

From the Ancient Eudaimonia to Modern Indices: A Critical View

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Abstract

GDP (Gross Domestic Product) is an index that has been used by all free economy countries for almost a century. However, it has been criticized by many researchers and politicians for its misleading messages about the real wealth of people, its inability to evaluate the effect of environmentally harmful activities, the well-being of societies, the exclusion of non-market activities which exist in all economies, and the non-transactional services provided by the natural environment. This study aims to analyze and evaluate GDP and ten more alternative indicators as to their Simplicity, Comprehensibility, Completeness and Reliability, using a questionnaire addressed to experts, i.e., university professors. SWB (Subjective Well-Being) has been assessed as the preferred index for an overall evaluation, while the FSI (Failed States Index) ranks in the last position. GDP received its highest ranking as second in Reliability, with Gross National Income (GNI) ranking first. SWB refers to and evokes the direct democracy of 5th century Athens with its Simplicity, Comprehensibility, and Completeness, but not for its Reliability, due to the difficulty of its measurement. A combination of SWB with GNI might produce a reliable GDP alternative.

Keywords: GDP, eudaimonia, wellbeing, wealth, happiness

Jel: E010, H400, D310, O400.

1. Introduction

Human happiness, wealth, progress, prosperity, well-being, and eudaimonia have always been the target of societies and states, throughout the course of history. Their achievement has been estimated by different measurement units, depending on the circumstances, the

culture and the knowledge of the sovereign and ruler. The determination of the sentiment of this ultimate human achievement has also been a subject of continuous concern, investigation and disputes among philosophers, scientists and scholars.

All the ancient Greek philosophers, from Socrates onwards, agreed that the goal of man is happiness and that what people seek in their every action is a happy life. Aristotle's answer to the question "what Eudaimonia is" introduces the Platonic meaning of work or function, by raising the question, "what kind of life provides man with the greatest satisfaction", but, to find the answer, he considers it necessary to ask, "what is the characteristic function of man". Well-being is intangible, difficult to define and even harder to measure, as stated by Thomas (2009, p. 11).

Gross Domestic Product (GDP), the best-known measure of macro-economic activity, was developed in the 1930s, and is a standard benchmark used by policymakers throughout the world. It is based on a clear methodology that allows comparisons to be made over time and between countries and regions (Commission of the European Communities, 2009).

Ultimately, GDP measures what it is supposed to measure, based on specific assumptions which were stated by Simon Kuznets 80 years ago. Measuring prosperity and growth has never been among GDP's goals, although it ended up being used that way.

Many scientists, researchers and even non-expert citizens believe that GDP indicates whether things are going well or have worsened, but at the same time they believe that the GDP as an indicator of prosperity of a nation is extremely problematic. National accounts refer to the basic signification of production, income, expense and wealth. They calculate the pecuniary transactions that take place between the various economic institutions in the free market economy.

Among the serious criticisms of GDP prevail its inadequacy in measuring environmental sustainability or the social inclusion of happiness, progress, well-being, or eudaimonia, which should be considered when using GDP in policy analysis and debates (Stiglitz et al., 2008).

Robert Kennedy's speech in 1968 at the University of Kansas, only 40 years after the GDP implementation, consists of a characteristic criticism comprehended in the phrase "in the GNP of USA have been calculated the cigarettes advertisement, the bombs and the arming systems, the anti-theft systems and the television programs that deify and promote violence and criminality". "The GNP is indifferent to the health of our children, the quality of their education and for the joy of their game [...]. In other words, it calculates everything, apart from those that add value in our lives" (Gleeson-White, 2012).

The disadvantage of GDP pushed many scientists, from the early 1970s onwards, to invent and propose various economic and social indicators, some to be used in parallel with GDP and others to replace it (Adelman & Morris, 1967; Hick & Streeten, 1979; Seers, 1972), through attempts to escalate the codification of its most immediate accounting weaknesses and ending with the main issue that concerns us: the measurement of prosperity.

Over time, several indicators have been constructed and proposed as aspiring replacements of

GDP. Some have a complementary role, seeking to address the weaknesses of GDP, while others, usually more complex, aim to prevail as new wealth indicators that will include happiness, or progress, or environmental protection, or the quality of life. Inevitably, the proposed indicators are characterized by advantages and disadvantages.

The critical analysis of GDP and its weaknesses is not among the objectives of the present research, since this has already been recorded in great detail in the international literature. In addition, the main goal of our work is not the critical approach of the proposed alternative indicators that seek to replace GDP or to supplement it. However, the inevitable reference to certain indicators, both for highlighting their advantages and for criticizing their weaknesses, will be part of our work, to the extent that they will be reported in comparison with the proposed index which is the main goal of our research.

The paper is structured as follows: The introduction of Section 1 is followed by a literature review presented in Section 2. Section 3 analyzes the methodology followed in our research, and Section 4 presents the proposal of the new index, followed by the conclusions in Section 5.

2. Literature Review

GDP has remained for many decades the undeniable indicator of national economic wealth, but at the same time has been criticized for not evaluating the overall progress of societies, ensuring, among other values and merits, the well-being of its citizens and the impact for future generations and other societies. It becomes essential either to replace or to complement GDP with economic, environmental, and social indicators able to provide a comprehensive assessment of the conditions and progress (Radermacher, 2015). Well-being is a state in which humans experience and enjoy happiness, positive affect, low negative affect, and satisfaction with life, as is delineated by the hedonic tradition without degrading positive psychological functioning and human development, as the eudaimonic tradition defines (Ryff, 1989). Most researchers now believe that well-being is a multi-dimensional construct (Diener, 2009a, 2009b; Michaelson et al., 2009; Stiglitz et al., 2009), which is not irrelevant to personal income flows (Dodge et al., 2012, p. 227), or to national wealth as it is expressed by GDP and national well-being (Beaumont, 2011).

2.1 Criticism of GDP

Among the main points of the criticism articulated on the GDP as the prevailing index of wealth over time are:

The Disadvantage of the Price-Monetary Mechanism

GDP as a macroeconomic value constructed within the SNA uses the pricing system required to aggregate heterogeneous goods and services into a single monetary framework, implying prices to be a satisfactory measure of relative values.

The individual and the social cost-benefit curves contradict the measuring of exterior impacts with misleading messages about the optimal level of production and its negative effect from environmentally harmful activities and the positive value added to the GDP.

2.2 Exclusion of Non-Market Activities

Several services providing utilities to households exist in all economies, like housework, child and elderly care, voluntary work, etc., but they are not measured since they are outside of the price mechanism and, consequently, they are completely ignored in relation to GDP (Van den Bergh, 2007). The same services are in other cases included in the SNA, with the prerequisite they are provided for a fee, such as employment of a domestic helper or paying for a private daycare center. It is therefore entailed that the transfer of goods and services from the non-market economy to the market where they are registered in the SNA increases the GDP, but it still does not reflect the total prosperity added by the non-market utilities. In addition, GDP does not include non-transactional services provided by the natural environment, such as food and water provided naturally and without any human production mechanism, natural energy sources such as solar and wind, the absorption of pollution by forests, and leisure provided by the landscape and nature.

2.3 Black Economy

Economic activities which are either lawful activities which are concealed mostly for tax evasion, or illegal activities, such as drug trafficking and gambling, are not included in the GDP, since they belong to the so-called informal or black or shadow economy. Despite the fact that some of these activities are not properly counted in the GDP, and are furthermore not only legally condemned but also socially and morally, this may seem acceptable as they do not offer an increase in social well-being, but this is incorrect, since they produce profit and income not included in GDP. In addition, it should not be disregarded that the definition of GDP itself does not impose any condition on the value appraisal of the counted goods and services.

The transition from the informal to the formal economy in developing countries may involve the mass abandonment of the countryside by self-sustaining micro-farmers and their relocation to the suburbs and deprived neighborhoods of cities in miserable living conditions. The economic outcomes of this change are depicted on GDP growth, but the effects on prosperity are far from positive, at least in the short- and medium-term timeframe (Van den Bergh, 2007).

2.4 Public Sector

A very important category among the five primary institutional sectors that has also been criticized for the way it is included in the GDP is that of public goods and services. In national accounts public services such as education, health, safety and infrastructure are measured in terms of costs (Stiglitz et al., 2009, p. 26). Since the consumption of public goods do not reveal the real preference or the price citizens are willing to pay for their enjoyment, it is difficult to assess their real utility (Nicholson & Snyder, 2012, p. 682; Stiglitz, 1988).

The non-inclusion of the goods and services received by the state in households' disposable income distorts the levels of prosperity between two households with the same income and different access to public goods (Stiglitz et al., 2009, p. 31, Verbist et al., 2012).

2.5 Inequality

GDP per capita corresponds – in theory – to the average citizen of a country, while the large income inequality in most countries suggests that a significant percentage of population is far from enjoying the standard of living that is fictitiously attributed to statistical variables (Stiglitz et al., 2009, p. 8), and therefore the inequality of the income distribution in the population is reflected.

Beyond that, the households that do not have access to public goods and services, like education or health services, must pay from their own income to buy them from the private sector, decreasing their actual disposable income.

2.6 Sum of Benefits and Costs

A serious methodological error of GDP is that it includes, besides the activities that are obviously beneficial to society, others that actually reflect the cost of producing GDP (Van den Bergh, 2007). The transportation cost of workers to and from their workplace is a cost derived from uncontrolled urbanization and the cost of cleaning up pollution is also a cost attributed to environmental degradation. Such expenditures are characterized as “defensive” (Stiglitz et al., 2009, p. 28), in the sense that they are needed to offset the side effects of economic activity, and therefore their inclusion fictitiously increases GDP but not the real well-being of people.

The purpose of GDP is evidently to measure total economic activity without distinguishing goods and services that produce utilities and increase well-being and those that do not produce any utilities and even reduce the quality of life. Summing up the benefits and costs, it is attuned to the GDP principles and framework, but it seems to be absolutely irrational for pursued social well-being (Talberth et al., 2007). Critics insist that the inclusion of benefits and costs in GDP is equivalent to a business adding revenue and expenses to calculate its profit instead of subtracting one from the other (Van den Bergh & Antal, 2014). Most of the alternative indicators of prosperity and growth attempted a separation between beneficial activities and costs for human well-being.

2.7 Social and Environmental Capital

Among the most serious criticisms against GDP is the argument that any company keeping its books in a manner commensurate with the SNA would be rejected by the audit services and would probably go bankrupt (Van den Bergh, 2007). It becomes evident, therefore, that the national economy of any country should be approached in terms of assets and liabilities (Stiglitz, 2005), letting its net worth provide a complete picture of its real position and its future prospects.

The consumption of the mineral wealth of oil reserves or even forestry is recorded positively in GDP since these activities create income, profits and taxes, but the consumption reflecting the depletion of natural resources (Cobb et al., 1995), by way of depreciating the fixed capital of a company, is not considered. In the same manner, material capital can also be misunderstood by the existing SNA, since a war or a major natural disaster will unavoidably

increase the growth rate, because of the high required reconstruction ensuing (Cobb et al., 1995).

Assessing the total capital of the economy properly – in material, human, environmental, and social terms – is not only a critical condition for drawing the right conclusions and policy directions (Costanza et al., 2009) but also a fundamental prerequisite for ensuring sustainability, by maintaining the natural capital and bequeathing it to future generations.

2.8 Prosperity

In recent years, more and more official texts have reflected a trend of shifting priorities from tight economic growth to broader policy objectives like COM (2009) 433, and UNCSD RIO + 20 Declaration of United Nations Conference on Sustainable Development, held in Rio de Janeiro in June 2012, on the 20th anniversary of the first Rio Conference in 1992, entitled “The future we want”.

Under this new holistic approach, increasing economic activity can only be a means to achieving the aim of society: individual and collective well-being (Costanza et al., 2009), based on the balanced development of three pillars: economic, social and environmental (Thomas & Evans, 2010), and is by no means the target itself, as it is measured by the GDP, which ignores the others and produces distorting messages about their assessment and evolution.

3. Methodology

Qualitative Comparative Analysis (QCA) is a research methodology applied in the social sciences that offers a systematic way of studying the configurations of cases and eventually allowing comparisons across different items, subjects, theories, methodologies, and policies.

Comparative analysis is an old mode of research, widely used within many, if not all, fields of scientific inquiry. As a method, comparison plays an important part in the most diverse branches of the humanities and the social sciences alike. While its early uses can be traced back to antiquity, it seems to be more popular and evolving than ever, as results from contemporary comparative research can be found in nearly all disciplines and applied to the study of almost any topic, ranging from the comparative study of the working conditions across nations, to the analysis of the differences of life values within a single societal context, to the examination of the contrasts of facework in various cultures, to the study of the varieties of written documents in different countries (Adiyia & Ashton, 2017). Despite its wide and interdisciplinary use, it is usually not considered an important method, except in certain cases where the advantages and disadvantages of this methodology are considered important and essential in the literature of social scientific methods, resulting in this strategy frequently being used without proper attention and its results being treated rather without criticism (Allik, et al., 2010; Drobni et al., 2010; Droogers, 2005; Magun & Rudnev, 2010; Merkin & Ramadan, 2010; Suzuki, 2010).

In cases where the research concerns case studies, Qualitative Comparative Analysis (QCA) is used in the comparative process. The data are interpreted in terms of their quality, with a

parallel investigation of the causes of the various variables, by QCA analysts. Therefore, a qualitative stage analysis is applied first, followed by a systematic stage analysis with the application of QCA. Tilly (1984) distinguishes four types of comparative analysis, among the many that exist and are in use, which are mentioned below: individualization, universalization, the finding of variations, and inclusion (p. 82). The types of comparative analysis proposed by May (1993, as cited in Azarian 2011, p. 117) for forecasting are similar to those suggested by Tilly (1984), which are as follows:

- a. The personalization of comparison is suggested for the comparison and understanding of peculiarities when there are a small number of cases for benchmarking (Tilly, 1984, p. 82). In these instances, the complete description of the characteristics or properties for each case participating in the study is examined, meaning that the expansion and the deepening of the knowledge for each case is achieved and the clearest picture after the in-depth analysis emerges. In essence, this method as described cannot be considered truly comparative, but simply applies the comparison in a limited area of research (Fredrickson, 1997).
- b. For cases where the research is the proof that a phenomenon possibly follows the same rule, the globalized comparison is applied (Tilly, 1984, p. 82).
- c. In cases where the aim of the research is to search for a principle of variation in the character or intensity of a phenomenon, the comparison of finding variations is applied and systematic differences between the cases are examined (1984, p. 82).
- d. In cases where the overall comparison of cases is sought in order to investigate and interpret their characteristics as a function of their different relationships with the overall system of which they are a part (1984, p. 83), then different cases are identified in different parts of the same system.

In the present study, case (a) was followed with a comparative analysis and a complete description of the characteristics, advantages and disadvantages of each of the examined indicators that have been proposed from time to time as potential substitutes for GDP.

3. Empirical Study

A questionnaire has been used to evaluate the existing indicators regarding the four characteristics we believe must be fulfilled, which are Simplicity, Comprehensibility, Completeness, and Reliability. The construction of the questionnaire was based on the characteristics most discussed in the international bibliography regarding the attributes and properties of the preferred index.

The questionnaire was available to a number of experts, all of whom belong to the academic sector since they all are university professors with expertise in wealth economics and/or national accounting. The non-inclusion of experts from sectors other than the academic one, such as the public and private sectors, and from fewer regions of the world, constitutes a limitation of the research.

Experts were asked to participate in the research by completing the questionnaire, provided they had knowledge of the different indicators, and also that they were familiar with the

relevant information to make a judgment regarding the four attributes under consideration (Simplicity, Comprehensibility, Completeness, and Reliability). The experts were asked to express preferences over indicators, evaluating each one separately and individually for every attribute, using a Likert scale ranging from 1 (very low), to 7 (very high). With this procedure, the experts were able to evaluate each indicator for every attribute, remaining unaffected in their judgments by the preceding indicator evaluation or from the preceding attribute judgment.

The empirical study was conducted in September 2021 and the sample included professors of various rankings who are connected to the author by common research interests on the LinkedIn platform. The questionnaire was constructed electronically on Google Forms and distributed by email. The responses were collected in Excel form also on the Google Forms platform. The percentage of completed questionnaires is satisfactory for such a particular subject, since it was expected that only experts of relative academic field could be able to complete it. Out of 148 total questionnaires distributed by email, 84 were completely answered. Of the remaining 64 participants, 58 were not knowledgeable enough about the indicators and their characteristics, and six questionnaires were erroneous and therefore excluded from the sample. This response rate makes the sample equal to 56.8%. The 11 indicators, including GDP, have been evaluated by university professors from Greece and several other countries (Germany, Iran, Australia, Ireland, Pakistan, USA, England, Italy, India, Bulgaria, South Korea, France, and Cyprus). The sample of 84 completed questionnaires included 26 responses from Greek professors and 58 from the above-mentioned countries.

3.1 Presentation and Comparison of Proposed Indicators

The proposed Non-GDP Indicators for measuring Human Progress, Growth, Prosperity, Happiness, etc., as possible substitutes for GDP are presented below:

1. HDI = Human Development Index, introduced by the UN in its Annual Development Report (UNHDR) in 1990. It focuses on GNI per capita (PPP), which means Gross National Income (GNI) per capita at Purchasing Power Parity (PPP). Added to GNI are some other factors, like Life Expectancy, Mean Years of Schooling and Expected Years of Schooling. The index is formed of two sub-indicators, HDI and Non-Income HDI. It is considered the most popular and used composite index. It was initiated by economists Mahbub ul Haq and Amartya Sen (Klugman et al., 2011) and composes three fundamental parameters of human development: income (measured by per capita GNI), health (measured by survival) and education (measured by years completed and expected years of study). The choice of these three dimensions was justified in the first report as follows: “Human development is a process of expanding human choices”. “The most crucial of these choices are a long and healthy life, education and access to the resources needed for a decent standard of living” (UNDP, 1990 p. 1).

The HDI ranking shows relatively small – though not negligible – differences from those depicted based on per capita GDP.

2. ANS = Adjusted Net Savings, Composed of Net National Savings

Net National Savings is derived from gross national savings minus the consumption of fixed capital. By increasing NNS with education expenditure and deducting the depletion of energy, mineral and net forest, along with damage from carbon dioxide emissions and from particulate emissions, the value of ANS is calculated.

All the values included in the ANS correspond to the following additions, expressed as a percentage of each country's GNI: A: Consumption of fixed capital (-), B: Expenditure on education (+), C: Exhaustion of energy resources (-), D: Depletion of mineral resources (-), Q: Loss of forest land (-), F: CO₂ emission costs (-), and G: PM₁₀ particulate emission costs (-).

The final calculation of the Index is: Net National Saving + Education Expenditure – Energy depletion – Mineral depletion – Net Forest depletion – Damage from carbon dioxide emissions – Damage from particulate emissions = Adjusted Net Saving.

The ranking based on the ANS shows huge differences from that based on the GDP per capita. There are, in fact, countries with very close ANS values and a chaotic difference in living standards.

3. HPI = Happy Planet Index measures what matters: sustainable well-being for all. It tells us how well nations are doing at achieving long, happy, sustainable lives.

This index combines sustainability with subjective prosperity. It is published under the auspices of the British think tank “New Economics Foundation”, which promotes economic and social justice and environmental sustainability. HPI could be described as a kind of complex indicator, in which the synthesis of the individual variables takes a different form from the classic cases of summation and averaging.

As in the case of the ANS, the ranking of countries based on HPI bears no resemblance to the ranking based on GDP per capita, while we also find the adjacency of countries with huge income differences.

4. EF = Ecological Footprint

EF is expressed in an unusual unit: the global hectare (gha), which corresponds to the land area of one hectare with average bio-productive capacity. Per capita EF measures how much equivalent area is required to meet a person's needs, given his or her consumer behavior, level of technology, and how he or she manages natural resources (Borucke et al., 2013).

EF alone does not lend itself to drawing safe conclusions and policy proposals. The situation of a minimal or no burden at all is ideal from an environmental point of view, but it is not a realistic solution for humanity if it implies an impoverishment of the standard of living. The point is to balance the two goals, hence the creation of HPI as an indicator of efficiency. However, the EF retains an independent value in terms of comparison with the carrying capacity of the ecosystem, thus capturing the extent to which each country's consumption model is far from its sustainable level.

5. SWB = Subjective Well-Being expresses the levels of satisfaction in peoples' lives.

It is measured based on the self-report of several factors' evaluation, such as personal, physiological, motivational, behavioral, and cognitive components, to present adequate validity, reliability, factor invariance, and sensitivity to change. The SWB classification shows significant differences from the per capita GDP, but a relatively satisfactory correlation coefficient (Diener, 2009).

Happiness indicators are constantly emerging, such as the Gross National Happiness (GNH), introduced by the king of Bhutan in 1972, and the Satisfaction Life Index (SLI), proposed by Adrian White in 2007.

Another characteristic example is the Happy Life Years (HLY) index, developed by Ruut Veenhoven in 1996. It combines Gallup World Poll's Subjective Well-Being (SWB) with life expectancy, multiplying them in order to capture the expected happy years of life of the average person. In fact, this index, divided by the EF index, produces the Happy Planet Index (HPI), which reflects the ability of a country to ensure a long and happy life to its inhabitants at the lowest possible environmental cost (Goossens, 2007, p. 37)

6. SPI = Social Progress Index

The Social Progress Index (SPI) is the result of the Social Progress Imperative initiative, which consists of 54 variables organized in the following three main axes: the basic human needs, the foundations of well-being, and the opportunity to progress as to their provision and satisfaction stated by the citizens of a society. It measures the degree of social and environmental needs satisfaction provided by each country to its population. The main features of the Social Progress Index are the exclusion of economic variables and the use of outcome measures.

The deviations of the ranking from the corresponding GDP per capita are not particularly large, approaching the values calculated for HDI.

7. QLI = Economist Quality-of-Life Index

The Quality-of-Life Index (QLI), first published in 2005 by The Economist and consists of 11 variables, such as GDP per capita, life expectancy, political stability and divorce rate.

The determinants of quality of life factors, and the indicators used to represent these factors, are (Scerri, 2014):

1. Material well-being includes GDP per person, at PPP in \$.
2. Health, measures life expectancy at birth, years.
3. Political stability and security, political stability and security ratings.
4. Family life, evaluates divorce rate (per 1,000 population)
5. Community life estimates the church attendance or trade union membership of a country.
6. Climate and geography, distinguishes between warmer and colder climes.
7. Job security, calculated by unemployment rate.

8. Political freedom, approaches the average of indicators of political and civil liberties.

9. Gender equality, is measured by ratio of average male and female earnings.

10. Education levels

11. The rate of real GDP growth and income inequality (Gini coefficient).

8. LPI = Legatum Prosperity Index

The Legatum Prosperity Index, developed in 2018, is based on 104 different variables which are grouped into nine sub-indexes presented below, which ascribe by averaged equal weights of all factors the value of the index.

Sub-indexes: Economy, Entrepreneurship & Opportunity, Governance, Education, Health, Safety & Security, Personal Freedom, Social Capital, Natural Environment.

9. FSI = Failed States Index

The Failed States Index (FSI), issued by the non-profit Fund, the Legatum Prosperity Index (LPI), consisting of 89 variables, which are grouped into the following 12 sub-indexes: Demographic Pressures, Refugees and IDPs, Group Grievance, Human Flight and Brain Drain, Uneven Economic Development, Poverty and Economic Decline, State Legitimacy, Public Services, Human Rights and Rule of Law, Security Apparatus, Factionalized Elites, External Intervention.

10. SSI = Sustainable Society Index

The Sustainable Society Index (SSI), published in 2006 by the non-profit organization Sustainable Society Foundation, in the Netherlands, compiles 21 variables, divided into three areas of prosperity: Human, Environmental and Economic Well-Being. The ranking based on SSI is very different from that based on GDP per capita. This seems to be expected, given that one of the three axes of the SSI is environmental prosperity, which tends to move in the opposite direction of GDP.

Composite Indicators

Among the complex indicators, GDP correctors are also included since they try to include in the SNA several variables that are currently excluded, even if the heterogeneity of these variables is partially hidden in those due to their expression in monetary terms.

11. Genuine Progress Indicator (GPI)

GPI was introduced in 1995 and is an evolution of Index of Sustainable Economic Welfare (ISEW) (Cobb & Daly, 1989), which in turn was an evolution of Measure of Economic Welfare (MEW) (Nordhaus & Tobin, 1972). It belongs to the category of GDP adjustment indicators, in the sense that it uses it as a starting point and adds or subtracts data according to their contribution or not to prosperity (Lawn, 2005), remaining methodologically within the SNA accounting framework and maintaining its monetary expression.

3.2 Criticism on the Alternatives to the GDP Indicators Proposed

There is not yet an unequivocal answer to which of all the aforementioned alternative indicators is capable of replacing and becoming the successor to GDP.

Researchers worldwide are attempting to construct an alternative indicator better than GDP. It seems from the latest proposals that the best indicator is different for each variable, and in attempting to find the best, we would need as many indicators as the variables, something practically and communicatively not attractive. In this case, we might prefer to maintain GDP, despite its imperfections, to avoid a mass of indicators.

Identifying and studying the strengths and weaknesses of alternative indicators can work constructively, illuminating aspects that need improvement and leading us closer and closer to an effective and widely accepted indicator.

Therefore, analyzing the benefits and advantages as well as the handicaps and disadvantages of the proposed indicators, is expected to shed light and clear up the background in order to strengthen the support of the proposed index in this study.

The SPI showing the best statistical behavior consists of 54 variables, which makes it complex in construction and misinterpreted as a result.

In contrast, HDI, with only four variables, achieves slightly lower performance, but combined with undoubted methodological and communication advantages.

It is obvious that HDI is overwhelmingly superior, showing stronger correlations with almost all indicators. In fact, in most cases it outperforms not only its per capita GDP, but also its logarithmic form. The only case where the correlation is a little weaker is that of EF, but that is desirable as the ultimate goal is to increase prosperity without deteriorating environmental sustainability.

It is found that HDI is the alternative indicator with the strongest correlation in 11 of the 25 variables, outperforming by a large margin over the rest. This is followed by SPI, with a predominance of three variables, followed by LPI and FSI, with two variables each. Finally, ANS, HPI and QLI predominate in one variable. The third and quite impressive conclusion is that the GDP per capita, both in its simple and logarithmic form, fails to prevail in any of the 25 variables. In all of them there is always an alternative indicator that achieves a stronger linear correlation.

There is therefore no unequivocal answer yet as to what will be the successor to GDP.

Specific and individual criticism on the above alternative indexes will be stated in the following chapter, along with the justification of our proposal of the new index.

4. Results of the Empirical Evaluation

Simplicity, Comprehensibility, Completeness and Reliability are the four characteristics evaluated in all 12 known indicators, including GDP. Simplicity encompasses the ability of everyone to use, analyze, compare, and apply the indicators. Comprehensibility presupposes

that everyone understands the meaning and the substance of the indicators. Completeness is the requirement for the objectivity and the inclusion of all variables of the indicators that build up and describe the wealth and the well-being of people. Reliability is the presumption of each index to be constructed by real and essential variables.

The evaluation results are presented in the following Table 1.

Table 1. Evaluation of GDP and Alternative Indicators.

	1) Simplicity	2) Comprehensibility	3) Completeness	4) Reliability	Total Evaluation	Rank
GDP (Gross Domestic Product)						
Average	4,461538462	4,142857143	3,785714286	4,357142857	16,74725275	6
Median	4	4	4	5		
Max	7	6	7	6		
Min	3	3	2	2		
standar deviation	1,187317237	0,973008511	1,230769231	1,273303489		
HDI (Human Development Index)						
average	4,5	4,214285714	4,214285714	4,428571429	17,35714286	2
median	4	4	4	5		
max	6	6	7	6		
min	2	2	2	2		
standar deviation	1,151279196	1,186711432	0,960768923	1,380335265		
ANS (Adjusted Net Savings)						
average	4,076923077	3,923076923	4,076923077	4,076923077	16,15384615	9
median	4	4	4	3,5		
max	6	6	6	6		
min	3	2	2	2		
standar deviation	1,037491633	1,320248293	1,414213562	1,471960144		
HDI (Human Development Index)						
average	4,538461538	4,285714286	4,214285714	3,857142857	16,8956044	7
median	4	4	4	4		
max	6	6	7	7		
min	3	2	2	2		
standar deviation	1,114924013	1,201576873	1,367414526	1,51129867		
EF (Ecological Footprint)						
average	4,571428571	4,357142857	4,153846154	3,857142857	16,93956044	5
median	4	4	3,5	3		
max	7	7	7	7		
min	3	2	2	2		
standar deviation	1,146128033	1,291758125	1,255543264	1,595110873		
Overall Evaluation						
SWB (Subjective Well-Being)						
average	4,692307692	4,642857143	4,571428571	4,076923077	17,98351648	1
median	4	4	4	4		
max	7	7	7	7		
min	3	3	3	2		
standar deviation	1,187317237	1,216260639	1,146128033	1,381926996		
SPI (Social Progress Index)						
average	4,642857143	4,285714286	4,285714286	4	17,21428571	3
median	4	4	4	4		
max	7	6	7	7		
min	2	1	1	1		
standar deviation	1,393136175	1,459512766	1,561367933	1,624516314		

QLI (Economist Quality-of-Life Index)						
average	4,384615385	4,071428571	4,285714286	4	16,74175824	8
median	4,5	4	4	4		
max	6	6	7	7		
min	2	2	2	2		
standar deviation	1,490711985	1,240347346	1,52687948	1,439098995		
LPI (Legatum Prosperity Index)						
average	4,333333333	3,857142857	4,076923077	3,785714286	16,05311355	9
median	4	4	4	3		
max	7	6	6	6		
min	2	2	3	2		
standar deviation	1,656442469	1,249852062	1,08012345	1,201576873		
FSI (Failed States Index)						
average	4,384615385	3,857142857	3,769230769	3,642857143	15,65384615	11
median	4	3	3	3		
max	6	6	6	6		
min	1	1	1	1		
standar deviation	1,639359631	1,434981393	1,255543264	1,216260639		
SSI (Sustainable Society Index)						
average	4,428571429	4,357142857	4,083333333	4,142857143	17,01190476	4
median	5	4	4	4		
max	6	6	6	6		
min	2	3	2	2		
standar deviation	1,388882314	1,263975133	1,477097892	1,384615385		
GPI (Genuine Progress Indicator)						
Average	4,153846154	3,928571429	3,857142857	3,785714286	15,72527473	10
Median	4	4	4	4		
Max	7	6	6	6		
Min	2	1	1	1		
standar deviation	1,381926996	1,459512766	1,309952797	1,263975133		
Max Average Values	4,692307692	4,642857143	4,571428571	4,428571429		
Min Avegate Values	4,076923077	3,857142857	3,769230769	3,642857143		

The above Table 1 presents the 11 indicators, including GDP, with the results of the empirical evaluation by experts, who evaluated the characteristics of Simplicity, Comprehensibility, Completeness and Reliability for the 11 indicators. Among the results are included the average value for each of the four characteristics, the median, the max and min values and the standard deviation. The total evaluation of the sum of the four characteristics is also presented with the ranking on each one of the 11 indicators. In addition, the existence of max evaluations for each index (7) are highlighted with bold blue numbers and the min with bold red. Accordingly, the max average and the min average evaluations of each characteristic depicted in the 11 indicators are also pointed with bold blue (for the max) and bold red (for the min values).

First in ranking among the 11 indicators has been evaluated the SWB (Subjective Well-Being) with a total evaluation of 17.98.

5. Conclusion

Evaluation and criticism on the new proposed index compared to GDP and alternative proposed indicators will be conducted based on four main axes: Simplicity, Comprehensibility, Completeness and Reliability.

Simplicity: In first place among the 11 indicators for their Simplicity is SWB (Subjective Well-Being), followed by HDI (Human Development Index), while FSI (Failed States Index) is ranked in the last position.

Comprehensibility: SWB (Subjective Well-Being) ranks in first place of the Comprehensibility evaluation. In second place are EF (Ecological Footprint) and SSI (Sustainable Society Index) with the same evaluation gravity. LPI (Legatum Prosperity Index) and FSI (Failed States Index) are in the last positions regarding their Comprehensibility.

Completeness: Completeness is the third factor, after Simplicity and Comprehensibility, where SWB (Subjective Well-Being) takes the lead. QLI (Economist Quality-of-Life Index) and SPI (Social Progress Index) share the second place regarding the Completeness they encompass, while FSI (Failed States Index) ranks in the last position among the 11 indicators.

Reliability: HDI (Human Development Index) is considered the most reliable of all indicators, followed by GDP. FSI (Failed States Index) once again ranks in the last position.

The overall evaluation designates SWB (Subjective Well-Being) as the index with higher evaluation among the 11 indicators. This ought to be expected since the index ranks in first place for the three out of four characteristics comprising their evaluation.

Any subjective evaluation is expected to be rather simple in its assessment, since people register their beliefs on their life conditions that makes them on unhappy. Within these factors, income is inevitably included, as it is always a means to acquire goods and services, either on personal level, or in social, offered by the public. Since Subjective Well-Being is measured according to personal, physiological, motivational, behavioral, and cognitive components, it also turns out to be the most preferable for its Comprehensibility and Completeness.

The acceptance of the above characteristics refers to the direct democracy of the Athens of the 5th century BC, where every citizen could express his opinion and vote on public affairs. Accordingly, in the Subjective Well-Being index, every citizen states how he experiences his prosperity and not as it supposedly should be stated according to the GDP, which concerns the whole economy, with its known disadvantages and weaknesses.

Contrary to the above-mentioned factors, Reliability brings the Human Development Index into first place. It seems that Gross National Income (GNI) per capita at Purchasing Power Parity (PPP), plus Life Expectancy and Years of Schooling, which compose HDI, are more reliable to measuring human eudaimonia, wealth and well-being.

The Failed States Index has been evaluated as the least accepted index. Eventually the 89 variables, grouped into 12 sub-indexes, comprise an index that is complicated and difficult to measure, as to its Simplicity, Comprehensibility, Completeness and Reliability.

A larger sample of participants could induce somehow altered results.

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