



# The journals are full of great studies but can we believe the statistics? Revisiting the Mass Privatisation – Mortality Debate

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## ABSTRACT

Cross-national statistical analyses based on country-level panel data are increasingly popular in social epidemiology. To provide reliable results on the societal determinants of health, analysts must give very careful consideration to conceptual and methodological issues: aggregate (historical) data are typically compatible with multiple alternative stories of the data-generating process. Studies in this field which fail to relate their empirical approach to the true underlying data-generating process are likely to produce misleading results if, for example, they misspecify their models by failing to explore the statistical properties of the longitudinal aspect of their data or by ignoring endogeneity issues. We illustrate the importance of this extra need for care with reference to a recent debate on whether discussing the role of rapid mass privatisation can explain post-communist mortality fluctuations. We demonstrate that the finding that rapid mass privatisation was a “crucial determinant” of male mortality fluctuations in the post-communist world is rejected once better consideration is given to the way in which the data are generated.

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## Introduction

As a result of the much enhanced availability of health-related data sets, together with an expanding body of subjective institutional indicators, increasingly sophisticated econometric software, an increased demand for interdisciplinary approaches to global health challenges and pressures stimulating widely-read medical journals to publish headline-attracting studies, many research questions traditionally falling within the domain of one discipline have been rendered ripe for appropriation by others. This is a broadly positive and welcome development. Nonetheless, especially where rather atheoretical empirical investigation takes centre-stage, it is not without risk. As Jonathan Wolff (2010), British scholar and philosopher of health, wryly observed writing in the *Guardian*, “The journals are full of great studies, but can we believe the statistics?”.

The source of these risks includes: the inherent complications (and shortfalls) in some of the data itself; the complexity of the econometric techniques (often disguised by the sophistication of the theoretical exposition and the functionality of the software); the country specificities; the myriad complications in combining methodologies; and the different norms and standards

characterising and shaping expectations and know-how across different disciplinary boundaries. Of particular interest among this emerging empirical strand of ‘cross-national/time-series’ health literature are the results of increasing numbers of studies, in applied social sciences and social epidemiology, which lay claim to enhancing our understanding of the mechanisms which underpin global health trends and trajectories.

From a cursory review of recent and widely publicised work one can point to a diversity of policy relevant findings: over 50% of the 8.2 million reduction in child deaths between 1970 and 2009 are due to increased female education (Gakidou, Cowling, Lozano, & Murray, 2010); social division is positively correlated with child and maternal mortality (Powell-Jackson, Basu, Balabanova, McKee, & Stuckler, 2011); development assistance for health in crowds out domestic government spending on health (Lu et al., 2010); indicators linked to economic and social modernisation lower infant mortality rates (Shandra, Nobles, London, & Williamson, 2004); a \$100 increase in social welfare spending in industrialised countries reduces mortality by 1.19% (Stuckler, Basu, & McKee, 2010; Stuckler, King, & McKee, 2010); and the economic reform programmes of the IMF are associated with increased tuberculosis incidence.

So to Wolff’s rhetorical question: what indeed are we to make of this strand of literature? Should we take the results at face value and assume the referees are *au fait* with the techniques applied,

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that the data and programming files used are reliable and have been sufficiently interrogated? That the underlying assumptions, robustness checks and declaration of caveats are as clear as they ought to be? That the aggregated proxies for political and socio-economic phenomena are reliable? And what to do when the research results and/or methods are questioned by those from across the disciplinary boundaries? These are not trivial questions since the initial publication of health findings are, quite rightly, of interest to the media and the general public, become rapidly disseminated and repeated, and have discernible impact upon public behaviour and policy making.

In this paper, we take stock of this cross-national, time-series strand of empirical global health research through the lens of another widely publicised cross-national study, namely, the 2009 *Lancet* publication which concluded that mass privatisation was the major determinant of increased male mortality in the aftermath of the collapse of communism (Stuckler, King, & McKee, 2009). This provides a useful case study for a methodological discussion, not only because it was the research to which Wolff explicitly referred but also because it gave rise to an extended exchange in both the mainstream media and through various outlets of the *Lancet*, and has parallels with a not dissimilar discussion concerning the conclusion that IMF operations in the post-communist world have been associated with increased tuberculosis incidence (Stuckler, King, & Basu, 2008).<sup>1</sup> In January 2009, following the publication of the mass privatisation claims, the University of Oxford (2009) issued a media release stating unequivocally that “one million working-age men died due to the economic shock of mass privatisation policies” and linked responsibility for this to Jeffrey Sachs, Lawrence Summers and Stanley Fischer. The *Economist* (2009) ran a headline, “Mass murder and the market” (though the article itself was inclined to argue against the claims). There were multiple exchanges in the *Financial Times*, the *New York Times* and across the worldwide web. A year later, in January 2010, the *Lancet* published two pieces (Earle & Gehlbach, 2010; Gerry, Mickiewicz, & Nikoloski, 2010) that presented formal tests of the original findings of Stuckler and colleagues and found them wanting.<sup>2</sup>

We do not to call into question the value of this strand of research,<sup>3</sup> but rather highlight a number of key methodological and conceptual issues that, if ignored, may render some results less reliable than others. This matters because, first, the debate stems from the use of a type of data that is very widely available and increasingly called upon for investigating important questions in social epidemiology and applied social sciences. Second, whether and through which mechanisms policy decisions (by governments or international organisations) impact upon health is of paramount importance to policy makers and other interested parties. Third, the ‘mass privatisation – mortality’ debate about those ‘million lives’ awaits resolution and is relevant to policy in the affected countries particularly. Fourth, it may serve to stimulate and inform the collection of individual level data and/or promote greater understanding in domains which are becoming increasingly multidisciplinary.

Studies which fail to explore the statistical properties of the longitudinal aspect of their data, which ignore issues of

endogeneity, and which fail to think about the underlying data-generating process may, through misspecifying their models, produce misleading results. This is precisely what happened in the case of the debate about whether mass privatisation was a crucial determinant of male mortality in the post-communist world. By overlooking the underlying process of health production, mass privatisation has been unjustifiably associated with increasing male mortality. From this case study, we cull a number of important lessons for empirical health research.

We proceed as follows: in the next section we briefly review the key conceptual and practical challenges facing cross-national, time-series health studies; in Section 3, we catalogue some of the key empirical challenges as illustrated by the mass privatisation-mortality debate; Section 4 discusses some lessons for related research; and Section 5 presents our conclusions.

### Cross-national panel data

Since Auster, Leveson, and Sarachek (1969) first examined an aggregate health production function, a great deal of cross-national health research has been, and continues to be, based on the estimation of such functions. This literature addresses an ever-growing need to understand the socioeconomic determinants of health, in the face of booming health-care and pharmaceutical industries, spiralling public sector medical costs, ageing populations and the growing scrutiny of the role of government in delivering health and well-being. While the empirical results are mixed, a consensus has emerged showing that health is a product of lifestyles and behaviours (e.g. tobacco, alcohol and diet), health-care consumption and provision (e.g. private and public medical expenditures and treatments), socioeconomic states (e.g. inequality, wealth, work and education), the environment (e.g. physical infrastructure, climate and water) and institutional frameworks (e.g. regulatory structures). However, there is little by way of consensus on what the appropriate methodology is for explaining health production or for disentangling the relative roles of the constituent effects.

The methodological controversies are both conceptual and empirical. One main group of concerns relates to the extent to which the empirical model being estimated reflects the data-generating process captured by theory (i.e. the health production function). Where there is no formal (structural) model capturing the production of health and from which testable hypotheses stem, the likelihood that we are left with a series of singular, self-contained hypotheses increases unavoidably. This likelihood is exacerbated with aggregate level data, where there is rarely reference to the problem of aggregation itself or its relationship with the model being estimated. The actual relationship that these studies are exploring takes place at the individual level but is being estimated at the aggregate level. Gravelle, Wildman, and Sutton (2002) demonstrate the profound conceptual difficulties with this kind of approach and conclude that to test the determinants of health requires individual level data. Of course, such data are not always available and so we rightly seek to take what insights we can from the data that are available.

On the empirical side, beyond the ubiquitous worries regarding data quality and comparability across time and space, concerns relate to sample size and coverage, the use of indicator variables to proxy for social, economic and political phenomena, and the choice of estimation technique given the true data-generating process. The most obvious constraint is that the number of countries and years for which there are data provides only very limited coverage, particularly for less-developed parts of the world or for newly collected indicators, such as the recently emerging proxies for institutional quality. Faced with this constraint, the most widely adopted solution is to perform the empirical analysis on ‘pooled’

<sup>1</sup> See <http://www.imf.org/external/np/vc/2008/072308.htm> for the IMF's response to this study and <http://tinyurl.com/5r2kywa> for subsequent methodological discussion.

<sup>2</sup> The response of Stuckler, King and McKee is published (unrefereed) on the *Lancet* website and can be enjoyed here: (<http://download.thelancet.com/mmc/journals/lancet/PIIS0140673610601602/mmc1.pdf>).

<sup>3</sup> Research in this spirit often presents important new data (Gakidou et al., 2010), embraces highly topical questions (Stuckler, Basu, et al., 2010) or tackles important questions of political economy (Lu et al., 2010).

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