

Beyond GDP indicators: A tension between powerful stakeholders and transformative potential?

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Abstract. The last four decades have seen a proliferation of new indicators aiming to challenge GDP. But do they really produce new outcomes? By observing the rankings they produce (compared to those produced by GDP), the potential of 6 Beyond GDP indicators for indicating a way towards a better society has been examined. The conclusion is reached that rankings from indicators supported by powerful stakeholders are highly correlated with rankings according to GDP, demonstrating a low transformative potential.

1 Introduction

Since the end of the Second World War and the introduction of national accounting, the annual growth of Gross Domestic Product (GDP) has been the benchmark indicator guiding economic policy. The erosion of the Fordist compromise and the emergence of environmental questions have gradually led to a reexamining of the central role played by GDP. There are at least three reasons for doubting the adequacy of GDP as a prosperity indicator today (Cassiers and Thiry, 2014): (1) the unlimited growth of GDP is in contradiction with a series of environmental limits (Georgescu-Roegen, 1979; Jackson, 2009/2016; Rocktröm *et al.*, 2013; Steffen *et al.*, 2015); (2) growth does not (or no longer) lead to a reduction in inequality (Piketty, 2014); and (3) the link between growth and a higher quality of life is contested, beyond a certain threshold (Easterlin, 1974; Layard, 2005; Cassiers and Delain, 2006). Over the years, a growing number of international institutions (including the OECD and the UND) and public stakeholders (as seen in the report by Stiglitz, Sen, and Fitoussi on economic performance measures and social progress [Stiglitz *et al.*, 2009]) have begun to criticise GDP.

This reexamination has seen the emergence of a significant number of complementary or alternative indicators to that of GDP (Singh *et al.*, 200; Gadrey and Jany-Catrice, 2012; Fleurbaey and Blanchet, 2013) in an innovative trend known as Beyond GDP. Their common feature is to take social and/or environmental problems into account on top of or instead of economic growth. Among these indicators, those that have received the most widespread attention in the public debate are probably the ecological footprint (EF), and the Human

Development Index (HDI) (Morse, 2014). However, despite this proliferation in Beyond GDP indicators, they have failed to become institutionalised, if one understands this as their use in day-to-day policy making, nor have they found a central place in public debate (Seaford, 2013a). Most of them have remained limited to academic circles, like the social indicators of the 1970s and 80s, or the Global Environmental Assessments, which had little influence on decision making (Innes, 1989; Clark *et al.*, 2006).

Seaford (2013a) sees two possible outcomes for the rise in Beyond GDP indicators. Either they continue to spread without becoming institutionalised—at best helping to identify new problems, with marginal application—or they become ‘the stuff’ of public debate, become mobilised for evaluating public policy, and public policy makers take them up.

In order to increase the chances of the second outcome, the literature on the topic has made a series of recommendations for speeding up the institutionalisation of Beyond GDP indicators. These include underlining opportunities for involving powerful stakeholders in achieving the indicators’ more widespread application. This would involve aligning the indicators’ conceptual and methodological framework with those of powerful stakeholders (Innes, 1989; Clark *et al.*, 2006), who we understand in accordance with Parsons as actors capable to ‘bring[ing] about changes in the action of other units, individual or collective, in the processes of social interaction’ (Parsons, 1967, 299). These can be users of the indicators (Seaford, 2013b) or more generally considered to be legitimate stakeholders (Thiry *et al.*, 2013; Hak *et al.*, 2012). Seaford synthesises these propositions as follow: ‘identify potential users with power, then tailor the indicators to their needs and try to entrench their use’ (Seaford, 2013b, 8). For instance, participation of international institutions like the OECD might help speed up the institutionalisation of Beyond GDP indicators. While this certainly seems a correct observation, it should be noted that linking indicators to powerful stakeholders also involves a risk: ‘If an indicator or an indicator set perfectly matches the conceptual frameworks of policy actors, it is unlikely to shake established mental models and institutions’ (Lehtonen *et al.*, 2016, 6). The question then must be asked of how far powerful stakeholders’ expectations in respect to the indicators—such as highlighting competitiveness and profitability targets (Thiry *et al.*, 2014)—are compatible with a desire to ‘trace progress towards a socio-ecological transition by the behaviour of such indicators’? (Martínez-Alier, 2009, 1099). This article is aimed at investigating the tension inherent to the twin goal of shifting paradigms and getting powerful stakeholders to participate in this shift. The tension can be formulated as follows: are the Beyond GDP indicators supported by powerful stakeholders capable of creating other representations and promoting other public policies than those that have resulted from GDP? This question has not been addressed in the literature on these indicators, but it is a rather classic dilemma in the social sciences: can a system be thoroughly

changed by those who hold the highest stake in it, or is change only conceivable from the outside?

The question will be asked of the following six indicators, if they are supported by powerful stakeholders, and what their transformative potential is (defined as their potential to change frameworks of action or narratives). Let's note that the concept of powerful stakeholders should be used cautiously as there is no general metric to identify them.

The article is divided into six sections including the introduction. Section two presents the six indicators under consideration. The following two sections evaluate whether or not these indicators are supported by powerful stakeholders, then determine their transformative potential by comparing them to GDP. Finally, in a fifth section, the article analyses the mechanisms through which certain indicators end up strongly correlated with GDP, and in the sixth section some possible explanations for this fact are proposed.

2 Presentation of the six indicators

Three criteria have been used in order to choose the indicators. In the first place, indicators have been chosen whose ambition is to measure a form of social and societal progress in a multi-dimensional way. Whatever variety of terms are used to specify the objective these indicators refer to (well-being, quality of life, social progress, human development, happiness), these indicators are considered as having a similar objective, which is a desirable society. In the second place, there must be available data from a very large array of countries (>120), from the global north as well as the global south, leaving a significant surface for comparison. In the third place, they must have been recently published (no later than 2014), in order to avoid distortions due to the different times the measurements were made.

We identified six composite indicators that satisfy these criteria: the Human Development Index (HDI), the Social Progress Index (SPI), the Global Well-Being Index (GWBI), Quality of Life (QoL), the Happy Planet Index (HPI), and the Sustainable Society Index¹ (SSI). The surface of comparison extends to the 104 countries in common to all of them. Table 1 synthesises the principal

¹ Aggregated using the geometric average of the eight categories, as suggested by Saisana & Philippas (2012).

characteristics of the different indicators and their year of publication is indicated beneath the table.²

Table 1. Characteristics of 6 Beyond GDP indicators

	Human Development Index HDI	Social Progress Index SPI	Global Well-Being Index GWBI	Quality of Life Index QoL	Happy Planet Index HPI	Sustainable Society Index SSI
Editor	Scholars & UNDP	Coalition of scholars, business, regional & local actors	Scholars	Scholars	New Economic Foundation	Sustainable Society Foundation
Type of variables	Education, health, income	Education, health, living standard, environment, freedom, tolerance, safety	Education, health, civic engagement, social life, living standard, life satisfaction, environment, safety	Health, social life, freedom and opportunity, living standard, trust, safety	Health, Life satisfaction, inequality, environment	Education, health, living standard, inequality, energy, environment, economy
Number of variables	3	52	23	39	4	21
Aggregation method ³	Geometric mean	Arithmetic mean + PCA	Arithmetic mean	Complex	Complex	Geometric mean

Source: Respectively World Bank (2015), UNDP (2014), Porter *et al.* (2016), Chabaan *et al.*, (2015), Maridal (2016), Jeffrey *et al.* (2016) and De Kerk and Manuel (2016).

3 Connection between the indicators and powerful stakeholders

² The year the data was collected is heterogeneous for most of the indicators.

³ Details can be found in the section 5.3

Among the six Beyond GDP indicators studied, which of them are supported by powerful stakeholders? In other words, which can 'bring about changes in the action of other units, individual or collective, in the processes of social interaction' (Parsons, 1967, 299)? It is not possible to assemble from the available literature a list of categories of stakeholders who could then be classified as powerful and non-powerful. While certain authors claim that 'the military-industrial complex', 'political leaders' (Mills, 1967), or 'the transnational capitalist class' (Sklair, 2002) hold the power, these categories have relatively little capacity for being applied to those who have produced or support the indicators. For instance, where does one adequately place a national statistics institute? Rather than classifying the producers of indicators on the basis of categories that are difficult to apply, they will be evaluated on a case by case basis. Do they have sufficiently established authority (Avant *et al.*, 2010; Parsons, 1967) to be considered powerful stakeholders? In this sense, governments, the World Bank, and the Nobel Prize in economics certainly carry such authority. In order to answer the question, the stakeholders involved in the development of the indicators will be taken into account.

The HDI was developed by leading academics (Amartya Sen and Haq) under the auspices of the UN (UNDP). The combination of a Nobel Prize and an important international institution have given it the attributes of a powerful actor. The SPI was developed by the Social Progress Imperative, a coalition bringing together large private companies or their foundations (Deloitte, the Skoll Foundation, and the Rockefeller Foundation, for instance) as well as academics from among the most prestigious universities (including Harvard, MIT, and Oxford⁴). Its developers also collaborated with the European Commission, as well as with governments, municipalities, and local associations across a number of continents, in order to develop regional or local versions of the index. The indicator has significant authority thanks to the expertise and the elite aura of its academic and professional supporters, as well as the funds supplied by private companies and foundations. The coalition and the network responsible for the SPI can be qualified as powerful.

The GWBU and QoL are both products of academia, of the American University of Beirut and Baylor University respectively. The last two indicators (the HPI and the SSI) were produced by think tanks rather than the academy. They were developed by the New Economic Foundation (United Kingdom) and the Sustainable Society Foundation (Netherlands) respectively. These four

⁴ No fewer than ten members of Harvard Business School, including Michael Porter, contributed to the SPI, but so did a large number of academics from other institutions, including Scott Stern from MIT, and Ngaire Woods from Oxford University.

indicators were all developed without high-profile participation from international institutions, public stakeholders, or highly prestigious universities. Their scope is local and their developers' means limited. They will be considered as supported by non-powerful stakeholders.

Two indicators (HDI, SP) can thus be considered as being supported by powerful stakeholders, while the others (GWBU, QoL, HDI, SSI) are supported by non-powerful stakeholders. The potential of these indicators to change frameworks of action or narratives will now be considered, and placed in connection with the stakeholders who played a role in their development.

4 Evaluation of transformative potential

The term transformative potential has been proposed here in a limited sense, for referring to the indicators' capacity for influencing frameworks of action or narratives (Sebastien and Bauler, 2013), and thus contribute to transform reality. One way of quantifying transformative potential can be to compare the ranking of countries according to Beyond GDP and GDP indicators. This comparison is justified by the fact that many Beyond GDP indicators are used as benchmarking tools between countries, with the aim, inspired by New Public Management, of steering performance (Desrosières, 2012; Salais 2010). Because of this, the relative position that the indicators attribute to each country is of the utmost importance. In accordance with this way of conceiving transformative potential, an indicator will be considered as having that much more transformative potential the larger the disparity between its results and those resulting from GDP. If the results produced by an indicator and GDP are very close or identical, the transformative potential of the indicator will be considered to be very weak or nil. Hence, we focus on the *controversy* dimension of indicators, considering that it is a necessary condition to hold a transformative potential, but also that other dimensions should be looked at in the design of an effective and desirable indicator (*e.g.* being actionable, or anchored in a theory of justice). The divergence in rankings resulting from GDP and Beyond GDP indicators has thus been taken as a reasonable proxy for transformative potential.⁵ The metric has been applied to the different

⁵ Two methods have not been mobilised: an evaluation of transformative potential as the divergence in terms of tendencies over time indicated by two indicators (poorly adapted to the available data), and the difference between the narratives that the indicators promote (poorly adapted to quantitative analysis).

indicators in two stages. First, the disparity between the rankings produced by GDP and each of the six indicators has been observed by calculating correlation coefficients. The analysis has then been repeated with the countries grouped by type in order to test whether the correlations are preserved.

4.1 Survey of indicators' rankings

Table 2 shows the Top and Bottom 10 for per capita GDP, as well as the shift in rank produced by the six Beyond GDP indicators under consideration: the Human Development Index (HDI), the Social Progress Index (SPI), the Global Well-Being Index (GWBI), Quality of Life (QoL), the Happy Planet Index (HPI), and the Sustainable Society Index (SSI).

Table 2: Top 10 and Bottom 10 of countries according to GDP per capita and their rank's change according to six Beyond GDP indicators

<i>Ranking</i>	<i>GDP</i>	<i>HDI</i>	<i>SPI</i>	<i>GWBI</i>	<i>QoL</i>	<i>HPI</i>	<i>SSI</i>	<i>Mean divergence by country⁶</i>	<i>Mean divergence by decile</i>
1	Norway	0	-6	-7	-3	-8	-4	5	11
2	Switzerland	-1	-3	0	1	-18	1	4	
3	USA	-5	-16	-3	-3	-82	-85	32	
4	Ireland	-3	-8	-5	2	-39	-46	17	
5	Netherlands	0	-3	2	-2	-10	-20	6	
6	Austria	-13	-7	2	-4	-32	-3	10	
7	Germany	1	-8	2	-5	-37	-11	11	
8	Denmark	4	5	7	-1	-19	6	7	
9	Iceland	-4	-1	-4	4	-25	-24	10	
10	Sweden	-1	4	0	-5	-41	6	10	

⁶ The divergence in average rank in respect to GDP shows if the position of a country is sensible to the use of Beyond GDP indicator instead of GDP. If it is low, it means that the country's relative economic, social and environmental performances (rank) are related. It is calculated from the absolute value of the divergences of each indicator. This is because in a situation where both a country's rank as attributed by GDP strongly diverges from that attributed by other indicators, and the rank diverges in opposite directions depending on the indicator, the use of the absolute value of these divergences avoids neutralising these variations in the calculation of the average.

95	Senegal	-4	12	9	25	15	13	13	9
96	Chad	-7	-8	-7	-7	-8	-1	6	
97	Benin	-1	6	-1	8	-5	20	7	
98	Uganda	1	8	10	7	10	34	12	
99	Rwanda	3	10	4	25	12	39	16	
100	Burkina Faso	-2	6	1	19	6	20	9	
101	Sierra Leone	0	0	0	14	1	9	4	
102	Togo	7	6	-2	10	-1	4	5	
103	Niger	-1	0	10	27	7	7	9	
104	Liberia	4	4	4	4	27	5	8	

For most of these countries, the choice of one indicator over another has an impact on their rank. For some, this impact is weak (Norway, Switzerland, Sierra Leone, Togo), whereas for others their rank diverges significantly when Beyond GDP indicators are used (Rwanda, Ireland, and above all the USA). One can already get a sense of how differently certain indicators rank certain countries in respect to their GDP ranking, whereas others produce more similar rankings. Thus the HPI strongly penalises the performance of the Top 10 countries, whereas QoL and the GWBI produce little change in their ranking.

This table only shows the highest and lowest ranking countries, but what about the similarity between GDP and the six Beyond GDP indicators in general?

4.2 Extent of divergence between GDP and Beyond GDP indicators

Table 3 shows two modes for examining the disparity between the indicators' results. The first line calculates the disparity between the rankings produced by Beyond GDP indicators and GDP, using the correlation coefficient between these two rankings (correlation of rank) for the 104 countries under consideration. This approach is inspired by the analyses of McGillivray (1991) and Borgnäs (2016).

The second stage is more intuitive. The '# Rank divergence > 10' line indicates occurrences of disparities of more than 10 rank positions between the GDP ranking and that of the indicator under consideration. For instance, for the HDI, there are 15 instances of disparities in rank of more than 10 positions. In other words, the rank attributed by the HDI diverges by more than 10 positions from that attributed by GDP in the case of 15 countries. A difference of 10 places may be considered as a moderate difference. The '# Rank divergence >

20' line makes a similar calculation, but in this case for disparities of more than 20 positions. Such disparities are considered to be more substantial differences in ranking. Table 3 shows these different methods for observing the divergence between GDP and the six other indicators.

Table 3. Three measures of the divergence between GDP and six Beyond GDP indicators' rankings

	<i>HDI</i>	<i>SPI</i>	<i>GWBI</i>	<i>QoL</i>	<i>HPI</i>	<i>SSI</i>
Correlation with GDP rank, per capita PPP	0,97	0,92	0,85	0,80	0,26	0,59
Moderate divergence (# Rank divergence > 10)	15	37	45	51	81	73
Strong divergence (# Rank divergence > 20)	1	7	19	31	61	47

The results of both methods converge, resulting in two groups of indicators. The rankings produced by the HPI and the SSI are weakly or moderately correlated with that produced by GDP (0.26 for the HPI, 0.59 for the SSI) and the disparity in ranking of more than 10 or 20 positions is very large (between 47 and 81). The two indicators thus produce rankings strongly divergent from those produced by GDP.

At the other end of the scale, the rankings produced by the four other indicators are strongly correlated with GDP (between 0.85 and 0.97). It is difficult to define a threshold above which one might count an indicator as being very close to GDP. But conventionally, one can consider that a correlation between 80% and 90% is very high and leaves little room for divergence in ranking. A strong correlation between GDP and the HDI is not surprising and has been pointed to on numerous occasions already (McGillivray, 1991; Cahill, 2005). On the one hand, the HDI gives significant weight to GDP in its construction. On the other, the two other dimensions it takes into account (health and education) are correlated with GDP. The high correlation coefficients are more unexpected for the SPI, GWBI, and QoL indicators, all of which include a large number of non-economic variables.

Examining the ranking disparity between these four indicators and GDP, one can note the following: the ranking produced by the HDI diverges very little from that produced by GDP, even when only considering divergences of more than 10 places (only 15 instances out of 104 countries). The SPI is quite close to the HDI when one counts substantial divergences from GDP (7), but it diverges much more frequently when counting moderate divergences from GDP (37). At the other end of the scale, the HPI and the SSI are very different

from GDP, with most countries diverging by more than 20 places. QoL and the GWBI are in the middle ground between the SPI and the HDI on the one hand, and the HPI and the SSI on the other. It is to be noted that the two indicators supported by powerful stakeholders (HDI and SPI) diverge the least in their rankings from GDP. The strong correlation between the rankings in general may signify one of two things: either GDP is, all things considered, adequate as an indicator for accounting for the dimensions included in Beyond GDP indicators—in which case, Beyond GDP indicators are redundant and their interest is weak—or, or several Beyond GDP indicators mainly include variables that have been traditionally correlated with GDP, and leave other crucial variables out. The article will argue for the second of these options.

4.3 Analysis by country group

There is a strong correlation between the rankings of some Beyond GDP indicators and that based on GDP, which suggests a weak transformative potential. However, if the small divergence in rank lies in dimensions that can be seen as meaningful (for instance, the indicators convey another narrative about the countries of the global south), this means that these indicators can still indicate another direction than that pointed to by GDP. In the following section, the indicators' rankings will be observed not according to country but country group, according to a major available distribution in the social field: those countries that are and are not members of the OECD, the OECD member countries generally being considered to be more developed. The indicators' rankings will then be observed according to another possible distribution in the social field: socio-political cultures. Since a typology of socio-political cultures including all the countries from our test group is unavailable, only the industrialised countries will be taken into account, using a typology—that developed by Esping-Andersen—that is a point of reference in political science. Esping-Anderson (1999) clusters countries according to their social protection scheme. He distributes the 17 industrialised countries among three schemes: social democratic, conservative corporatist, and liberal.⁷ These three ideal types account for different conceptions at the base of the constitution of the welfare state, each of which can be linked to an ideology. In our analysis, the welfare scheme will be used as a proxy for reflecting the political culture of the 17 countries under consideration.

⁷ Social democratic: Denmark, Finland, Norway, Sweden; Conservative corporatist: Austria, Belgium, France, Germany, Italy, Spain, Netherlands, Portugal; Liberal: Australia, Canada, Ireland, UK, USA.

Table 4 gives the mean rank obtained by country group. One should bear in mind that the countries (or the country groups) are more powerful the lower their rank.

Table 4: Mean rank of OECD vs non-OECD countries and of three welfare regimes, according to GDP and six Beyond GDP indicators

	<i>GDP</i>	<i>HDI</i>	<i>SPI</i>	<i>GWBI</i>	<i>QoL</i>	<i>HPI</i>	<i>SSI</i>
Rank OECD countries	19	19	19	22	23	48	30
Rank Non-OECD	69	70	69	68	68	56	64
Social Democratic	9	9	4	9	11	30	6
Conservative Corporatist	19	24	22	25	21	55	37
Liberal	9	8	9	9	7	62	55

The same two groups of indicators emerge from Table 4. The HDI, SPI, GWBI, and QoL indicators produce a mean between 19 and 23 for the OECD countries, close to the GDP-based mean (19). For these indicators, the mean rank of the non-OECD countries oscillates between 68 and 70, which is also close to the GDP mean (69).⁸ The four indicators thus lead to a performance differential between OECD and non-OECD countries similar to that produced by GDP. The narrative that is conveyed here is therefore not different to that conveyed by GDP. On the other hand, the remaining two indicators, the HPI and the SSI, produce a mean rank considerably more favourable to non-OECD countries (in comparison with GDP).

The social democratic countries appear in top ranking position for all the indicators except QoL.⁹ The HDI, SPI, GWBI, and QoL indicators (as well as GDP) hold the liberal countries in second place. The HPI and SSI indicators hold the Western European conservative corporatist countries in second place,

⁸ Using Mann Whitney tests, it appears that there is a significant difference between the mean rank of GDP and that of the HPI (for OECD, non-OECD, liberal and conservative corporatist countries, p-value < 0,05) and the SSI (OECD, liberal and conservative corporatist countries, p-value < 0,05), but no significant difference with the HDI, SPI, GWBI and QoL indicators.

⁹ Probably because it lays heavy emphasis on economic freedoms.

and the liberal countries in last place. It is worth noting again that the mean rankings of the HDI, SPI, GWBI, and QoL indicators are very close to those produced by GDP across all the socio-political schemes. These results thus converge with those that emerged from separating the OECD and non-OECD countries. When the countries are compared on the basis of their socio-political schemes, the SPI, GWBI, QoL, and HDI indicators do not supply additional information to that supplied by GDP.

4.4 Intermediate conclusion

Observing these tables provides a response to the initial research question. It appears that the two indicators supported by major stakeholders have the highest correlation with GDP. This is more than 0.90 in both cases. In addition, when making an analysis by country group, the representations produced by GDP remain intact as far these two indicators are concerned. It is thus possible to observe a significant convergence between the rankings produced by the indicators supported by major stakeholders and that produced by GDP.¹⁰ The hypothesis that major stakeholders—at least those considered for this analysis—create indicators with weak transformative potential appears to be verified.

Finally, it appears that both HPI and SSI show a large divergence with GDP, both in terms of global ranking and in terms of narrative. They are the indexes most likely to challenge GDP imaginary. However an indicator's having been produced by non-major stakeholders does not guarantee a weak correlation with rankings produced by GDP (QoL and the GBWI are strongly correlated to GDP). Nor does it guarantee that the indicator will be a desirable one, as indicators with few variables, such as the HPI, can fail to account for any number of important elements (material comfort, education...).

¹⁰ This analysis was limited to six Beyond GDP indicators. Others could be added in order to test the external validity of the above claim. Among the other indicators calculated for tens of countries but not satisfying all the criteria satisfied by the selected indicators, the ranking produced by the Multi Poverty Index 2016 (published by the UNDP) is 81% correlated with GDP. And the Index of Economic Well Being 2014 ranking (published by the academic Osberg) is 38% correlated with GDP. Considering that the MPI may be considered as being supported by powerful stakeholders, the analysis is thereby reinforced. However, it is worth recalling that the indicators' divergence from GDP has only been observed in cross section. An analysis of temporal series could show that, if a certain indicator's ranking is close to GDP one year, the tendency the indicator indicates over time differs from that according to GDP.

5. Correlation with GDP factors

The indicators supported by powerful stakeholders presented here produce rankings that are near or even very near to that produced by GDP. Does this mean that GDP is an adequate indicator of wellbeing after all? Or is the proximity of the results due to the fact that the Beyond GDP indicators supported by powerful stakeholders make use of variables and methods that necessarily end up producing results close to those produced by GDP? A more or less close correlation with GDP can be the result of three things: the choice of variables, the weight attributed to each and the aggregation method. The following will examine what these different methodological options entail.

5.1 The choice of variables

If GDP is positively correlated with most Beyond GDP indicators, this is because the latter are based on variables that are themselves correlated with GDP. As Easterly notes in a review of different studies investigating the link between quality of life and GDP, ‘Studies such as Wheeler (1980), Ram (1985), Dasgupta and Weale (1992), Dasgupta (1993), Kakwani (1993), Sen (1994), and Fedderke and Klitgaard (1998) generally found quality-of-life indicators to be higher in richer nations’ (Easterly, 1999, 241). A positive correlation between GDP and most Beyond GDP indicators is not surprising. What is surprising, however, is the scale of the correlation (more than 80%) in most of the indicators under consideration. It is important then to identify which variables correlate most closely with GDP.

McGillivray (1991) and Cahil (2005) demonstrate that health and education variables are strongly correlated with GDP, on a scale of more than 70% in the 1980’ and in 2001.¹¹ Inglehart and Klingemann (2000) calculate a 70% correlation coefficient between subjective satisfaction with life and GDP in the 1990’. Federkke and Klitgaard (1998) observe a positive correlation between GDP, civic and political rights (44-74%), and institutional efficacy (54-76%), as well as a negative correlation between GDP and political instability (-45- -

¹¹ Two things should be noted here: on the one hand, the positive correlation between GDP and numerous variables approaches zero beyond a certain level of revenue (Wilkinson and Pickett, 2009). On the other hand, these indicators do not provide information about the conjoined evolution of the variables and GDP, nor a possible relationship of causality between the two, or at least not to such an extent [Easterly, 1999].

64%) for the 1960–85 period. Health, education, civic and political rights, subjective satisfaction, and other such variables are thus strongly correlated with GDP (up to a certain point). This means that an indicator made up solely of this kind of variable has a strong chance of being strongly correlated with GDP and hence of being redundant. The inclusion of GDP among the variables taken into account by the indicator makes such an outcome even more likely. The HDI makes use of these variables all together, and a number of articles have considered it to be redundant in regards to GDP (Mc Gillivray, 1991; Cahil, 2005). For an indicator to diverge from GDP, it must also take into account variables with which GDP is less strongly correlated. Table 5 lays out a few instances of variables that have been a concern for the Beyond GDP indicator’s movement, such as inequality and environmental variables. These are weakly correlated with GDP.

Table 5: Variables with low or moderate correlation (rank) with GDP

	Correlation with GDP rank, per capita PPP
Availability of affordable housing	0,13
Gini coefficient	0,37
Biodiversity and habitat	0,33
Greenhouse gas emissions / Pop.	-0,85
Greenhouse gas emissions / GDP	0,58

Sources: Gallup (via Porter *et al.*, 2016), World Bank (2014), Hsu *et al.* (2016) and World Resources Institute (2016). 132 countries.

It is worth noting that the choice of a particular variable or its deflators can considerably influence the correlation with GDP. This is the case with greenhouse gas emissions. When deflated by population, they are negatively correlated with GDP (-85%), whereas when they are deflated by GDP, they are positively correlated (58%). The SPI, which makes use of a measure for greenhouse gas emissions, used emissions deflated by population until 2014. Since then, its developers have modified the deflator by using GDP, which has had the effect of lowering the rank attributed to non-OECD

countries¹². ‘Greenhouse gas emissions per \$1000 of GDP replaces the narrower 2013 CO₂ emissions per capita, which rewarded countries at lower levels of economic development’ (Stern *et al.*, 2014, 21).

The choice of thematics included in an indicator, along with the choice of variables with which to evaluate, is thus crucial to the output that the indicator will produce. As Borgnäs (2016) demonstrates, this choice is not the product of chance, but rather of the theoretical paradigm of an indicator’s developers.

5.2 Weighting

The weight attributed to each variable, along with the aggregation method with which the indicator will be determined, can also explain a part of the correlation with GDP. **Table 6** displays the weight given to environmental and inequality variables¹³—generally weakly correlated with GDP—by each of the indicators under consideration. It should be noted that the weighting is before aggregation. The aggregation process of the variables in dimensions, then in a single numeral, modifies its weighting, which is thus slightly different to that indicated below.

Table 6: Weight of environmental and inequalities variables

	<i>HDI</i>	<i>SPI</i>	<i>GWBI</i>	<i>QoL</i>	<i>HPI</i>	<i>SSI</i>
Environment	0	8%	9%	10%	25%	33%
Inequalities	0	2%	4%	3%	25%	5%
Rank						
correlation with GDP	0,97	0,92	0,85	0,80	0,26	0,59

One can observe a high degree of consideration for the environment and inequality in the Beyond GDP indicators that are the least correlated with GDP. The HPI and the SSI are both the least correlated with GDP and those that place most emphasis on inequality and the environment. In contrast with this, the SPI and the HDI are the most correlated with GDP and put the least emphasis on these two aspects.

¹² For instance, the greenhouse gas/PIB emission ratio is three times smaller for the USA than for Mali, Cameroon or Mongolia.

¹³ Income inequality or inequalities in other variables (*e.g.* life expectancy), in the case of the HPI and the SPI.

This result may seem straightforward but it has a strong implication: if an indicator claims to go Beyond GDP, it should sufficiently include variables other than those that are weakly correlated with GDP, *e.g.* include inequalities or environment. If it does not, it risks to be redundant.

5.3 Aggregation method

What about the aggregation method? The objective of this article is not to make an in-depth study of the impact that aggregation methods have on correlation with GDP. The following will simply be a remark concerning compensability between different dimensions, an issue at the heart of the debates between supporters of weak sustainability indicators (which authorise compensation) and strong sustainability indicators (that heavily limit compensation) (Dietz et Neumayer, 2007). It is a debate taking place between the promoters of Beyond GDP indicators, as certain aggregation methods, such as the arithmetic mean, allow for perfect compensation between the performances of the different categories (this is the case for the SPI, the GWBI, and the QoL), whereas other methods, such as the geometric mean, limit compensation (this is the case with the HDI, the SSI, and the HPI).

Would an indicator that limits compensation correlate less strongly with GDP and thus indicate a higher transformative potential? In the case of the SPI, changing the aggregation method causes the correlation with GDP to shift from 0.92 (arithmetic mean) to 0.90 (geometric mean). In the case of the SSI, the correlation shifts from 0.72 (arithmetic mean) to 0.59 (geometric mean). In both instances, the use of the geometric mean diminishes correlation with GDP to a small extent. In general, two conditions are required for such a diminishment to occur: (1) the majority of the indicator's variables must be correlated with GDP, and (2) the indicator must include other variables that are only very weakly correlated (so that there is variability between the performances of the indicator's categories). If these two conditions are satisfied, limiting the categories' compensability reduces the correlation with GDP, since the variability of performances is penalised. This is the case in particular with the SSI, where environmental performances contrast with socio-economic performances. On the other hand, if these two conditions are not simultaneously satisfied, an aggregation by geometric mean will not negatively influence the correlation with GDP (as is the case with the HDI), and can even increase it.

The choice of aggregation method, along with that of the variables and their weighting, are thus factors that influence the transformative potential of an indicator. This potential appears stronger the more weight an indicator gives to inequality and environmental variables, and this in particular when it limits compensability between the different dimensions.

6. Discussion of the results and conclusion

The analysis of six Beyond GDP indicators demonstrates a significant variability in their correlation with GDP and the convergence of their rankings. Amongst this diversity, the indicators supported by powerful stakeholders (HDI, SPI) produce rankings that are more than 90% correlated with that produced by GDP. They thus produce rankings that are generally redundant in regards to GDP, suggesting a very weak transformative potential. How is this result to be interpreted? And how does one explain the fact that developers of Beyond GDP indicators, while wishing to go beyond GDP, end up producing rankings that are very close to those produced by GDP? The aim here is not to exhaust all the possible responses to these questions, but rather to suggest four types of explanation that deserve to be considered in further depth.

A first, possible explanation for the weak transformative potential of the indicators supported by powerful stakeholders would be the lack of adequate data (Hak et al., 2012) or data that is not updated often enough (Lehtonen, 2015; Rinne et al., 2013; Seaford, 2013b). Thus, when the figures of a variable under consideration are not available to a sufficiently rigorous degree, there can be a trade-off between choosing a bad measure of a pertinent phenomenon or not having any measure of this phenomenon. The Gini coefficient, for instance, is only calculated for a limited number of countries and it is not systematically kept up to date. Nor is there a global measure of pollutant emissions (such as CO₂) calculated at the country of consumption. In many instances, statistics institutions' need for credibility induces them to opt for the second of the two options, that is, not to include the pertinent variable in the indicator. Frederiksen notes in this respect that certain 'indicators that would potentially be better in line with redundantly formulated demands from stakeholders (notably for indicators which helped to grasp an overall image of the sustainability of Europe) were discarded by ESTAT due to lack of data, or non-robustness of the potential indicators' (Frederiksen, 2012, complete report, 24). Undeniably, new indicators need new statistics. However, here they are required to be built on the same statistics that have been produced to serve the macroeconomics that their developers want to get beyond. This first explanation is thus partly involuntary, the result of institutional actors' need for robust statistical data, a demand not met for certain key dimensions of Beyond GDP indicators. However, the very decision to develop new statistical data is an eminently political one, which suggests that other factors are at play here.

A second explanation has to do with institutionalism. Holm insists that a change in institutions, that is, in 'humanly devised constraints that structure political, economic and social interactions' (North, 1991, 97), means that 'income, power, and status will be redistributed' (Holm, 1995, 5). If the institutional appropriation of Beyond GDP indicators can be thought of as a shift from one institutional order (growth regime) to another, this shift will

involve winners and losers. It is not in the interests of certain stakeholders currently in positions of power (policy makers, international institutions) to emphasise dimensions whose current progress is negative. In this respect, Collingridge and Reeve (1986) have shown the ways in which stakeholders discredit and reject scientific knowledge that does not correspond to existing opinions or interests. For instance, it can be politically embarrassing to draw attention to environmental dimensions at a time when the limits of the ecosystem have been transgressed (Steffens *et al.*, 2015), or to measure the extent of inequality when this is on the rise in a number of countries (Piketty, 2014). Indicators that underscore bad performances can appear unattractive to users holding positions of power. On the other hand, indicators whose results are more in tune with the outcomes produced by current political programmes are more likely to be taken up by those who make decisions. This can explain why indicators that place a weak emphasis on current, ‘critical’ dimensions of the world picture are privileged by public policy makers.

A third possible interpretation of the results emphasises powerful stakeholders’ common interests, insofar as they belong to the dominant class. In the Marxian tradition of this interpretation, Sklair has developed the concept of a transnational capitalist class, with a material base in the control of corporations, and consisting of four fractions: ‘Corporate executives and their local affiliates (the corporate fraction); globalising bureaucrats and politicians (the state fraction); globalising professionals (the technical fraction); merchants and media (the consumerist fraction)’ (Sklair, 2002, 145). According to this notion, the powerful stakeholders referred to in this article are members and agents of a transnational capitalist class. This class has an interest in maintaining the current state of the economy which is characterised by an increasing capital share of income (Keeley, 2015). It has no objective interest in changing the set of economic indicators, including GDP, that represents not only the respective health of private enterprises, but also the extent of the global market to which they have access. One can then ascribe to them a general tendency to favour the status quo. They include, nonetheless, multiple tendencies (Robinson and Harris, 2010), including those who wish to ‘attenuate some of the sharpest social contradictions of global capitalism in the interests of securing the political stability of the system’ (Carroll *et al.*, 2010, 46). The ruling economic class is not homogeneous, and it would be its heterogeneity that is responsible for the Beyond GDP indicators supported by powerful stakeholders. The reformist wing of the dominant class would accommodate and initiate Beyond GDP indicators with the aim of making them the basis of a new order of social peace (Thiry *et al.*, 2013). But these indicators would be developed in such a way that they do not fundamentally differ from GDP, so as not to immeasurably diverge from their class interests. This process would not imply that actors are aware of their methodological choices’ class content, while it can be embodied in administrative routines, data constraints or

common beliefs among powerful stakeholders. This is a long-durational approach that could explain institutional inertia.

There is another approach, which draws its inspiration from the notion of epistemic communities (Hass, 2002), or ‘advocacy coalitions’ (Sabatier, 1998). An epistemic community is a network of professionals in a particular domain who share a ‘set of normative and principled beliefs [...], shared causal beliefs [...], shared notions of validity—that is, intersubjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and a common policy enterprise—that is, a set of common practises associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence’ (Haas, 2002, 3). One way of interpreting the results of the current investigation according to this framework would be to make the claim that (1) the producers of indicators among powerful stakeholders constitute an epistemic community and (2) that this community is characterised by values, criteria for validating ‘good’ indicators, professional ethos and common beliefs about the mechanisms that drive societal development. These characteristics would end up producing indicators with weak transformative potential. Thus, for Thiry *et al.*: ‘We note that in official circles, the debates about Beyond GDP, while bringing new stakes to the table, nonetheless do not crystallise in the emergence of a fundamentally new cognitive framework. Compartmentalised values, norms dominated by an imperative towards short-term growth, unchanged algorithms, and images characterised by a vision that does not question the hierarchy of the respective spheres of the environment, society, and the economy’ (Thiry *et al.*, 2014, 16). For instance, the weak presence of environmental variables could be the result of the fact that the position that ‘favours well-being over sustainability is dominant among institutional actors close to decision makers (national accountants, statisticians in international institutions, etc.)’ (Thiry *et al.* 2014, 10). This would also be because decision makers are caught up in the urgency of the most immediate stakes and continue to emphasise economic dimensions (Seaford, 2013b). In sum, the conceptual and methodological frameworks that the epistemic community close to the spheres of power expect are those belonging to GDP.

The relative importance and the pertinence of each of these interpretations should be determined through empirical research. But whether one privileges one over the other, the paradox remains the same. On the one hand, a certain number of stakeholders see Beyond GDP indicators as redundant in regards to GDP (Seaford, 2013b) and thus do not see a use for them (the analysis carried out here seems to partially support this stance). On the other hand, the dominant producers of indicators today do not seem to envision taking any very radical steps away from GDP. But perhaps the situation will change with modifications in the balance and distribution of power. The rising influence of currently marginal actors, such as social economy organisations (Defourny and

Develtere, 1999; Eme and Laville, 2006), the ecological transition movement (Hopkins, 2008; Seyfang and Smith, 2007), and new movement-parties (Podemos, Syriza) appear to question the centrality of economic growth and GDP. It remains to be seen if these actors will be asking for Beyond GDP indicators and, if so, what shape these will take.

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