Commentary: Health and economic transition

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If economic fluctuations impact on mortality then a region where one might expect to see an effect would be the countries of the former Soviet Union. The Soviet Union had created a complex network of economic interdependency between its constituent republics. A product such as a car or a television set might incorporate components from ten or more republics, each being exchanged through a system of barter that was isolated from the global marketplace. This all changed in 1991. Each of the 15 republics became an independent country.¹ Few had any experience of how to engage in international trade and what they produced, if they were able to get the constituent parts, could not compete with higher quality goods from other parts of the world. With governments no longer willing to pour subsidies into uncompetitive loss-making industries, manufacturing output slumped. Unemployment, which officially did not exist under communism, was soon widespread and many of those who still had jobs were paid late if at all.² At the same time, each country underwent a series of rapid fluctuations in mortality. While the immediate causes are now understood,³ many questions remain about the factors underlying them. Do the findings reported by Tapia Granados help us to understand these events?

Tapia Granados documents the association between changing mortality and a series of economic indicators in the USA since 1920.⁴ Death rates from causes such as cardiovascular disease, cancer, traffic injuries, respiratory infections, and liver cirrhosis increase when the economy improves while suicide rates fall. In each case, plausible explanations are proposed, although the association with cancer mortality is perhaps most problematic, given the long lag periods involved between changes in exposure to risk factors and death. Thus, we have previously shown how the decline in mortality from lung cancer in Russia in the 1990s can be explained by the shortage of consumer goods, of which cigarettes were an example, in the late 1940s, with consequences for the initiation of smoking among those who were then teenagers.⁵ In looking at the former Soviet Union, it therefore seems appropriate to concentrate on those causes of death that have fluctuated most in the period since its break-up. These are ischaemic heart disease, external causes of death (injuries and violence), and suicide.⁶ If Tapia Granados' findings apply to these countries we would expect to see a positive correlation between changes in economic performance and mortality from the first two causes, and a negative correlation with suicide.

Before testing this hypothesis, it is important to emphasise that any finding of a contemporary positive association between changes in GDP and changes in mortality should not be interpreted as evidence that economic growth is generally bad for health. The distinction between short- and medium- or long-term effects becomes crucial in this regard. There is overwhelming evidence on the macro and micro level of economic development being a very powerful—if not the most powerful—determinant of health status over the medium and longer run.⁷ It may well be that the relationship in the short run is a different one, and Tapia Granados provides evidence about the potentially specific US case. A few other recent studies have also found a short-term impact of the same direction, but they tended to focus on either the impact of economic booms or of recessions. Ruhm,⁸ for instance, finds a positive short-term effect of recessions on health, but at the same time points out that if growth is long lasting, then the short-term effect will be partially or fully offset.

In testing Tapia Granados' hypothesis in the Eastern European transition context, an immediate problem relates to the availability of data. The newly independent countries required time to create the collection systems necessary to produce internationally comparable data, a challenge that was effectively insurmountable in those countries such as Georgia or Moldova where governments were not in control of significant parts of their national territory. Concepts such as employment became blurred where people remained formally in work, receiving the associated non-wage benefits, but without pay while, at the same time, a large informal and thus unrecorded economy was emerging. Data on GDP are, however, available from 1991 for some countries, making it possible to replicate some of Tapia Granados' analyses.

Figures 1 and 2 show, for the Russian Federation and Ukraine, the annual rate of change in GDP and in mortality from the three causes of death. The mortality data are age standardised using the European Standard Population. Given the uncertainty about diagnostic recording of ischaemic heart disease at older ages, the age range has been limited to below 65 years.

Both show a similar pattern. First, contrary to the finding in the USA, in Russia all three causes of death display similar patterns, although in Ukraine suicide does behave as expected after 1997. Second, while the annual change in GDP and in

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mortality is markedly discordant in the early 1990s, immediately following independence, from the mid-1990s onwards GDP and mortality from each cause track each other closely (except for suicide in Ukraine).

It seems, therefore, that once the immediate period of major transition following independence has passed, there does seem to be an association between the rate of change in the economy and in mortality in Russia and Ukraine, similar to that seen in the USA. GDP is, of course, an imperfect measure of economic performance, especially in transitional economies for the reasons noted earlier. A particular problem in Russia is the large contribution of oil and gas to GDP, estimated by the World Bank to be ~25%. The economic benefits are highly concentrated among a small percentage of the population. However, GDP in Russia does correlate relatively well with other measures such as the percentage of the population living in poverty.  

How does this fit with what is already known about the underlying determinants of mortality in this region? One study that may shed some light on this subject is an analysis of regional mortality in European Russia in the early 1990s. This sought an explanation of why, at a time when mortality was increasing throughout Russia, the rate of increase was much faster in some regions than in others. The increase in mortality was greatest in those regions that had experienced the fastest pace of transition, as measured by job gains and losses in large and medium enterprises. The change in overall mortality was driven largely by cardiovascular diseases, external causes, suicide and alcohol-related mortality. The contribution of

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**Figure 1** Association between the annual change in age-adjusted mortality from selected causes of death (males aged 0–64) and gross domestic product per capita (1995 international dollars, purchasing power parity): Russian Federation  
Source: World Bank World Development Indicators and WHO Health for All database

**Figure 2** Association between the annual change in age-adjusted mortality from selected causes of death (males aged 0–64) and gross domestic product per capita (1995 international dollars, purchasing power parity): Ukraine  
Source: World Bank World Development Indicators and WHO Health for All database
alcohol consumption to the last of these is self-evident; subsequent research has shown the substantial contribution it also makes to the other three causes. Rapid transition was also associated with other problems, such as rising crime rates. There is, however, a paradox. While death rates increase when the economy is growing fastest, those deaths are concentrated among those who have least opportunity to share in the economic gains. The victims of the transition have predominantly been men with low levels of education and few social support networks, a group that is left behind by a society that is moving ahead.

This raises the question of whether the effect of economic change on mortality might be cushioned by the presence of strong social safety nets. In this respect Russia and Ukraine have more in common with the USA than they have with western Europe. Although the universal health system bequeathed by the Soviet Union remains in place, the quality of care is often poor. Furthermore, many of the communist era social support systems have broken down in the face of increasing need and reduced resources, creating a situation that has some similarities to the situation in inner cities in the USA.

Previous research looking across countries has used pooled data, with population-weighted regressions that will give prominence to the USA. Does the relationship hold in countries such as the United Kingdom or Sweden that have well-developed welfare states? As Table 1 shows, it does not. In view of the marked discordance in the years immediately following independence, only data from 1995 (Russia) or 1997 (Ukraine) have been used. For Sweden and the United Kingdom, where a longer series of economic data is available, the data span from 1975 to 2002. Consequently the correlation coefficients are purely illustrative and not directly comparable. Although he does not report correlation coefficients for each country, those for Russia and Ukraine exceed the values reported in Russia and Ukraine, but are lower than the United States. This raises the question of whether the effect of economic fluctuations on mortality and health more generally. Jäntti et al. have shown how, during the period of the severe economic crisis in Finland in the early 1990s, an inclusive social policy was able to detach developments in mortality entirely from the economic cycle. If it indeed turns out that one advantage of the western European social model is its ability to shield mortality (and by inference health) developments from the impact of economic fluctuations, when compared to with the United States model, then this information should contribute to the debate on the relative merits of the two models.

### Table 1

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<th>Ischaemic heart disease</th>
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Source: World Bank World Development Indicators and WHO Health for All database.

*P < 0.05; **P < 0.01.

Disclaimer

This commentary builds on work being undertaken by the authors as part of their membership of the World Health Organization’s European Regional Task Force on Macro-economics and Health. The views expressed are those of the authors alone.

### References

Commentary: Mortality increases during economic upturns

Christopher J Ruhm

The conventional wisdom is that mortality falls when the economy temporarily improves and increases when it weakens. This strong a priori belief has engendered substantial attention to be paid to analyses indicating a countercyclical variation in deaths and excessive scepticism to countervailing evidence. However, this view is beginning to change as recent research, often using more sophisticated methodological designs than earlier studies, commonly finds that fatalities rise during economic upturns. ‘Increasing Mortality During Expansions of the US Economy, 1900–1996’ by José Tapia Granados contributes to this new understanding by showing that the secular decline in US mortality accelerates during economic recessions and slows or reverses in expansions. His analysis utilizes time-series data on total deaths, as well as age-specific and cause-specific mortality.

The use of time series data for a single geographic location is traditional in this research. The next section discusses how the resulting literature has obtained ambiguous results, in part because of difficulties in adequately controlling for confounding factors that are spuriously correlated with macroeconomic conditions. This is followed by a description of a relatively new approach using panel data for multiple time periods and geographic areas. Longitudinal information allows for estimation methods that exploit within-location changes in economic conditions. Since local economies evolve somewhat independently over time, these variations are less likely to be correlated with changes in omitted determinants of death that have similar effects across areas (such as many technological innovations). Most estimates using these techniques indicate a procyclical variation in mortality.

Time series analyses

Most of the extensive research examining how mortality varies with macroeconomic conditions uses time series data aggregated over a single geographic location (such as the US). Particularly influential have been a series of studies conducted by M Harvey Brenner suggesting that overall mortality, infant deaths and fatalities from cardiovascular disease, cirrhosis, suicide and homicide increase during recessions and periods of economic instability.

These findings are controversial. Researchers have pointed out serious technical flaws in Brenner’s analyses including: choice of lag lengths and covariates, hypothesized pattern of lag coefficients, use of inconsistent or poorly documented data, and changes in specifications within and across analyses. Studies correcting the problems often fail to replicate his findings.

With the exception of Brenner’s work, most (but not all) of the time series evidence suggests that economic downturns reduce mortality. Research undertaken as early as the 1920s by Ogburn and Thomas using US and UK data from the late 19th and early 20th century, identifies a positive correlation between macroeconomic activity and total mortality, as well as deaths from several specific causes (with suicides the exception). Eyer obtains a similar finding using US data from 1870 to 1975. Though not conclusive, these analyses present a serious challenge to Brenner’s hypothesis and even he has noted that mortality tends to decrease in periods of rising unemployment (p. 232).