

Advocacy, analysis and quality. The Bermuda triangle of Statistics

Andrea Saltelli and Michaela Saisana,
European Commission,
Joint Research Centre,
Unit of Econometrics and Applied Statistics, Ispra (I)
Contact: Andrea.saltelli@jrc.ec.europa.eu

59th World Statistics Congress
Hong Kong (25 – 30 August 2013)
Topical Session 'Statistics and Policy'

One might muse that what official statistics are to the consolidation of the modern nation state (Hacking, 1990), composite indicators are to the emergence of post-modernity, – meaning by this the philosophical critique of the exact science and rational knowledge programme of Descartes and Galileo (Toulmin, 1990, p. 11-12). Composite indicators give voice to a plurality of different actors and normative views of post-modernity.

Not only has the use of composite indicators increased dramatically over the past ten to fifteen years, but the typology of use has widened. To make a recent example of a hitherto unheard use, in 2012 Bill Emmott, former Director of *The Economist*, used a battery of composite indicators, with a well dramatized presentational style, to describe the decline of a country, and this in a movie seen by millions of viewers (Emmott, 2012).

We consider composite indicators as an object populating a multidimensional space whose main axes are advocacy, analysis and quality.

Advocacy refers to the use of composite indicator in the context of what Boulanger calls elsewhere in this session the “discursive-interpretive model” for the use of statistics in the public discourse, whereby statistics contribute to a process of framing of and focusing on an issue among the many competing for public’s attention (Boulanger, 2007).

Analysis refers to the fact that composite indicators, in their unique capacity to capture elusive multidimensional phenomena, can be irreplaceable tools to measure e.g. country level progress along dimensions such as the Rule of Law, Corruption, Human Development, Innovation, Competitiveness and many others. For these complex phenomena one cannot easily use either ‘Headline Indicators’, while the use of Scoreboards, formally correct, may lack the necessary synthesis.

Quality refers to the observation that the quality of these measures is often wanting. According to the authors of the Stiglitz report the main flaw of these measures is in the “arbitrary character of the procedures used to weight their various components” and the fact that the “normative implications [of these procedures] are seldom made explicit or justified”. While we rather disagree with this statement, having witnessed in our work the pain at which developers go in order to select and justify their aggregation and

weighting procedures (see e.g. the present debate within the team of the Human Development Index), we do concur that each indicator should be analyzed in its individual merit. An example of such an analysis for the Ecological Footprint is presented elsewhere in this session, while general methodologies to monitor ex post the quality of a construct are discussed in Paruolo et al., (2013).

These three dimensions (advocacy, analysis and quality) are not independent from one another. To make an example, most developers adopt for transparency and simplicity linear aggregation procedures to build composite indicators which are fraught with considerable difficulties (see Paruolo et al. 2013 for a review). In this case quality may suffer at the expenses of advocacy.

We review these issues and try to offer some elements of an epistemology of composite indicators

In the tradition of post-modernity evoked at the beginning of this talk we suggest to tackle composite indicators in the context of a stance called 'Post-normal Science', described elsewhere in this session. Here 'quality' becomes the new organizing principle which "enables us to manage the irreducible uncertainties and ethical complexities" (Funtowicz and Ravetz, 1994). This stance has direct links to a democratization of knowledge and allows the consideration of the multiplicity of legitimate perspectives and commitments which one may expect to see in development, use and critique of composite indicators. We call this approach a 'sensitivity auditing' of composite indicators (Saltelli et al., 2013).

References

Boulanger, P.-M. (2007). Political uses of social indicators: overview and application to sustainable development indicators. *International Journal of Sustainable Development* **10**(1,2), 14–32.

Emmott, B., (2012), Girlfriend in Coma.

Funtowicz, S.O. and Ravetz, J.R. (1994). The worth of a songbird: Ecological economics as a post-normal science. *Ecological Economics* **10**(3), 197-207.

Paruolo, P., Saisana, A., Saltelli, A., 2013, Ratings and rankings: Voodoo or Science? *Journal Royal Statistical Society A*, **176** (2), ---.

Saltelli A, Guimarães Pereira A, van der Sluijs JP, Funtowicz S., 2013, What do I make of your Latinorum? Sensitivity auditing of mathematical modeling, Submitted to *Foresight and Innovation Policy*, arXiv:1211.2668 [physics.soc-ph].

Stiglitz, J. E., A. Sen, and J. Fitoussi (2009). Report by the commission on the measurement of economic performance and social progress. Technical report, www.stiglitz-sen-fitoussi.fr.

Toulmin, S. (1990). *Cosmopolis - The hidden agenda of modernity*. University of Chicago Press.