Technological Forecasting & Social Change 78 (2011) 75–89

Contents lists available at ScienceDirect

Technological Forecasting & Social Change

Producing state of the future indexes using the international futures model ☆

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ARTICLE INFO

Article history:
Received 4 May 2010
Received in revised form 4 October 2010
Accepted 17 October 2010

Keywords:
Index
State of the Future Index
SOFI
IFs
Global model
Millennium Project
Pardee Center

ABSTRACT

This paper reports on the introduction of the State of the Future Index (SOFI) into the University of Denver's International Futures (IFs) modeling system, a synthesis that will permit the calculation and comparison of the SOFI for all nations covered in the model. The SOFI is an index designed to show whether the future outlook is improving or not; it is also useful in policy analysis since it can be used to demonstrate whether contemplated policies appear to change the future, overall, for the better. It is one of the few indexes that are forecasted.
The capability to calculate SOFI has been added to the IFs model; this addition now permits the model to calculate SOFI for all of the countries in the model. With this capability national SOFIs can be computed by anyone and for any country, set of countries, region, or globally. The model, its database, and now the SOFI calculation are available online at no cost to the users. This opens the opportunity to produce an annual or biennial publication that tracks and ranks the State of the Future Index for countries, regions, and the world as a whole.

1. Introduction, background, and objectives

This paper reports on a new facility for computing national State of the Future Indexes: the International Futures (IFs) model which operates at the Frederick S. Pardee Center for International Futures, University of Denver. Over the past several months the model has been modified to extend its database to include the required historical data, where available, interpolations for missing data where possible, and the SOFI algorithm has been added to accomplish the computation of a SOFI for any country. These capabilities are on line and free to the users of the IFs model.[1]

In 2001, the Millennium Project began to explore the possibility of creating a quantitative index, that would depict the global state of the future, measuring, in effect, whether the future seemed to be improving or not. The SOFI is a single integrated measure that indicates whether the human condition in a given country or region has improved or diminished and seems likely to improve or diminish in the future [2,3]. Inevitably some of the variables included in a SOFI will show the potential for improvement while others show worsening, but the SOFI integrates such changes into a single measure so that the balance between pluses and minuses can be assessed. Existing indexes such as the Human Development Index present an historic and current integration of measures of poverty reduction, education, and health; but this index and others miss important dimensions of sustainable human development captured by SOFI such as improvement or degradation of the environment, levels of corruption, and personal freedom.

☆ The Frederick S. Pardee Center for International Futures is the home of long-term forecasting and global trend analysis at the Josef Korbel School of International Studies on the University of Denver campus. The core of the Center's forecasting efforts is the Patterns of Potential Human Progress (PPHP) series. This project produces annual volumes on human development topics, beginning with global poverty reduction, which can be purchased or downloaded for free. The second published volume, Advancing Global Education, can also be purchased or downloaded. Each volume includes tables with long-term country-level forecasts across the various issue areas of the IFs model. (From http://www.ifs.du.edu/pardee/index.aspx). Also see [1].

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[1] www.ifs,du.edu.

0040-1625/$ – see front matter © 2010 Elsevier Inc. All rights reserved.
doi:10.1016/j.techfore.2010.10.007

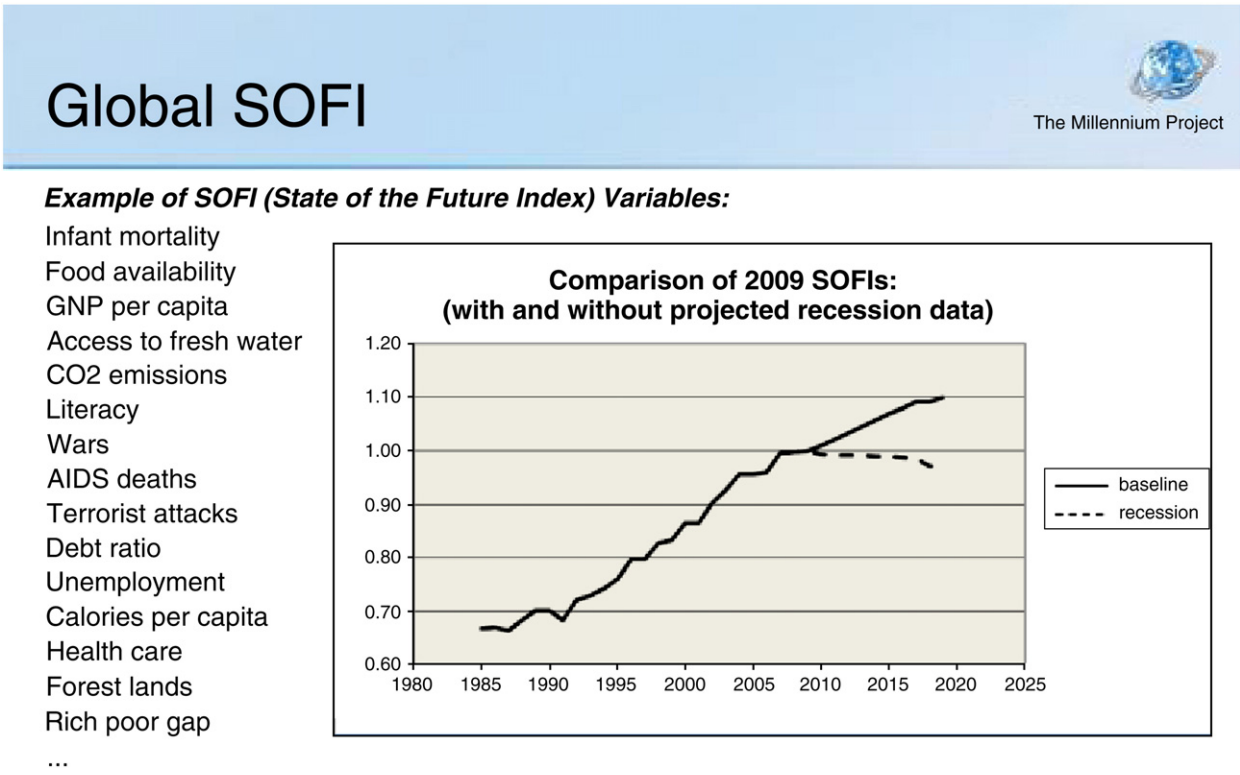

Fig. 1. Global State of the Future Index (illustrating effect of recession assumptions) [3].

What variables should be included in such an index (See [2] and [4] for a full discussion of what's involved in the creation of an index.))? What would make the global future appear to be improving or worsening? Working with a worldwide panel, the Project identified several dozen variables that could provide insight into the directions of change.

The State of the Future Index is constructed using a selected set of variables and forecasts that, in the aggregate, depict whether the future promises to be better or worse. The SOFI is intended to show the directions and intensity of change in the outlook and to identify the factors responsible. Some Millennium Project's experiments with the SOFI have illustrated how it might be used in policy analyses. In these tests, SOFI projections are first run without the contemplated policies. Then, in a second run, the proposed polices are included by estimating their consequences on forecasts of the SOFI variables. The recalculated SOFI is compared with the original run and in this way the effects of the policies are demonstrated. This process may show, for example, that a policy intended to improve one variable (say lowering of corruption) may produce a change in SOFI that is unexpectedly negative since other variables may have been affected adversely. The SOFI approach provides a mechanism for studying the relationships among the items in a system—how making a single change ripples throughout a system, creating some positive and intended consequence as well as unintended results.

To construct the index it is necessary to accomplish a number of steps. First historical data must be collected for the selected variables. Usually 20 years of historical data are collected if the forecast is to be 10 years into the future.[2] Missing data must be "imputed" using various techniques, the simplest of which is interpolation. Then the variables must be forecasted; usually using well known time series statistical techniques to make these forecasts. These forecasts are generally based on first or second order equations and therefore do not include perceptions about how future developments may influence their course. In many past SOFI calculations, perceptions about future developments obtained through international Delphi's and other sources have been included using Trend Impact Analysis.[3]

Next, the variables must be "non-dimensionalized." This process involves stating the value of the variables in terms of their percentage of the range defined by the "best" value and the "worst." These percentage values are then multiplied by their assigned weights and summed. This sum is known as the systemic SOFI. The SOFI is produced when the systemic SOFI is divided by the value of the systemic SOFI in a reference year.

Results of these computations for the most recent year in which global SOFI was produced by the Millennium Project are shown in Fig. 1.

[2] The IFs model is set up to project through the year 2100. The rule of thumb used for SOFI is that the time span of historical data should be twice as long as the intended projection- usually 20 years of past data for 10 year projections. So that while the model is capable of numeric forecasts of 90 years, limitations in historical data should limit the time horizon to a decade.

[3] See Futures Research Methods, FRMv3, Millennium Project 2009 [2].