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Recession and health in Europe: what to expect?

Research Note

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Summary

This research note reviews the evidence of the effects of economic downturns on public health, with a focus on European countries. First, we show that there is no single, blunt answer to the question of how recessions impact health or health inequalities. Many factors are likely to affect the relationship, including the country's level of economic development, the scale of economic disruption, the specific health conditions considered, and – not least – government policies. Second, we present results from interviews of experts in 18 European countries regarding which public policy and health policy responses to the economic crisis have been implemented. The findings suggest that policy responses differ considerably between countries in the current crisis. It is not hard to imagine that such variation in policy responses, be it in health or social policy more generally, will make a difference to the question of how the current economic crisis will affect health outcomes within and across EU countries. When sufficient information will be available, it will be important to establish which policies will have made what impact, if any.

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Executive summary

The financial and economic crisis has led to concerns that population health will suffer in European Union (EU) countries. How do recessions affect public health in the EU? What do we know based on the experience and evidence from past crises? We find, based on a preliminary review of the evidence, that there is no blunt answer to the question. The public health effects of economic downturns depend on several key issues, including the scale of the crisis, the extent to which populations are vulnerable, and government responses. Our tentative conclusions are as follows:

(1) For high-income countries (which subsumes most of the EU), economic downturns have generally not displayed major negative effects on aggregate population health indicators such as all-cause mortality or life expectancy. Some evidence suggests that the effects may even have been positive *on average* as a result of fewer unhealthy "affluent" activities (over-consumption of food and alcohol) and more health-promoting activities (walking instead of driving).

(2) Nevertheless, the health of vulnerable economic groups who may be particularly hard hit, e.g. through lay-offs and income loss, is likely to suffer disproportionately in absolute and/or relative terms (with respect to the wealthier ones), thereby potentially leading to an increase in health inequalities between socioeconomic groups.

(3) Specific intentional causes of disease and mortality associated with social distress will likely rise, such as suicide and homicide rates. On the other hand, those causes of death associated with economic production, such as traffic fatalities, will likely decrease as traffic volume and intensity drops.

(4) In lower-income EU countries, by contrast, it is likely that the global economic crisis does pose a severe threat to overall population health, as people have fewer resources to cushion themselves through own accumulated wealth, nor can they expect wide-ranging social protection support. Our preliminary evidence indicates that some social protections, such as active labour market programmes or family supports, can help offset risks of rising suicide rates.

(5) Taking (1) and (4) together indicates that inequalities in health between richer and less rich EU countries will likely increase as a result of the current recession (particularly west- and east-EU disparities).

(6) Because most existing evidence focuses on the health effects of 'normal' economic fluctuations, the extent to which past evidence applies to the current, extra-ordinary downturn may be limited. (We find modest support for the idea that the severity of an economic crisis leads to [more] damaging health effects compared to a smaller fluctuation).

(7) While one might speculate that the full positive or negative health effects of a recession only occur after several years, we found little evidence to support this position in those studies which have compared short and long term consequences.

(8) The focus of policy could be:

- In higher-income EU countries (EU15): address potential negative individual impacts on vulnerable populations, such as the unemployed and other lower socioeconomic groups
- In lower-income EU countries (EU12): strengthen and reinforce social support systems while addressing potential negative individual impacts on vulnerable groups.

1. Introduction

The current financial and economic crisis has raised major concerns in the public health community that death, illness and disability will surge in both rich and poor countries across the globe, and that the operation of health systems will be compromised both by increased demand for treatment and a reduced health budget. For instance, in Autumn 2008 the WHO's director-general Margaret Chan warned that health problems would increase as people struggle with unemployment and poverty: "It should not come as a surprise that we continue to see more stresses, suicides and mental disorders", and in January 2009 the WHO released a report, *Financial Crisis and Global Health*, suggesting that "the poor would be the hardest hit", concluding that "defending health budgets" would become more difficult, and that declines in income and employment would worsen health in European countries (WHO, 2009a, WHO, 2009b). Such fears are 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 (Catalono, 2005). That the financial crisis will harm health also reflects the conclusions of the Commission on Social Determinants of Health, published in 2008 (Marmot, 2008), and argued by Sir Michael Marmot in a recent BMJ commentary (Marmot and Bell, 2009).

Yet, several researchers, primarily economists, argue the opposite: recession might actually improve health, at least in the short run. Research in the USA and Europe finds pro-cyclical worsening of mortality during expansions and improvement during recessions, with recession associated with lower road-traffic injuries and alcohol-related deaths and hospital admissions (Tapia-Granados, 2008, Gerdtham, 2006, Ruhm, 2000, Ruhm, 2003, Ruhm, 2008a, Ruhm, 2008b). These studies have led some commentators to speculate "Good News: Recession may make you healthier!"(Bougerol, 2009) and thus argue that "recession may be a lifestyle blessing in disguise."(Cowen, 2009)

One reminder that periods of economic hardship may be accompanied by counter-intuitive short-run positive effects on health comes from World War II, where evidence showed that death rates from cardiovascular disease declined in Norway and other German-occupied countries as overall fat and calorie intakes were drastically cut. After the war ended in 1945, diet-related and CVD death rates returned to their pre-war rates (Dubos 1987). Similar patterns as found in World War II Europe were observed in Cuba in the 1990s, after the collapse of the Soviet Union had short-term devastating effects on the economy.

Sen (1998) has also illustrated how decadal fluctuations in life expectancy behaved in almost exactly the opposite way as national per capita incomes in England and Wales during the 20th century. What is striking to those who believe that economic hardships result in worse health outcomes (like the authors of this paper), life expectancy in England and Wales rose by nearly seven years per decade during the war decades 1911-21 and 1941-51. Sen attributes this success to "a more effective use of public

distribution systems associated with war efforts and more equal sharing of food through rationing systems" (Sen, 1998). Others have suggested that these hardships temporarily boost solidarity and social capital.

How should policymakers react to this diverse and seemingly contradictory evidence? Will health be negatively impacted? If so, what can we do to protect health from any potential negative effects of the financial crisis?

This paper aims to review the existing evidence on the effects of past economic downturns on health, in order to better assess the expected health effects of the current crisis and propose how policy should respond, if at all. Inevitably, the single biggest limitation of this approach is that the lessons from the past may be of limited use for the present, because the current recession may well be very different from any past experiences. This has to be borne in mind when interpreting the findings presented below.

If there is one main message of this short note, it is that there are no universal truths about the health impacts of recessions. However, we do see some patterns emerging from our analysis. In particular we find that significant financial disruptions appear to have the greatest effects on health when i) social protections and social support are low and ii) risk factors that can be used by desperate people to inflict harm are easily available. Besides, the magnitude of the economic fluctuation may be more important than its direction, positive or negative.

2. What does the existing evidence tell us?

The existing evidence on the effects of the economy on health is not only broad but also varies considerably in terms of data sources, time periods studied, methods applied, and – not least – their findings. We review the key issues that are likely to matter when trying to answer the overarching question of whether and, if so, how recessions affect health.

2.1 Effects of Financial Crisis on Health at Individual and Population Levels

Two branches of the existing research shed light on what the health effects of economic downturns may be:

(1) The individual-level research evaluating the individual health effects of unemployment or of other relevant socioeconomic factors likely to be affected by a recession (mostly done by epidemiologists and psychologists)

(2) The population-level research focusing on relationships between unemployment (or other macroeconomic indicators affected by a recession) at the aggregate level, typically at the country or state level (mostly done by economists).

At the risk of only a slight over-simplification, the former suggests health would deteriorate with increasing unemployment (and hence in a recession), while the latter tends to predict the opposite. We briefly summarise each of the two perspectives, followed by a discussion of their methodological limitations.

Individual-level evidence

A large body of epidemiological research (as well as some economic and other social science research) has documented the detrimental effects of unemployment on health at the individual level. For example, studies on unemployment and mortality in Britain in the 1970s and 1980s showed that unemployed people had a mortality rate 20% to 25% higher than average for people of the equivalent socioeconomic group (Moser et al 1990, Bethune 1997). Similar evidence was found in other countries by Stern (1983), Creed (1998), and Ungváry et al. (1999).

Several reviews have identified the major pathways through which unemployment affects individual health: First, there is a material pathway; unemployment is detrimental to the individual's standard of living and financial resources, which has been found by many studies to be a robust determinant of health. Restricted financial resources can lead to poor nutrition, reduced access to medical health care (particularly in the US where healthcare is largely tied to employment). Second, there is a stress-related pathway. Unemployment, and the loss of prestige that accompanies it, appears to be associated with increased risks of suicides (Lewis, 1998) as well as unhealthy lifestyles such as increased smoking, hazardous drinking (Morris et al 1992; Eurothine 2007; Hammarström 1994; Morris et al 1994). These effects have been interpreted as reflecting the psychological "burden" and stress felt by those who loose jobs (Stern 1983), although measuring 'stress' is methodologically difficult.

Population-level evidence

This entire body of rather robust and consistent individual level evidence, much (but not all[1]) of which can most likely be interpreted as causal evidence, would lead one to conclude that a recession that is typically characterised by a significant increase in unemployment would be expected to also harm health at the aggregate, national level. Such has also been the conclusion of some early and influential work by Brenner (1971, 1973, 1977, 1979), who found negative associations between unemployment rates and mortality rates using country-level longitudinal data.

Brenner's work, however, has faced heavy methodological criticism regarding his estimation methods, model specification, lagged effects, confounding variables (or 'endogeneity'), and inconsistent data sources (Gravelle et al., 1981).

In recent years several papers have tried to address or circumvent these methodological problems. Extensive research by Christopher Ruhm (Ruhm, 2000, Ruhm, 2003, Ruhm,

[1] While causality may be tentatively inferred from longitudinal studies that show that job loss tends to precede the onset of illness, some authors have nevertheless cautioned that the relation my still be biased by self-selection, as severe illness in persons of working age may well have precursors, including absenteeism and health insurance claims, that employers notice (Dooley, Fielding and Levi 1996; Böckerman and Ilmakunnas (2009).

2006, Ruhm, 2008a), but subsequently also by others (Gerdtham, 2006, Neumayer, 2004, Tapia-Granados, 2005), using aggregate data over time for a range of high-income countries, have found that negative deviations from the long term per capita GDP trend are closely associated with *reductions* in a wide range of cause-specific mortality rates, including CVD, alcohol-related mortality, homicides, traffic fatalities, cancer, and all-cause mortality rates overall (with the notable exception of suicide rates that appear to rise during recessions) (Ruhm, 2000). While there is no biological basis for short-term effects on cancers, other findings are plausible. If these are accurate, their implication is that "recessions" (or negative deviations from long-term GDP trends) improve health overall, at least in the short run, while positive deviations from the trend entail adverse health effects (Catalono, 2005).

Reconciling Individual and Population Level Findings

The contrasting results between the individual level and the aggregate level evidence appear puzzling at first sight, but can be reconciled upon closer inspection. They are potentially consistent with a scenario in which those that do fall into unemployment during a recession are indeed likely to suffer worse health. At the population health level, however, this effect could be compensated by improvements in the average health of the rest of the population. Because the unemployed population accounts for <10% of the entire population (6% on average in the EU in 2007, although Spain, Belgium and central & Eastern European countries are >10%), the health of the non-unemployed population has a much greater effect on overall population health. (see Appendix for a stylised model of what determines the overall population health response to recession)

But is it plausible for mortality risks to fall among either the unemployed or non-unemployed because of recessions?

Ruhm and others argue that mortality risks could drop, for several reasons. First, during recessions individuals may improve a number of health-related behaviours, such as eat and smoke less and drink less alcohol, in response to tighter budget constraints. Ruhm does find some evidence from US individual level data that smoking and drinking drop in the short-run when state-wide GDP deviates below its time-trend.

On the other hand, in the current crisis, sales of junk food in the EU have risen during the recession, reflecting increased consumption of fizzy drinks and fast-food (Lock, 2009) (although this says little about total food consumption, as people may overcompensate this trend by eating in, which may be healthier). In EU countries, junk-foods tend to be inferior goods, and thus when incomes decline, their consumption is expected to rise (Drewnowski, 2005, Drewnowski, 2004, Popkin, 2001, Popkin, 2002).

Second, Ruhm points out that a person who earns £10/hour pays a higher price (in terms of opportunity cost) to spend an hour exercising than a person who earns less, say £5/hour. When a person's earnings drop, opportunity costs decrease and hence the

incentive to exercise should increase. This, Ruhm argues, could decrease mortality rates among those who become unemployed.

Some (surprising) evidence has found that the relative risk of death of unemployed with respect to employed decreases during recessions, when unemployment rises (Valkonen, 1995, Valkonen, 1998, Martikainen, 1996). Again though there are alternative interpretations of these findings. For example, it could be that the mortality differential between unemployed and employed during economic upturns may be driven by selection factors (or reverse causation). Alternatively, the health effects of unemployment may be modified by the context in which unemployment occurs. For example, the stress-related consequences of unemployment may be less in a recession context when unemployment is widespread (Blake, 1995).

Further arguments put forward to explain these counter-intuitive population findings are also plausible, albeit ambiguous. Declines in occupational hazards have been argued to account for some reduction in mortality rates. This is because occupational hazards are, to some extent, a function of the employment rate (more employees create greater risks). When persons lose jobs, hazards of accidents may decrease among those who remain on the job. However, the opposite effect is also plausible, if workers become overstretched and take on multiple roles for which they may not be adequately trained, or if investment in safety at the workplace are cut. In many ex-communist countries, for instance, occupational-related death rates rose during the post-communist depression of the 1990s.

To complicate matters further, some recent population-level studies, applying similar modelling techniques as Ruhm and colleagues but using Swedish (Gerdtham, 2005, Svensson, 2007) and European data (Economou, 2008) failed to confirm the pro-cyclical relationship between the business cycle and mortality. Economou and colleagues (2008), for example, found unemployment rates were positively associated with ischaemic heart diseases; cancer of trachea, bronchus, and lung cancer; malignant neoplasms; homicide and purposeful injury; and suicide and self-inflicted injury.

Below we consider briefly some of the factors that may help account for part of the observed differential health responses across countries.

2.2 Mediating Factors

Mediating Factor #1: Gender

ILO figures show that women will be experiencing higher unemployment rates than men (globally 7.4% for women compared to 7% for men)(ILO, 2009). However, men may suffer disproportionately from unemployment than women. Gerdtham and Johannesson (2005) tested the effects of six alternative business cycle indicators on the mortality risk:

the unemployment rate, the notification rate[2], the deviation from the GDP trend, the GDP change, the industry capacity utilization, and the industry confidence indicator. For men they found that economic downturns (as measured by drops in the economic measures) were significantly associated with increase mortality risk for four of the indicators (the notification rate, the capacity utilization, the confidence indicator, and the GDP change) and a non-significant effect for the other two indicators (deviation from GDP trend, unemployment rate). For women, none of the economic measures was significantly associated with mortality risks. Hence, recessions in Sweden may have adversely impacted men's health but not women's health.

Mediating Factor #2. Vulnerable Groups and Health Inequalities

It is very likely that different population groups will be affected in different ways. We have focused on two population groups, unemployed and non-unemployed, although this is clearly a gross oversimplification. While those who are actually falling into unemployment (or find themselves at immediate risk of doing so) may be likely to suffer health-wise, the rest of the population may respond in ways that promote their health. In particular, vulnerable groups include migrants and refugees as well as other groups which have elevated mortality risks and risks of job loss, including ethnic minorities, former incarcerated persons, persons who have disabilities and persons who suffer from substance abuse.

Most studies on the health effects of recessions (or of economic upturns) have focused on population averages. This obscures potential inequalities in health that may be widened, as well as an understanding of how and for whom policy-makers should intervene to counter potentially negative health effects.

Researchers have also found that, unsurprisingly, income inequalities tend to rise during recessions (although this depends very much on the policy response to a recession). As unemployment rises in recessions, and lower socioeconomic groups are almost always at higher risk of unemployment, it follows that income inequalities, and as a result health inequalities will increase. This is apparently what has been observed in Japan over the 1990s: One study of Japan's long term economic stagnation during the 1990s evaluated the impact on health inequalities using two repeated cross-sectional surveys (covering 1986-9 and 1998-2001) (Kondo, 2008). Overall, mortality rates appeared to have improved over time. Among all occupational groups, self-rated health had also improved. However, when disaggregating the data by socio-economic groups, and correcting for confounding factors, the researchers found that health inequalities had widened. For example, the odds ratio (OR) for poor self-rated health (95% confidence intervals) among middle-class non-manual workers compared with the highest class workers was 1.02 (0.92 to 1.14) before the crisis but increased to 1.14 (1.02 to 1.29) after the crisis (*p* for temporal change = 0.02).

[2] The notification rate is ratio between workers notified in advance of impending dismissal and the total number of persons in the labour force.

Edwards (2008) examined mortality by individual characteristics during the 1980s and 1990s using the U.S. National Longitudinal Mortality. While his results do not allow for a perfectly consistent picture, overall individuals with extremely low education and very low wages and wealth are at greatest risk of declining health in adverse economic times when jobs are lost. Those with a high school degree or more, who presumably have some buffer-stock savings and decent prospects of avoiding long-term unemployment, rather seem to benefit during recessions, perhaps from working less hard or being exposed less to pollution. On the other hand, the health status of the middle socio-economic groups tends not to be affected by recession.

Other findings caution the extent to which the effects of downturns on health inequalities observed in the past can be applied to the future. One study shows that inequalities in mortality (by occupational category) rose both during the economic boom of the 1980s and during the severe and prolonged recession of the 1990s (albeit less so than in the 1980s). This could suggest that a third factor, such as government policy, lies behind these decadal trends in inequality. It also is consistent with the idea that the magnitude of the economic change, irrespective of whether it is positive or negative, creates the opportunities for the rich to fare better than the poor. This may be because the rich are better at adapting rapidly to new and changing economic circumstances through their power, education, ability, and social networks.

Mediating Factor #3. Social Protection

Government policies, such as investments in social protections or healthcare systems, have been shown to make a difference. For instance, income inequalities remained remarkably stable during the bank crisis that hit the Scandinavian countries in the early 1990s, and this stability has at least in part been attributed to these countries' high levels of welfare support (Aaberge et al., 2000). The same research, however, has pointed out that increased welfare benefits during the crisis did not account for the stability in the income distribution.[3] Complex mechanisms seem to be at work in a period of recession.

It is often assumed that social welfare systems will protect against economic downturn. For example, WHO's response to the global financial crisis suggested that "Stronger social safety nets are urgently needed to protect the most vulnerable in rich and poor countries" (WHO 2008). This hypothesis has not been examined thoroughly in the literature yet. Moreover, if health improves in bad economic times and deteriorates in

[3] While current income inequality remained stable, the authors do not exclude the possibility that a recession such as the one experienced in Scandinavian countries may have adverse long term distributional repercussions. First, many unemployed workers might suffer from human capital losses that will reduce their future earnings (although the authors also provide counter-arguments to this hypothesis). Another reason for predicting more income inequality in the future is that the crises were costly for the public sector and resulted in budget deficits. Perhaps the reductions in transfer programmes that were motivated by these budget deficits will turn out to have larger effects on income inequality than the rise in unemployment per se (Aaberge et al 2000).

good ones, the prime target for policy perhaps ought to be the avoidance of ill health arising during economic booms.

Gerdtham and Ruhm (2006) have looked at the potential role of social expenditures as a way to mitigate the – in their results – harmful health effects of economic upturns in OECD countries. They show that the effects are particularly harmful for countries with weak social insurance systems, as proxied by public social expenditure as a share of GDP.

Does healthcare spending drop in times of recession? We investigated the association between recessionary episodes and healthcare spending in absolute terms and as a percentage of GDP in 27 EU countries from 1970 to 2007[4]. As shown in Tables 1a-1c, we found no effect of economic downturns on healthcare spending based on a variety of indicators for recession (including fluctuations in GDP, unemployment and dating based on business cycles).

Table 1a. Association of Recessionary Episodes with Healthcare Resources

Measure of Economic Downturn	(1) Health Spending per capita	(2) Health Spending/GDP	(3) Out of pocket spending/Total Health
Year of Recession*	10.1 (11.6)	0.042 (0.053)	-0.011 (0.26)
Year after Recession	11.6 (12.8)	0.13 (0.068)	0.056 (0.36)
Second Year after Recession	-15.9 (12.3)	-0.11 (0.084)	-0.43 (1.09)
Country-Years	125	125	125
Countries	25	25	25
R^2	0.979	0.820	0.638

Notes: Robust standard errors in parentheses clustered by country to reflect non-independence of sampling. Models also include controls for country dummies and country-specific time-trends. * - EU recession dummy based on dating by Camacho and colleagues (2005)(Camacho, 2005)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 1b. Association of a Mass Rise in Unemployment (>3%) with Healthcare Resources

Measure of Economic Downturn	(1) Health Spending per capita	(2) Health Spending/GDP	(3) Out of pocket spending/Total Health
Dummy for Mass Rise in Unemployment Rates (>3%)	28.0 (15.1)	0.033 (0.21)	0.024 (1.33)
Country-Years	216	216	216
Countries	27	27	27
R^2	0.976	0.792	0.550

Notes: Robust standard errors in parentheses clustered by country to reflect

[4] A detailed description of the methodology is reported in Annex 1

non-independence of sampling. Models also include controls for country dummies and country-specific time-trends.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 1c. Association of a Current GDP per Capita growth with Healthcare Resources

Measure of Economic Downturn	(1) Health Spending per capita	(2) Health Spending/GDP	(3) Out of pocket spending/Total Health
Percentage Change in GDP per capita (current USD)	1.05 (0.61)	0.0064* (0.0030)	-0.014 (0.016)
Country-Years	216	216	216
Countries	27	27	27
R^2	0.976	0.792	0.550

Notes: Robust standard errors in parentheses clustered by country to reflect non-independence of sampling. Models also include controls for country dummies and country-specific time-trends.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We also investigated whether downturns impacted on overseas health development assistance commitments and disbursements using data from the OECD Creditor Reporting System (CRS) database. As shown in table 2, we found no effect of recessions on commitments.

Table 2. Relationship between Health ODA Commitments and Recession, 1975-2005

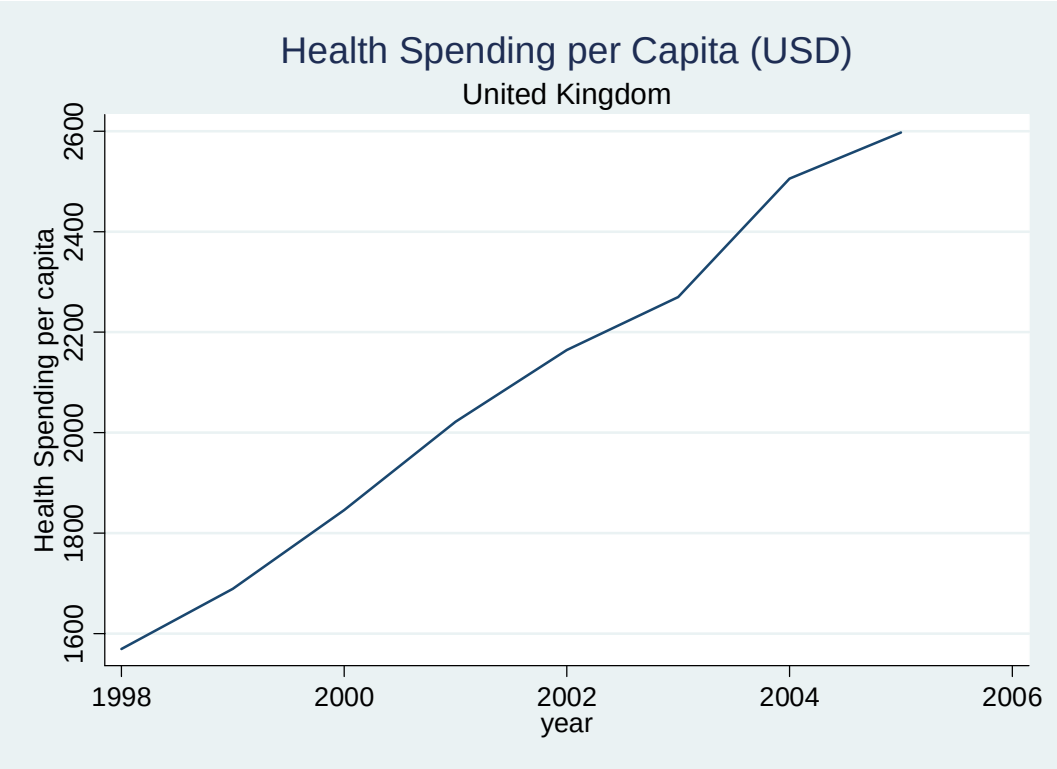
	(1)	(2)	(3)	(4)
Recession	14.4 (8.71)	12.9 (9.39)	—	—
One Year after Recession	0.67 (8.53)	0.32 (8.08)	—	—
Two Years after Recession	4.96 (10.8)	10.9 (13.0)	—	—
Real GDP Change (%)	—	—	0.89 (1.09)	1.52 (1.26)
One Year after Real GDP Change (%)	—	—	-1.12 (0.89)	0.57 (1.13)
Two Years after Real GDP Change (%)	—	—	-1.80 (1.30)	0.12 (1.78)
Country-Specific Time Trend	No	Yes	No	Yes
Country-Years	195	195	238	238
Countries	14	14	15	15
R^2	0.015	0.148	0.018	0.125

Notes: Robust standard errors in parentheses clustered by country to reflect non-independence of sampling. Countries include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain,

United Kingdom. Recession dating based on Camacho 2005. Health ODA data are from the CRS database 2008 edition. GDP data are from the WHO European Health for All Database 2008 edition (derived from World Bank World Development Indicators 2008 edition).
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We use the UK as an example which shows why this appears to be the case (Figure 1). Over the past decade trends in health spending per capita appear to follow a linear upwards path, irrespective of any fluctuations in GDP. While the details require further assessment, this may imply that governments use health care spending as a counter-cyclical spending tool.

Figure 1 Health spending per capita trend in the UK 1998-2006.



Source: WHO Health for all Database

Mediating Factor #4: Wealth

High levels of income help "cushion" both populations and individuals against economic shocks. This can happen for several reasons. First, there may be fewer populations on the margins, who are more vulnerable to economic shocks. Second, social safety nets may be stronger and better resourced in richer countries. Third, a high level of existing wealth means a, say, 3% fall in gross domestic product does not threaten a population equipped with a higher living standard materially to the same extent as a 3% fall in a less wealthy country.

It is not, however, that all studies on the health effects of economic crises in developing countries find harmful health effects. When comparing the effects of the East Asian crisis in Indonesia, Thailand and Malaysia, Hopkins (2006) finds that while the crisis was associated with (short-lived) increases in the mortality rate in the former two countries, there was little apparent impact on health in Malaysia. Hopkins attributes this differential impact to the fact that the Indonesian and Thai government followed the World Bank prescription for adjustment, which included a cut-back in government spending at a time when there were significant job losses, while Malaysia chose its own path to adjustment. If this is a correct assessment, this already raises the importance of the policy response to a crisis in possibly mitigating (or not) the health effects.

Mediating Factor #5: Scale of Economic Disruption — "Normal" fluctuations vs "severe" crises

The majority of the existing studies at country level do not actually evaluate "recessions" *per se*, but rather base their analyses on routine fluctuations in gross domestic product, a measure of a country's output (Hopkins, 2006, Ruhm, 2000, Ruhm, 2003, Ruhm, 2006, Ruhm, 2008a, Tapia-Granados, 2005, Tapia-Granados, 2008). Economy-health relationships during 'steady-state', or normal, business-cycle peaks and valleys may differ substantially from those occurring under exceptional market circumstances, as in an acute financial crisis. In other words, although studies have evaluated routine "business cycles", they have yet to test properly the theory that "recession" may adversely affect a society's health. If the current economic crisis is indeed comparable to the Great Depression, the existing research provides limited relevance for forecasting the effects of the current crisis (Catalano, 2009).

Mediating Factor #6. Short term vs long term effects

It seems intuitively plausible to think that there is a difference between the short and the long term effects of a crisis. In particular, one might think that any potentially existing short term positive health effects of a crisis could be more than outweighed by adverse long term health effects. Not many studies have examined the difference between short and long term effects in great detail, and those studies that have done so, find mixed results. Ruhm (2000), for instance, has indirectly provided an answer to the question

when he looked at the differential health response to economic booms, which he showed to be health damaging in the short run. At the same time though he points out that if growth is long lasting, then the short-term effect will be partially or fully offset. By contrast, Tapia Granados (2005), after careful analysis finds the closest statistical association between current economic fluctuations and current mortality changes, at least in the US data he examined.

3. Current countries' responses to the crisis

We have asked experts from 18 European countries (see list of experts in Annex 2) what kind of initiatives have been taken up since the onset of the economic crisis. More specifically we have asked about their public policies, health-related policies and how previous economic downturns, if they occurred, had affected health policies. The responses summarised in the next three sections are not meant to be exhaustive and representative of the entire European experience. In addition they might not be the direct consequence of the crisis, even if for the most part they were implemented or planned as a direct response to the crisis.

3.1 Public policy initiatives

All countries show some kind of initiative in the public policy environment as a consequence of the crisis. Denmark is the only exception as there seems to be no sign of a downturn. Lithuania is the only example where there has been no social policy response but there have been a health policy response. In some instances the public policy target has been the financial sector, depending on the severity of the crisis. Where the crisis was more advanced (e.g.: Spain), the social policy response has been stronger. Most action has been taken on employment issues. Several countries report a change in employment laws aimed at supporting both the employee and the employer. In Poland for example, the government will offer loans to employers that are forced to limit their production and help employees with their mortgage, if they are made redundant.

Some countries have undertaken regionally targeted efforts in trying to cope with the crisis, which have exceeded the efforts at national level (e.g. in Spain and Italy). A list of reforms is reported in Table 3.

Table 3 Public policy initiatives over the last year in selected European countries

Reforms	**Countries**
General cuts in government spending	Spain, Estonia
Unemployment policies	
Strengthening job centres and labour market	Sweden, Austria
Improve training options, scholarships and professional placements	Netherlands, France, Spain, Germany, Slovenia, Estonia
Plan to lift restrictions on ending contracts	Estonia
Increase employment's benefit for part time workers	France

Boost to employment through increase of transport infrastructure, construction industry	France
Funds to boost employment	Spain
Increase minimum salary	Belgium
Subsidies for unemployed	Slovenia
Support for employers	Slovakia*
Shorter working hours incentives	Belgium, Slovenia

Retirement policies	
Retirement fund increase	Austria
Early retirement adjustments	Belgium
Subsidies for pensioners	Slovenia, Italy
Increase of retirement age	Finland*, Belgium
Increase in minimum pensions	Spain, Belgium
Family policies	
Child related benefits such as increases to child allowance or child benefits /one-off payments	Germany, Austria, Slovenia, Belgium, Czech Republic*
Contribution or partial refund of social insurance system	Slovakia
Mortgage support	France, Spain, Belgium
Tax reliefs	France, Spain, Germany, Belgium, Slovakia*
Houseing benefits	France
Special bonus for families	Italy

* Planned only

3.2 Health policy

Health expenditure changes have been slower and more modest compared to social interventions (see Table 4). Most developments have occurred in the health budget and in health care provision. In general, health care budgets will not be cut, but countries will forgive further increases in next year's health budget. Several experts pointed out that the health budget deficit will increase due to the decline in social security sickness fund contributions as a result of rising unemployment.

Disease specific initiatives – as a crisis response – have not been reported yet. Romania, for example, wanted to cut the number of beds allocated to infectious diseases in 2006, but then had to reconsider this option due to the influenza pandemic and did not cut the number of beds in the end. No evidence of cuts in funding for infectious diseases has been reported in other countries. Finland's priority for the future will be investing in mental health, presumably as a way to cushion the well known adverse mental health affects often associated with economic crises.

Changes in the demand for health care have been mild and related to the consumption of antidepressants in a few countries (e.g.: Austria and Belgium). Mental health services utilization rates increased in Lithuania in 2008 but possibly because of improved

provision. On the other hand the country registered a decline in the use of drugs and alcohol in 2008.
Most countries did not (yet) report a cut in staffing and only reported reductions in salaries. There is, however, a speculation that hospitals might be hit the hardest as they lack financial reserves and are often in deficit (e.g.: Slovakia).

Most recent sick leave data from some countries show a decline in sick leave frequency (Germany which reported the initial trends for 2009 and Spain) or a decline in duration of sick leave (Belgium). This is often the case in times of economic tightening as employees fear losing their job.

In Italy the impact of the crisis on health is expected to occur but so far no initiatives have been taken. The country experts reported that actions to cope with the crisis will possibly be taken at regional level rather than at national, given the regional structure of the Italian health care system.

Table 4 Health policy initiatives over the last year in selected European countries

Reforms	**Countries**
Budget	
Cuts in the health budget	Netherlands, Spain, Slovakia
Reduction in pharmaceutical expenditure	Spain
Decline in public funding of health programmes	Estonia
Decrease of the SHI general rate followed by an increase of the federal government lump sum	Germany
Increase health expenditure	France
Increase of health staff salaries	Belgium, Slovakia
Reductions in salaries	Slovenia*, Lithuania*
Government contribution to sickness fund	Austria
Cut to VAT tax on medicines	Lithuania, Estonia
Increase state contribution payments to health insurance	Czech republic
Health service provision	
Increased competition in the insurance market	Netherlands
Share of responsibilities on sick leaves between employee and employer	Estonia
Repayment of selected medicines simplified	Belgium
Partial refund or contribution to health insurance system	Slovakia
Reduction in coverage share of certain services	Slovenia
Lower mark up in pharmacies	Czech Republic
Increase users' fees	Finland
More control on employers to pay health insurance to employees	Slovakia

Demand for health care	
Increase demand antidepressants	Austria, Belgium
Decline demand for private health insurance	Spain

* planned only

3.3 Lessons from the past

A small number of countries reported the experience from previous recessions[5]. Poland went through a mild recession in 2001, when the health care budget was reduced in response to the downturn. The steepest decline in health expenditures was reported in 2002. However, it did not affect their rights to access the services, the costs were instead redistributed among the premium payers fees.
Subsequently, health expenditures stabilised in the period 2004-07 and in 2007 peaked up again.

Finland reported one of the most dramatic recessions in the 1990's as also studied in depth in the literature (Häkkinen et al., 1996, Klavus and Häkkinen, 1997, Lehto and Blomster, 1999). Real GDP decreased by one-tenth, unemployment rose dramatically and government debt accumulated rapidly. Recession hit the health care budget hard in absolute terms, even though in the first few years (1991-1994) due to a contraction of the GDP the share of health expenditure in total GDP increased. At the same time the state subsidy scheme was reformed, which assigned more responsibility to local authorities in the provision of health services. Subsequently the share of health expenditure fell dramatically. The crisis seemed to shift the revenue from public to private health care financing. In particular in the period 1987-96 out-of-pocket expenses increased from 13 to 22% (Klavus and Häkkinen, 1997). No specific impact was seen on the health status whereas the financing burden on low-income households increased noticeably. Häkkinen *et al*. (1996) evaluated changes in the use of physician services during the economic depression and other simultaneous changes in the health care system. The study concluded that equal utilisation for equal need might have been the most important factor in Finland. Although the reforms were prepared well before the recession, studies have reported that the recession pushed the reforms forward (Lehto and Blomster, 1999). Even though there is no way to show how the policies would have reacted in absence of the crisis, it is feasible to consider that the recession succeeded in pushing for health policies with a strong argument for effectiveness, rationalisation, prioritisation and cost saving measures.

Germany has responded to past economic downturns by pursuing cost-containment strategies. Given the high reliance of the social health insurance (SHI) on income, any economic crisis would affect the deficit of the SHI and the response of the government would be to strengthen the fund as they have done since the beginning of 2009.

[5] We have specifically asked the former communist countries to not report changes in health spending after the fall of communism as they would not be comparable to the current phenomenon

Austria reported health reforms in the same years when a slight economic downturn occurred, but this may not reflect a causal link. The main objectives of the reforms were budget consolidation or cost-containment measures.

In Belgium no measures were taken in the short term to reform the health system at the time of the recession at the end of the 1970s. However, the crisis did stimulate the debate on the need for health care reform and it may have laid the ground for a subsequent series of reforms of cost-containment while keeping as much as possible the principles of equity, freedom of choice and quality of care.

Taken together, it appears from the collective reports that previous crises have either resulted in an immediate policy response or have at least generated a debate on trying to be better prepared for the future. As mentioned further above, such policy responses may well help explain why in several cases there has been a positive rather than an adverse health response to a recession. When sufficient information will be available, it will be interesting to see whether policy has made a difference in coping with the likely effects of the current recession.

4. Future Research Needs

The existing evidence is not sufficient to fully understand the direction and magnitude of the impact of the crisis on health outcomes. As time proceeds more data will become available that allows to evaluate the effects. More generally, we see the following research needs that should help shed more light on the intricate relationship between recessions (or economic booms) and health.

- Use better definitions of "recessions": as mentioned above most of the existing research has not undertaken specific effort to distinguish between small and large fluctuations in output around its trend.
- Use more individual level data to better understand the mechanisms linking recessions and health: in particular we need a more comprehensive picture on how individual health related behaviour (esp. diet, physical activity, smoking, alcohol) responds to crisis.
- Shed more light on how health inequalities respond: greater use of individual level data, stratified by appropriate socioeconomic indicators, would also help us understand whether and how health inequalities are affected during an economic crisis.
- Distinguish in greater detail between different health indicators: an emerging hypothesis is that mental health suffers in a crisis while physical health may even improve (at least in rich countries). While plausible, to date little research has tested this hypothesis, especially with morbidity (as opposed to mortality) data.
- Better capture and understand policy responses to crisis, and their effect on health and health inequalities: few studies have captured policy responses in their

attempt to explain the variation in the relationship between recession and health across countries. Part of this can be done with more extensive quantitative analyses, but this should clearly be complemented by more qualitative policy analysis in the form of comparative country case studies.

5. Conclusions and policy implications

In this research note we examined whether on the basis of existing evidence from past events there is reason to believe that the current economic crisis will be harmful to the health of populations in European countries. We complemented this evidence review with a brief analysis of the responses from 18 experts from a diverse set of European countries, who had been asked to provide information on the policy response in their own country.

As so often, there is no single, blunt answer to the question how recessions affect health. To illustrate some of the factors that the answer may depend on we have structured the available evidence according to a number of key issues that likely play a critical role in the significance and direction of any resulting health consequences. Our tentative conclusions are as follows:

(1) For high-income countries it is unlikely that the recession will have major negative effects on aggregate population health indicators, such as all-cause mortality or life expectancy. According to some evidence at the country level evidence, the effects may even be positive *on average* as a result of fewer unhealthy "affluent" activities (over-consumption of food and alcohol) and more health-promoting activities (walking instead of driving).
(2) Nevertheless, the health of vulnerable economic groups who may be particularly hard hit, such as through lay-offs and the losses of incomes, is likely to suffer disproportionately in absolute and/or relative terms (with respect to the wealthier ones), thereby potentially leading to an increase in health inequalities between socioeconomic groups.
(3) Specific intentional causes of disease and mortality associated with social distress will likely rise, such as suicide and homicide rates. On the other hand, those causes of death associated with economic production, such as traffic fatalities, will likely decrease as traffic volume and intensity drops.
(4) In lower-income EU countries, by contrast, it is likely that the global economic crisis does pose a severe threat to overall population health, as people have fewer resources to cushion themselves through own accumulated wealth, nor can they expect wide-ranging social protection support. Our preliminary evidence indicates that some social protections, such as active labour market programmes or family supports, can help offset risks of rising suicide rates.
(5) Taking (1) and (4) together indicates that inequalities in health between richer and less rich EU countries will likely increase as a result of the current recession (particularly west- and east-EU disparities).
(6) Because most existing evidence focuses on the health effects of 'normal' economic fluctuations, the extent to which past evidence applies to the current, extra-ordinary

downturn may be limited. (We find modest support for the idea that the severity of an economic crisis leads to [more] damaging health effects compared to a smaller fluctuation).

(7) One might speculate that the full positive or negative health effects of a recession only occur after several years. We found little evidence to support this position in those studies which evaluate this issue.

(8) The focus of policy could be:

- In higher-income EU countries (EU15): address potential negative individual impacts on vulnerable populations, such as the unemployed and other lower socio-economic groups
- In lower-income EU countries (EU12): strengthen and reinforce social support systems while addressing potential negative individual impacts on vulnerable groups.

In addition, the qualitative analysis of the expert reports has shown that policy responses differ considerably between countries in the current crisis. It is not hard to imagine that such variation in policy responses, be it in health or social policy more generally, will make a difference to the question of how the current economic crisis will affect health outcomes within and across EU countries. When sufficient information will be available, it will be important to establish which policies will have made what impact, if any.

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Appendix 1: A simple model illustrating the effect of unemployment on population health

Mathematically, the effects of unemployment on population health can be expressed as a function of the sum of the health of the unemployed and the health of the non-unemployed, as follows:

(1) Overall Population Health = $\Sigma\ w_u*MR_{u,i} + (1-w_u)*MR_{e,i}$,
Here w_u is a weight corresponding to the unemployment rate, MR is a measure of the mortality rate, and *u* is an unemployed person and *e* is a non-unemployed person. *i* represents all individuals in a population. Based on individual evidence we know that $MR_{u,i} > MR_{e,i}$, by roughly 2-fold.

This simple equation shows that a financial crisis could affect overall population health in two ways, by directly increasing the unemployment rate (wu) and thereby the number of persons exposed to higher mortality risks, or indirectly changing the mortality rates of the unemployed or non-unemployed populations. In other words, letting we = 1- wu, we can derive the net population mortality effect as the sum of the changes in mortality rates among the unemployed and non-unemployed. Both changes in mortality rates are determined by three terms, i) the change in the fraction of the population unemployed/non-unemployed, ii) the change in the mortality rate as a result of a rise in unemployment, and iii) a cumulative effect of both dynamics:

(1a) $\partial H/\partial U = [\partial w_u/\partial U*MR_{u,i} + \partial MR_{u,i}/\partial U*w_u + \partial w_u*(\partial MR_{u,i}/U)] + [\partial w_e/\partial U*MR_{e,i} + \partial MR_{e,i}/\partial U*w_e + \partial w_e*(\partial MR_{e,i}/U)]$

In turn, mortality rates can be described by an economic framework of individual health production, which considers all of the key inputs to health, such as income, education, diet, the environment, social policy, and more, as follows:

(2) $MR = f(I, E, D, V, S)$, where *I* is income, *E* is education, *D* is diet and nutrition, *V* is the environment, *S* is social protections (including healthcare). In general, $\partial MR/\partial I < 0$; $\partial E/\partial I < 0$, although the other signs on diet and environment are ambiguous. Social protections are generally argued to be favourable to health, such that $\partial MR/\partial S < 0$, and, high levels of social protections are thought to reduce the negative effects of unemployment on mortality: $\partial MR_u/S_0*\partial w_u > \partial MR_u/S_1*\partial w_u$, where $S_1 > S_0$.

Based on equation 2, as income declines, as a result of unemployment, mortality rates should increase, particularly among the unemployed (based on the bulk of individual evidence). If social protections are weakened, for example as a result of scalebacks in government spending, the effects of unemployment on mortality rates could be exacerbated.

Let's suppose a major financial crisis corresponds to a 3% rise in unemployment (or a one standard deviation in year-to-year unemployment fluctuations in the EU between 1970 and 2006). We can denote this as $\Delta w_u = 0.03$. If mortality rates do not change, then overall population health will clearly decline, because unemployed persons have greater mortality risks than non-unemployed persons (i.e., $0.03*2*MR_{e,i} - 0.03*MR_{e,i} > 0$, based on two-fold risk of mortality among unemployed relative to non-unemployed). However, if there is a compensating impact on the mortality rates among those who do not lose jobs, population health may increase: $0.03*2*MR_{e,t-1} + [((1-w_u+0.03)*MR_{e,t}) - (1-w_u * MR_{e,t-1})] < 0$, where t is the present period of the crisis and t - 1 is the preceding period, and $MR_{e,t} < MR_{e,t-1}$.[6]

Appendix 2: List of country experts

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[6] As an example, let's suppose there was a baseline 5% unemployment rate and a 20/100,000 population mortality rate among the unemployed and a 10/100,000 mortality rate among the non-unemployed (roughly approximating the data for the UK unemployment and suicide rates). Suppose unemployment rises by 3% but risks of mortality fall to 18/100,000 among the unemployed and 9/100,000 among the non-unemployed. Overall, the population mortality rate would drop from 10.5 per 100,000 to 9.7 per 100,000.