



Original Articles

Towards a more ‘Sustainable’ Human Development Index: Integrating the environment and freedom

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ABSTRACT

The Human Development Index (HDI) is one of the most widely used composite indicators of socio-economic development. However, the HDI is at the cross-roads. In order to retain its flagship role in the development arena, many scholars have called from the HDI to reinvent itself by adding sustainability dimensions.

The aim of this paper is to introduce the Sustainable Human Development Index (SHDI), based on Multidimensional Synthesis of Indicators (MSI) – a new class of indexes that can be used for monitoring Sustainable Human Development (SHD). The approach we propose aims to address two primary issues regarding the HDI.

The first issue involves the integration into the SHDI of two important sustainability-related dimensions that are missing in the HDI; namely, the environment and freedom (defined here in terms of political rights and civil liberties). The second issue focuses on the method of aggregation using the new class of indexes proposed. We aim to expand on the three standard HDI dimensions while avoiding problems associated with the geometric mean that tends to collapse to zero. In doing so, we manage to retain the same theoretical intuitions of the post-2010 HDI approach, i.e. to penalize the heterogeneity of outcomes.

Moreover, we rely on the flexibility of the MSI approach to develop another index, the Environmentally-centered Sustainable Human Development Index (ESHDI), which puts the environmental dimension at the core of the analysis.

In the first part of the paper we introduce the theoretical debate on the multidimensionality of the HDI, and consider the two new dimensions of sustainability, as well as the MSI aggregation approach. In the second part, the SHDI and the ESHDI are introduced, tested through a simulation analysis, and are compared with the HDI geometric mean using 2013 data.

The simulations and the results of the empirical analysis show how the new class of indexes provide a more flexible approach to the procedure of aggregation, especially when the number of dimensions increases and/or when there is the need to stress the importance of one or more dimensions. The introduction of the two environmental and freedom sustainability dimensions greatly increases the potential of the HDI to address the SHD paradigm by capturing two core issues for the humanity and its common future.

1. Introduction

The Human Development Index (HDI), introduced by UNDP (United Nations Development Programme) in 1990, is considered a central indicator of the Human Development (HD) paradigm, and is widely recognized to hold a relevant role in the development arena vis-à-vis GDP and GDP per capita (Klugman et al., 2011; Dervis and Klugman, 2011; Morse, 2014). However, even though this composite index features a “conglomerative perspective”, and is intended as a comprehensive approach for analyzing the conditions of everyone in society (Anand and

Sen, 1997, p. 1), several concerns, both substantial and technical, have emerged in the literature (Desai, 1991; Morse, 2003; Kovacevic, 2010; Togtokh and Gaffney, 2010; Ranis and Stewart, 2010; Herrero et al., 2010; Dervis and Klugman, 2011; Neumayer, 2011; Herrero et al., 2012; Morse 2014). Although the HDI has evolved over time, with changes in calculation technicalities and the dimensions’ indicators (Morse, 2014), at least two main issues continue to attract the attention of researchers.

The first issue involves a technical concern of the new HDI (i.e. post-2010 version): the geometric mean exhibits some well-known problems

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of calculations when the number of dimensions increases and when one or more components are close to zero, when “the value of the whole index collapses to zero” (Klugman et al., 2011, p. 24). The geometric mean aggregation method should therefore be improved – especially if extra dimensions are added.

The second issue, involves the HDI’s ‘original sin’ of neglecting environmental and social sustainability issues. The environmental/ecological dimension (Dahme et al. 1998; Sagar and Najam, 1998; De la Vega et al. 2001; Togtokh, 2011; Pelenc et al., 2013) and the social/freedom dimension associated here with political rights and civil liberties (Dasgupta, 1990; Desai, 1991; Ranis and Stewart, 2010) are considered as ‘missing dimensions’ in the standard HDI (UNDP, 1996; Neumayer, 2001; Ranis et al. 2006; Biggeri and Mauro, 2010; Hirai, 2017).

Moreover, the integration of both an environmental dimension¹ and a freedom dimension in HDI are a top priority the 2030 Agenda on Sustainable Development and within the Sustainable Development Goals (SDGs),² If HD is about empowering people to lead long, healthy, educated and fulfilling lives (UNDP, 1990; Sen, 1999), then HD without being sustainable and empowering is difficult to accept.

Several researches have tried to integrate the environmental dimension in the HDI (Dahme et al., 1998; Ramathan, 1999; De la Vega et al., 2001; Neumayer, 2001; Morse, 2003). In particular, the Human Sustainable Development Index (HSDI) introduced by Togtokh and Gaffney (2010) and improved by Bravo (2014), and the adjusted HDI (to include a loss function) introduced by Pineda (2012), represent the most concrete attempts to overcome the ‘original sin’. Few studies try to include the freedom dimension (Dasgupta, 1990; Desai, 1991; Hirai, 2017), and less attempts have been made to integrate both of these two dimensions into the HDI (Hirai, 2017).

The aim of this paper is to introduce the Sustainable Human Development Index (SHDI) based on a new class of measures that aim to address two primary concerns.

The first is the introduction of dimensions that are missing in the HDI. Adding environmental and freedom indicators to the index allows us to assess the performances of countries in other important areas such as environmental protection and human rights (Togtokh, 2011; Bravo, 2014, 2015) and matters pertaining to civil and political rights (Ranis and Stewart, 2010).

The second point focuses on the method of aggregation for the dimensions selected. The new formula of the HDI introduced in 2010 aims to take account of the heterogeneity of outcomes using a geometric mean, which is less appropriate when many indicators are considered (UNDP, 2010). To address this crucial issue, our index is based on the Multidimensional Synthesis of Indicators (MSI, Mauro et al., 2016), a class of indexes that allows more flexibility in the management of substitutability between dimensions. Although this class of indexes does not completely eliminate the subjective nature of some choices, it has the merit of making them explicit, and also obliges those making these choices to justify them. This approach permits to expand the three standard HDI dimensions avoiding the problems of the geometric mean aggregation method, while maintaining the same relevant theoretical intuition.

Moreover, the MSI method of aggregation allows us to perform analyses that focus on specific dimensions. For example the attention can be devoted to the environmental considerations by penalizing countries that perform poorly in this specific dimension. We rely on the

flexibility of this approach to develop another index, the Environmentally-centered Sustainable Human Development Index (ESHDI), which puts the environmental dimension at the core of the analysis.

The remainder of the paper is structured as follows: the second section introduces the theoretical debates on multidimensionality and sustainability. The third section focuses on the aggregation method proposed and the data used. The fourth section presents the SHDI and the ESHDI are examined their properties through simulation analyses. The fifth section, discusses and compares the performance of the two new indexes with the old geometric mean using 2013 data for a sample of 50 countries (from UNDP, World Bank and Freedom House Data). In the final section, the main findings and conclusions are reported.

2. The HD paradigm, the HDI and the new dimensions

Although the HDI retains an important role in political terms in the development arena, it represents just one among the main elements of the UNDP’s HD paradigm, which is built on the Basic Needs framework and the Capability Approach (UNDP, 1990).

According to the HD perspective, “the main objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives” (Haq and ul, 1995, p. 29). Indeed, “the view of human beings as the ‘primary ends’ of the process of development calls for emphasis to be placed on what people get from development, not only what they put into it.” (Anand and Sen, 2000a,b). In brief, the HD paradigm is based on four main pillars: equity, productivity, empowerment, and sustainability (UNDP, 1996; Comim et al., 2008; Deneulin, 2009). The Sustainable Human Development (SHD) can be defined as a process of promotion and expansion of valuable human capabilities (opportunities) where the term ‘sustainable’ refers to environmental and social sustainability (Biggeri and Ferrannini, 2014). Therefore, according to the SHD, any development process should aim to reduce poverty, inequality and conflicts but also to promote inclusion, participation and environmental stress and ecological conditions. In other words, although extremely relevant, “[The HDI] is a quick and imperfect glance at human lives, which—despite the crudeness it shares with the GNP—is sensitive, to a significant extent, to the way people live and can choose to live. However, the breadth of the human development approach must not be confused with the slender specificity of the Human Development Index” (Sen, 2006, p. 257).

Therefore, the main argument found in the literature is that HDI is too limited to encompass the concept of HD with its three existing dimensions (Sen, 2006; Hirai, 2017). According to several researchers, the HDI does not, in fact, include all dimensions that might – or should – be of interest (Fukuda-Parr, 2000).³ Hirai (2017, p. 75) argues that “‘freedom’ and [the] ‘environment’ seem the most debated as ... additional desirable dimension[s]” for HDI integration. In this perspective, it is also important to emphasize that the UNDP’s attention to sustainability is nowadays remarkably strong.⁴ The initial UNDP’s HDR of 1990 (that launched the HDI) clearly stated that “The most critical ones are to lead a long and healthy life, to be educated and to enjoy a decent standard of living. Additional choices include political freedom, guaranteed human rights and self-respect ...” (UNDP, HDR, 1990, p. 13). According to the same report, “while the conceptual and

¹ This includes, for instance, the report on Sustainable Development in the European Union (EU, 2010), International Energy Outlook (2017) and the goals proposed in the Sendai Framework for Disaster Risk Reduction (2016).

² 17 SDGs are considered when calculating a country’s HDI. During this process, a set of indicators and targets have been identified and created. At least 10 out of the 17 goals feature a precise reference to sustainability and environmental goals (items 2, 6, 7, 8, 9, 11, 12, 13, 14, and 15), while some of the goals are directly or indirectly linked to political rights and civil liberties.

³ For a literature review of different human indicators review Smith et al (2013) and Morse (2014) see also Clark and Hulme (2010). For instance, among the attempts, Gustav Ranis, Frances Stewart and Emma Samman (2006), in their article “Human Development: Beyond the Human Development Index”, extended the measurement of HD to 11 important categories of life.

⁴ This last point strongly implies that the quality of growth matters. According to the UNDP (1996), there are several different kinds of growth: ‘jobless growth’ (which does not expand the opportunities for employment), ‘ruthless growth’ (in which the fruits of growth mostly benefit the rich), ‘futureless growth’ (where present generations squander valuable resources), and ‘peace-less growth’ (which feeds conflicts) (Biggeri and Mauro, 2010).

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