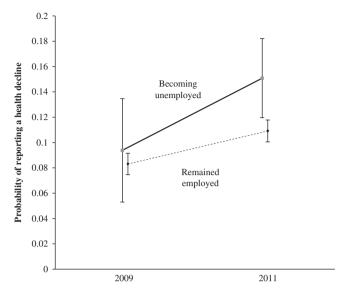


Figure 2: Probability of reporting a decline in health for the employed and the unemployed (2009 and 2011)

Notes: Results from full model reported in Table 2 and Web Appendices 3-4.

P = 0.048). Thus, the job loss-health association worsened during the austerity period during which persons experiencing job loss had a 60 per cent increased likelihood of a health decline (95 per cent CI: 1.21–2.14). To illustrate this divergence by employment status, we again plot the predicted probability of poorer health for those remaining employed and those experiencing job loss between 2010 and 2011 (Figure 2). Here the decline in health is greatest among those who lost work.

We further disaggregated these trends by age and sex, finding that the greatest risks were concentrated in those aged 45-54. During the second cohort, job loss increased the likelihood of reporting poorer health for both men (AOR 1.59, 95 per cent CI: 1.05-2.39) and women (AOR = 1.59, 95 per cent CI: 1.10-2.36). The differences between the models for men and women were no longer significant (test of effect heterogeneity: χ_2 (1) = 0.09, P = 0.77). While age increased the risk of a health decline (35-44 versus 18-24 = AOR 2.36, 95 per cent CI: 1.43-3.89), the influence of job loss varied across age groups. As shown in Figure 3, during the austerity period – but not during the recession – those aged 45-54 who lost their job were 10 percentage points more likely to report poorer health than those remaining employed in this same age group



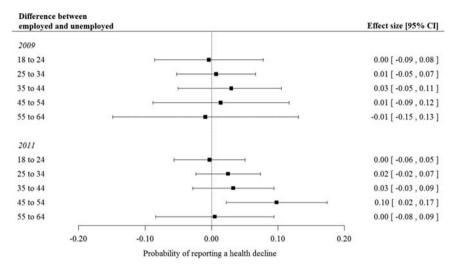


Figure 3: Predicted probability of a health decline according to change in employment status and age group, between 2008-2009 and 2010-2011.

Notes: Results from two models reported in Web appendix 6.

(predicted difference in the probability of reporting a decline in health = 0.10, 95 per cent CI: 0.02-0 0.17).

To test whether changes in income mediated the association between health and job loss we estimated an additional model incorporating a control for changes in income. The coefficient on change in income was not significant in either year. The coefficient on job loss did not differ between our models with and without the income variable (see Web Appendix 5).

We also performed a series of robustness checks to our sample and model specification. Our results suggest austerity policies increased the likelihood of poor health for those experiencing job loss over and above the effect of the recession, yet it is possible that this gap was created by the deepening of the recession, rather than austerity. To examine this alternative explanation, we explore whether the negative trends in self-reported health for those experiencing job loss are observed between 2009 and 2010, before austerity began. We find that there is no difference between those who lost their jobs and those that remained in work in 2009 (P = 0.59) (as observed in Table 2) and in 2010 (P=0.37) despite the deepening recession. The divergence between those becoming unemployed and those remaining in work only occurs in 2011 (P = 0.005), after austerity began. These results

suggest austerity exacerbated the health effects of the recession for those becoming unemployed but not the employed.

We also evaluated the possibility that the 2011 period saw selective redundancies of workers who were already more ill (that is, a 'healthy worker selection effect'). We tested this possibility by estimating additional models incorporating a measure of low health status ('bad' or 'very bad' health) in each initial year (2008 and 2010) in order to capture the influence of health status on job loss. In both the 2008-2009 and 2010-2011 models, incorporating this measure did not alter our findings (see Web Appendix 7a). We also considered the inverse possibility: that those who remained employed until 2010 and 2011 could be more resilient to health changes than those who experienced job loss. To test this possibility we estimated a Heckman selection model that predicts the likelihood of being unemployed in 2010 given the presence of a chronic illness and other socio-demographic factors (first-stage) and then uses the outcome of this model to adjust the influence of becoming unemployed on declining health given they were employed in 2010.26 As anticipated, adjusting for the health selection into employment does not influence our results (Web Appendix 7b). While better health can protect individuals from job loss,²⁷ greater resilience to health declines among individuals remaining employed in 2011 does not explain the association between becoming unemployed in 2010–2011 and declining health status.

The greater risk of job loss in 2011 may also explain our results. We tested whether increasing the proportion of people who became unemployed in 2009 to equal the proportion of individuals who became unemployed in 2011 (14.8 per cent) would create a significant difference between these groups in 2009. Our results suggest that, in this situation, the difference between these groups in 2009 would remain statistically insignificant (difference in proportions tests, 95 per cent CI: -0.018, 0.032, P=0.58), suggesting our results are not attributable to the increase in the number (and proportion) becoming unemployed.

We re-estimated our models incorporating individuals who became inactive into the 'became unemployed' group. Results from this model indicate that excluding these individuals biases our results downwards, because the coefficients on 'Job Loss' increased substantially with the inclusion of inactive individuals (see Web Appendix 7c for full results).

Finally, we re-estimated our models using conditional logistic regression. This yielded results consistent with our original model. Those who were unemployed had a higher probability of reporting a health decline



in the second period, 2010–2011 (AOR: 1.13; 95 per cent CI: 0.79–2.32) than the first period, 2008–2009 (AOR: 1.56; 95 per cent CI: 0.01–2.25) (see Web Appendix 7d).

Discussion

Four important conclusions can be drawn. First, the economic crisis and subsequent austerity has been associated with increased prevalence of poor health in Greece. Irrespective of labour market status, the proportion of people experiencing a decline in health between 2008 and 2009 was 7.93 per cent while between 2010 and 2011 it was 11.3 per cent. Between 2010 and 2011 the proportions experiencing a health decline were higher in Attiki, where Athens is located. Rising precariousness in Athens because of austerity could account for this trend, owing to its concentration of political, financial and economic activity, and unrest.²⁸ Second, job loss between 2008 and 2009 did not increase the risk of experiencing poorer health among men but it did increase that risk slightly among women. Third, our findings suggest that austerity measures exacerbated the impact of job loss on health. In 2011 (and in contrast to 2009), job loss increased the risk of poorer health for both men and women compared with those remaining in employment. Fourth, the influence of job loss on health during the austerity period (but not during the recession period) was particularly strong among those aged 45-54. Specific austerity measures that might account for this change include tighter enforcement of social protection regulations and reduced severance pay, in addition to increasing health-care costs and the cost-saving initiatives introduced by austerity and driving increased unmet medical needs.29

There are important limitations to our study. First, because of missing data, employment status could not be measured using a harmonised definition in the 2009 data. Compared with Eurostat unemployment rates, sample and population-level unemployment rates were the same in 2009 (Eurostat: 10.7 per cent; SILC sample: 9.9 per cent; 95 per cent CI for difference in proportions: -0.001 to 0.017, P=0.69) but differed slightly in 2011 (Eurostat: 21.6 per cent, SILC sample: 23.4 per cent: Difference in proportions P=0.003). By estimating the effect of within-person change we remove any potential confounding between erroneous self-reported economic status and health. Second, disaggregating the impact of the recession from the impact of austerity is difficult

given inadequate indicators of austerity. Yet our results suggest the negative impact of becoming unemployed on health rises dramatically in 2011, creating a clear divergence between those remaining employed and those becoming unemployed; this had not been observed in 2009 or 2010. Third, because the number of people becoming unemployed is relatively small, tests of the moderating effects of age and sex on unemployment may be under-powered. Yet, the moderating effect of age and sex has been so large in some cases that even with a relatively small sample we have statistically significant differences at $\alpha = 0.05$ level. Fourth, because our models are estimated using two separate samples, changes in sample composition may influence our results. To address this we have conducted a series of sensitivity analyses that suggest our results are stable after adjusting for socio-demographic characteristics and health selection into unemployment. Finally, our article is limited to one particular country in the midst of a large-scale recession and vast contraction of government spending, and examines the effect of the austerity package rather than individual policies. Owing to the limited number of variables available in the EU-SILC, we were also unable to develop a specific measure precariousness. Future research should therefore further probe this article's conclusions by ascertaining precisely which of the policies implemented between 2010 and 2011 led to rising precariousness and account for our article's findings.

Why did those who remained employed also experience increased risk of poorer health in 2009? During the crisis, susceptibility to health declines appears to have been widespread. Declining GDP may have reduced incomes and financial security, restricting access to goods and services necessary to sustain health (including food and health care), while increasing stress. The crisis had negative health consequences for those remaining employed as well as those becoming unemployed. Consistent with findings from the United States, ³⁰ our results indicate that economic crises, by increasing insecurity, can erode some of the protective effects of continued employment on health.

In contrast, women in Greece, rather than men, were slightly more likely to experience poorer health following job loss in 2009. These results may reflect some of the structural inequalities experienced by women in terms of opportunities for employment and access to social protection.^{31,32} For example, entitlements for Greek social protection policies are often unfavourable towards women because they protect



"male breadwinners"... at the expense of their wives'.³³ Indeed, average reported income replacement payments were higher for men in 2009 (€879.27 per year) than for women (€591.41 per year). Further, in 2011 Greece ranked 56 on the World Economic Forum's Gender Equality Index, 18 places lower than the EU average.³⁴ These gender disparities mean that women becoming unemployed in Greece may have relatively few opportunities for re-employment and therefore face increased uncertainty, stress, and, as a consequence, poorer health. The greater propensity for declining health among women compared with men, 2008–2009, may have been exacerbated by these aggregate inequalities. This is consistent with Drydakis' study, which also shows that adverse health consequences of unemployment in Greece are greater among women.¹²

Our results also suggest that 'austerity' had negative effects on the health of both men and women over and above the recession. Unlike the first cohort, among the second cohort there was a significant divergence between the employed and the unemployed, with the unemployed becoming much more likely to report poorer health. Spending reductions that affected access to and the quality of health care may have prevented individuals from receiving treatment for psychological and somatic conditions associated with job loss. Mental health, in particular, may have suffered from spending reductions; unemployed individuals are more susceptible to mental illnesses, while government spending on mental health programmes was reduced by 20 per cent. ² Reduced social protection payments and severance pay may have also foregone the potentially moderating effect of this compensation, particularly via financial insecurity and associated stress. Austerity therefore appears to have exacerbated the health effects of becoming unemployed, consistent with the earlier findings, using a different survey, by Drydakis. 12

These austerity effects were particularly concentrated among those aged 45–54, who are more likely to have dependents or other financial obligations thereby increasing the financial stress associated with job loss. Middle-aged workers also have stronger ties to the labour market than younger workers and this greater attachment may aggravate the mental health consequences of job loss. Again, increased health-care costs, reductions in severance pay, and tighter enforcement of social protection payments may have exacerbated the negative health consequences of unemployment for this particular age group.

Our results have important implications for policymakers. Governments and multi-national organisations prescribing and implementing welfare state contraction (such as the International Monetary Fund), especially during economic recession, should be aware that these measures can be particularly harmful to the unemployed. These policies are advocated on the basis of their economic advantages. Yet judged on the basis of measures 'Beyond GDP', our results suggest that they do not necessarily yield improvements in well-being.³⁸ Moreover, reliance on aggregate measures of health is likely to obscure the health-consequences of austerity for vulnerable groups, such as those who lose their job. While previous literature shows that job loss harms health, our results from Greece demonstrate that austerity exacerbated the negative effects of job loss on health. How governments respond to recessions can either protect the health of those who lose their jobs or it can expose them to the risks of poorer health on top of the economic shock of unemployment. The Great Recession has certainly led to poorer health in Greece (for both the employed and the unemployed) but austerity has very likely made the effects even worse.

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References

- 1. Eurostat. General government expenditure by function, 2014 users' database. Luxembourg: European Commission, Eurostat 2014.
- Kentikelenis, A., Karanikolos, M., Reeves, A., McKee, M. and Stuckler, D. (2014) Greece's health crisis: From austerity to denialism. *Lancet* 383(9918): 748–753.



- 3. Reeves, A., McKee, M. and Stuckler, D. (2014) Economic suicides in the great recession in Europe and North America. *British Journal of Psychiatry* 204(6): 1–2.
- 4. Reeves, A. et al (2014) Economic shocks, resilience, and male suicides in the great recession: Cross-national analysis of 20 EU countries. European Journal of Public Health 25(3): 404–409.
- 5. Coope, C. *et al* (2014) Suicide and the 2008 economic recession: Who is most at risk? Trends in suicide rates in England and Wales 2001–2011. *Social Science and Medicine* 117C: 76–85.
- 6. Economou, M., Madianos, M., Peppou, L.E., Patelakis, A. and Stefanis, C.N. (2013) Major depression in the era of economic crisis: A replication of a cross-sectional study across Greece. *Journal of Affect Disorders* 145(3): 308–314.
- 7. Stuckler, D., Basu, S., Suhrcke, M., Coutts, A. and McKee, M. (2009) The public health effect of economic crises and alternative policy responses in Europe: An empirical analysis. *Lancet* 374(9686): 315–323.
- 8. Ruhm, C.J. (2000) Are recessions good for your health? *Quarterly Journal of Economics* 115(2): 617-650.
- 9. Tapia Granados, J.A. and Diez Roux, A.V. (2009) *Life and Death During the Great Depression*. Proceedings of the National Academy of Sciences, USA; 106(41): 17290–17295.
- 10. Granados, J.A.T. (2005) Increasing mortality during the expansions of the US economy, 1900–1996. *International Journal of Epidemiology* 34(6): 1194–1202.
- 11. Vandoros, S., Hessel, P., Leone, T. and Avendano, M. (2013) Have health trends worsened in Greece as a result of the financial crisis? A quasi-experimental approach. European Journal of Public Health 23(5): 727-731.
- 12. Drydakis, N. (2015) The effect of unemployment on self-reported health and mental health in greece from 2008 to 2013: A longitudinal study before and during the financial crisis. *Social Science and Medicine* 128: 43–51.
- 13. Rahmqvist, M. and Carstensen, J. (1998) Trend of psychological distress in a Swedish population from 1989 to 1995. Scandinavian Journal of Social Medicine 26(3): 214–222.
- Hauksdottir, A., McClure, C., Jonsson, S.H., Olafsson, O. and Valdimarsdottir, U.A. (2013)
 Increased stress among women following an economic collapse A prospective cohort study.
 American Journal of Epidemiology 177(9): 979–988.
- 15. Gemmell, N. and Morrissey, O. (2005) Distribution and poverty impacts of tax structure reform in developing countries: How little we know. *Development Policy Review* 23(2): 131–144.
- 16. European Commission. (2011) The Economic Adjustment Programme for Greece Third Review. Brussels, Belgium: European Commission.
- 17. Ferrie, J.E., Shipley, M.J., Newman, K., Stansfeld, S.A. and Marmot, M. (2005) Self-reported job insecurity and health in the whitehall II study: Potential explanations of the relationship. *Social Science and Medicine* 60(7): 1593–1602.
- 18. Burgard, S.A., Brand, J.E. and House, J.S. (2009) Perceived job insecurity and worker health in the United States. *Social Science and Medicine* 69(5): 777–785.
- Meltzer, H., Bebbington, P., Brugha, T., Jenkins, R., McManus, S. and Stansfeld, S. (2010)
 Job insecurity, socio-economic circumstances and depression. *Psychological Medicine* 40(8): 1401–1407.
- 20. Catalano, R. et al (2011) The health effects of economic decline. Annual Review of Public Health 32: 431-150.
- 21. Bird, R.M. and Gendron, P.-P. (2007) *The VAT in Developing and Transitional Countries*. New York: Cambridge University Press.
- 22. DeSalvo, K.B., Bloser, N., Reynolds, K., He, J. and Muntner, P. (2006) Mortality prediction with a single general self-rated health question. A meta-analysis. *Journal of General Internal Medicine* 21(3): 267–275.
- 23. Zolt, E.M. and Bird, R.M. (2005) Redistribution via taxation: The limited role of the personal income tax in developing countries. *UCLA Law Review* 52: 1627–1695.

- 24. Parkin, D., McGuire, A. and Yule, B. (1987) Aggregate health care expenditures and national income. Is health care a luxury good? *Journal of Health Economics* 6(2): 109–127.
- 25. Arora, V.S., Karanikolos, M., Clair, A., Reeves, A., Stuckler, D. and McKee, M. (2015) Data resource profile: The European union statistics on income and living conditions (EU-SILC). *International Journal of Epidemiology* 44(2): 451–461.
- Heckman, J.J. (1979) Sample selection bias as a specification error. Econometrica 47(1): 153–161.
- 27. Bartley, M. (1994) Unemployment and ill health: Understanding the relationship. *Journal of Epidemiology and Community Health* 48(4): 333-337.
- 28. Economist. (2010) Anatomy of the protests, http://www.economist.com/node/16132704, accessed 10 July 2015.
- 29. Reeves, A., McKee, M. and Stuckler, D. (2015) The attack on universal health coverage in Europe: Recession, austerity, and unmet needs. *European Journal of Public Health*. 25(3): 364–365.
- Deaton, A. (2012) The financial crisis and the well-being of Americans. Oxford Economic Papers 64(1): 1–26.
- 31. Van de Velde, S., Huijts, T., Bracke, P. and Bambra, C. (2013) Macro-level gender equality and depression in men and women in Europe. *Sociology of Health & Illness* 35(5): 682–698.
- 32. Van de Velde, S., Bracke, P. and Levecque, K. (2010) Gender differences in depression in 23 European countries. Cross-national variation in the gender gap in depression. *Social Science and Medicine* 71(2): 305-313.
- 33. Matsaganis, M. (2013) *The Greek Crisis: Social Impact and Policy Responses*. Bonn, Germany: Friedrich Ebert Stiftung.
- 34. Hausmann, R., Tyson, L. and Zahidi, S. (2006) Global gender gap report. In: Forum WE, (ed.) Geneva, Switzerland: World Economic Forum.
- 35. Jackson, P.R. and Warr, P.B. (1984) Unemployment and psychological ill-health: The moderating role of duration and age. *Psychological Medicine* 14(3): 605–614.
- 36. Paul, K.I. and Moser, K. (2009) Unemployment impairs mental health: Meta-analyses. *Journal of Vocational Behaviour* 74(3): 264–282.
- 37. Riumallo-Herl, C., Basu, S., Stuckler, D., Courtin, E. and Avendano, M. (2014) Job loss, wealth and depression during the great recession in the USA and Europe. *International Journal of Epidemiology* 43(5): 1508–1517.
- 38. Fleurbaey, M. (2009) Beyond GDP: The quest for a measure of social welfare. *Journal of Economic Literature* 47(4): 1029–1075.

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