CENS INSIGHT

A Review of Global Open Source Intelligence

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The State of the Future Index

One of the more interesting and perhaps ambitious horizon scanning methodologies that has emerged in recent years is the State of the Future Index (SOFI). Developed by Theodore J. Gordon of the Millennium Project of the American Council for the United Nations University, the SOFI is an attempt to quantify the 10-year outlook for the global future via indexes and to indicate whether future world conditions appear to be getting better or worse.

Indexing as a Method

The usage of indexes, to be sure, is not new. Indexing, or the "aggregation of multiple variables into a singular number that represents the general state of affairs", has already been applied in a number of domains. The Cost of Living Index, for instance, synthesizes the cost of food and other consumer goods in a standard "market basket" to depict the cost of maintaining a certain standard of living. Another example, the Dow Jones Industrial Average, takes the price of selected stocks to create an aggregated index that gauges the performance of the industrial component of US stock markets. In this respect, the SOFI is no different: it aggregates a set of pre-determined variables into a singular measure that expresses an overall indicator of the global state of the future.

Having said that, the SOFI is also a unique premise. For a start, unlike most indexes which quantify the present or the past state of affairs, the SOFI is a measurement of "the promise of future". Second, most indexes are cross-sectional in reference, in which they are set up against similar categories (for example, from countries to countries) at a particular point in time. The SOFI, on the other hand, is longitudinal and it projects the anticipated trajectory of change over time.

Constructing the SOFI

So what does it entail to generate the SOFI? Briefly, there are five fundamental tasks:

1. *What variables to include?* The first task involves the identification of the key variables of the SOFI. To this end, a Millennium Project Global Lookout Panel comprising of 57 participants from 15 countries was established and the views of these participants canvassed. The 2005 SOFI survey results[1], for instance, identified twenty such variables,

1. http://www.acunu.org/millennium/SOFI.pdf. See page 7 for more details about these variables.

namely: (a) infant mortality rate; (b) availability of food; (c) GNP per capita; (d) access to safe water; (e) annual population addition; (f) adult literacy rate; (g) life expectancy; (h) number of armed conflicts; (i) size of forested areas; (j) violent crime rate; (k) share of population living in countries that are not free; (l) education level; (m) access to health care; (n) people living on less than US$2 per day; (o) nuclear weapon proliferation level; (p) mean monthly carbon dioxide in atmosphere; (q) incidences of terrorist attacks; (r) unemployment rate (s) annual AIDS death figure and (t) debt/GNP of developing countries.

2. *Forecasting of Variables.* Using 20-year annual data sets, the initial forecasting process involves the use of standard extrapolation, curve-fitting functions such as linear, exponential, power function, logarithmic, inverse V, inverse T and the S-Shaped function. However, given the use of such functions assumes an uninterrupted extrapolation of extant trends, it is also necessary to incorporate a dynamic dimension which takes into account unexpected strategic developments that may well interdict the projected trajectory. While there are a number of paradigms that can model dynamic processes, the SOFI employs the Trend Impact Analysis (TIA) method. The TIA method essentially simulates the effect of potential trend-changing developments (expressed in terms of expected probability and likely impact) on a given variable via Monte-Carlo style mathematical modeling.

3. *Aggregation of Variables*. In order to combine the forecasts of variables, it is necessary to "normalize" them—that is to express the measurements in terms that are comparable. This is done by asking the same Global Lookout Panel to provide values of what would constitute the best-case and the worst-case scenarios in a ten-year timeframe for all the variables. The value of the variables would then by "normalized" by expressing them as a percentage of their respective best-case/worst-case ranges. The "normalizing" function for any given variable is thus:

$$p(n,t) = (Vn\ (t) - \text{worst value of } Vn) * 100/(\text{best value of } Vn - \text{worst value of } Vn)$$

where p(n,t) is the normalized value for a variable n at time t, and where Vn (t) is the value of variable n at time t.

4. *Weighting of Variables.* For greater methodological rigor, a weighting mechanism (via the primary inputs of the Global Lookout Panel) is factored into the SOFI to reflect the relative importance of different variables. The 2005 SOFI, for example, is more sensitive towards variables such as terrorism incidences as well as the number of armed conflicts which are highly weighted. The SOFI also assumes the non-linearity of the weights based on the premise that when a certain variable reaches a level of satiation, its level of importance may start to decline. The availability of food, for instance, becomes less important when it reaches a certain "fulfillment" level. To enable the value of the weight to vary with the value of the variable, the S-Shaped function is used. .

5. *Calculating the SOFI.* The final task involves the calculation of the SOFI via the following function:

$$SOFI = \frac{SUM\ (p(n, t) * weight)}{SUM\ (p(n, T) * weight)}$$

where T is the reference year for the SOFI .

By calculating the SOFI for a given time t, a SOFI curve which tracks past growth/declines and projects the next ten-year outlook, can be plotted.

Appraising the Value of the SOFI

Now, having delineated the SOFI method, the more important question to ask is this: to what extent is the SOFI useful for policymakers or analysts? For a start, the reduction of the world's future into a singular index may be analytically too facile. Indeed, to equate the seeming precision of the index as an assertion of accuracy would be a mistake. While admittedly most indexes are reductionist in nature, it is inevitable that the SOFI will mask important variations between regions, nations or groups.

Second, the identification, "normalization" and weighting of variables are all processes that are ultimately contingent on the judgements of a pre-selected group that may be vulnerable to underlying conditioning factors such as religion, culture, politics and economics. The calculation of the SOFI will be skewed if these variables are not properly assessed. To be fair, however, it can be argued that the alternative is to rely on so-called expert judgements which may also be similarly vulnerable to the same host of interpretation dynamics.

Third, the usage of mathematical models to forecast what are inherently dynamic variables—may be overly deterministic. Even with the introduction of paradigms that attempt to model dynamic processes (such as the Trend Impact Analysis), the reality is such techniques still involve a large amount of over-simplification and speculative work.

Yet for all the analytical weaknesses that beset the SOFI as a result of its reductionism and mathematical determinism, it is also, ironically speaking, these reasons that point towards its appeal: a singular measurement that connotes a quick sense of the general direction of the future. That aside, the discerning analyst should treat the SOFI as no more than just an initial "face-value" reference.