

Beyond GDP : Conceptual Grounds of Quantification. The Case of the Index of Economic Well-Being (IEWB)

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**BEYOND GDP: CONCEPTUAL GROUNDS OF QUANTIFICATION.
THE CASE OF THE INDEX OF ECONOMIC WELL-BEING (IEWB).¹**

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ABSTRACT

Today, though the need for new indicators of progress is broadly recognized, no consensus has arisen on a successor to GDP. Various – often conflicting – quantification options are observed. On one side, one finds those who want to improve current indicators, by completing or adjusting them, within the logic from which they have emerged. On the other are those for whom new indicators of progress are liable, if well-designed, to catalyze a transition toward a new model of society, less reliant on growth. Up to now, these axiological issues related to quantification choices, though crucial for "what we measure affects what we do", are scattered among the debates and do not appear clearly to the stakeholders to the debates. Our paper aims therefore to offer a more systematic understanding of the normative impacts of generic quantification choices. To that end, we analyse the Index of Economic Well-Being (IEWB). Though this index is an example of creativeness at a given time, its lack of success in the public sphere leads us to further investigate the coherence between its foundations and its purpose(s). For each dimension of this composite indicator, the analysis – which is intended to be easily transposed to other indicators – sheds light on the variety of normative implications resulting from its conceptual and methodological apparatus. This concomitantly leads us to question in depth the relevance of some theoretical hypotheses underlying the IEWB to coherently account for economic, social and ecological issues. The paper's conclusion suggests that alternative conceptual frameworks, such as ecological economics and the capability approach, are liable to carry more coherent indicators of progress.

Key-Words: Economic Well-being, Indicators, Sustainability, Sociology of quantification

JEL Classification: A 13, B4, D63, I32, Q56

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INTRODUCTION

Today, GDP is broadly criticized. A consensus seems to have arisen on the fact that the pursuit of GDP's growth, as such, appears unsatisfactory to reflect and play a role on societies' global development³. These concerns about GDP are not only formulated by marginal actors. Major institutions⁴ and commissions⁵ have joined the movement: "The commonly used statistics may not be capturing some phenomena, which have an increasing impact on the well-being of citizens (...) for a long time there have been concerns about the adequacy of current measures of economic performance, in particular those solely based on GDP. Besides, there are even broader concerns about the relevance of these figures as measures of societal wellbeing." (Stiglitz *et al.* 2009:8)⁶.

Three main imperatives are often suggested to overcome GDP's lacks: first, considering outcomes rather than monetary production; second, integrating distributional issues; third, accounting for stocks besides flows. In that respect, among the many indicators suggested for succeeding GDP⁷, the Index of Economic Well-Being (IEWB) constitutes a possibly fruitful response. This index, thought of by Lars Osberg in 1985 and first implemented by Osberg and Andrew Sharpe in 1998, is an example of creativeness and innovation at a point in time. As we shall see, by considering consumption rather than production, the IEWB aims to focus on outcomes. By integrating a dimension of income inequality and poverty, the index tackles distributional issues. By encompassing a stocks dimension, it responds to the third criticism addressed to GDP. Besides, it innovates with the inclusion of an "economic security" dimension.

Nonetheless, the IEWB, as many other indicators, generates divergences of appreciations and suffers from a lack of adhesion among the actors in the debates. This observation has led us to further question the reasons of such divergences and lack of success.

We think— and we will show — that disagreements on quantification choices are far more than a methodological question, for they reveal deeper political and axiological divergences. The way indicators are built, on the one hand, is inextricable of the conceptions they convey. On the other hand, it influences the intensity of the indicators' ability to carry change and/or innovation with regard to GDP. Some quantification choices consist in adjusting and/or refining GDP without further questioning its conventional and historically situated foundations. Other quantification options, in revenge, enhance the indicators' potentiality to transmit a conception of progress very

³ See Cassiers and Thiry 2009, van den Bergh 2009, Méda 2008 and Gadrey and Jany-Catrice 2007.

⁴ Such as the OECD, the World Bank and the EU.

⁵ Let us mention the very influential Commission on the Measurement of Economic Performance and Social Progress (usually called "the Stiglitz commission"), chaired by Stiglitz, Sen and Fitoussi, launched in January 2008 by the President of France, Sarkozy.

⁶ The commission CAE-CGEE (launched in 2009 by Merkel and Sarkozy) questions : "*comment pourrions-nous élargir notre perspective, focalisée jusqu'ici sur la performance économique, de manière à évaluer la qualité de vie plus généralement, afin de distinguer ce qui importe réellement en matière de bien-être humain ?*" (CAE- CGEE, 2010: 5). The European Commission recognizes that: "Critically, GDP does not measure environmental sustainability or social inclusion and these limitations need to be taken into account when using it in policy analysis and debates"(European Commission, 2009: 3).

⁷ See FAIR 2011 for a good overview of the various initiatives at stake today.

different from the one conveyed by GDP, possibly implying a deep revision of societies' organisation.

These various options in quantification choices reflect two families of arguments underlying the contemporaneous debates. On the one side, one finds those who want to improve traditional economic indicators like GDP, by completing or adjusting them, with the inclusion of social, ecological and/or psychological issues. It is not a question for them to deeply revise the productivist logic underlying growth regimes but rather to adapt it progressively given new constraints and needs (Arrow *et al.* 2004, EU 2009, OECD 2007 and 2011). On the other side are those who consider the current debates as a signal that the time has come to think back about the deeper ends of the actors within economic and social systems. For them, new indicators of progress are liable, if well-designed, to catalyze a transition toward a model of society that would reduce its relentless reliance on the extension of material want (Gadrey 2010; Jackson 2009; Costanza *et al.* 2007).

Today, these – often conflicting – issues with regard to the foundations and repercussions of quantification choices are quite scattered among the debates. The normative implications of quantification do not appear clearly. This enhances the risk of choosing a quantification option on the basis of practical necessity, data availability, or any empirical reason, without being aware of the impact such a choice would imply for decision making. We think that the systematic deconstruction of a specific indicator like the IEWB, if easily transposable to others, can respond to this lack of clarity.

In a former paper (Thiry and Cassiers 2011), we have made an in-depth case study to show in detail the kind of impacts arising from quantification choices. The analysis of the Adjusted Net Savings (ANS), sustainability indicator of the World Bank, had shown that the conception of sustainability carried by this indicator was strongly determined by the theoretical hypotheses underlying it, gave rise to a particular vision of sustainable development that generates no consensus in the debate, and could orient the decision-making in a debatable way.

Though the ANS study had already shed light on a series of conflicting issues, the latter were confined to the debate of "strong versus weak sustainability". We now want to enlarge the scope of issues treated beyond this debate and therefore consider an indicator tackling a larger range of dimensions. Mixing money and non-money accounting, the IEWB gathers in one single composite indicator methodological choices that are to be found disseminated in various other indicators at stake today. The analysis of each of its dimensions is therefore easily transposable to a broader extent than the IEWB itself. By this analysis, we aim at offering, to a broader – though not exhaustive – extent than in the ANS study, a systematic understanding of the normative impacts of generic quantification choices, which might explain the lack of adhesion encountered by the IEWB⁸.

⁸ It is worthwhile mentioning that the normative scope of quantification choices raises a strong democratic issue at the procedural level: who is legitimate to define what progress is? This question has been at the origin of numerous studies (see FAIR 2011). Purposely we do not focus here on this procedural level, in order to study in depth the technical aspects of the normative scope of quantification.

To that end, the analysis sheds light on the variety of axiological implications resulting from the conceptual and methodological apparatus underlying the IEWB (and indicators built – at least partially – on a similar methodological basis), with regard to each of its dimensions separately and to its attempt to gather in one single indicator social, economic and environmental issues.

The paper is structured as follows: section 1 describes the IEWB; sections 2 to 5 consist in the analysis of the IEWB's dimensions, highlighting, for each dimension, the normative scope and the various interpretations to which it can give rise; section 6 questions the global coherence of the indicator; section 7 concludes.

1 THE IEWB : AN INDEX OF "COMMAND OVER RESOURCES"

"In 1980 Ronald Reagan asked the American people a seemingly simple question: 'Are you better off today than you were four years ago?' Although U.S. per capita disposable real income (...) was, in 1980, some 7.6 percent higher than in 1976, his audiences typically answered "No!" (Osberg 1985: 1). This observation led Lars Osberg to think of a more appropriate measure of economic well-being, the conceptual grounds of which being gathered in Osberg (1985). Thirteen years later, Osberg, in collaboration with Sharpe, from the Centre for the Study of Living Standards (CSLS), released the first version of the IEWB (Osberg and Sharpe 1998).

In their index, Osberg and Sharpe exclusively consider *economic* well-being, which they define as "command over resources" (Osberg and Sharpe 2005). They consider that "a society's economic well-being depends on total consumption and accumulation, and on the individual inequality and insecurity that surround the distribution of macroeconomic aggregates" (Osberg and Sharpe 2003: 12).

Theoretically, the IEWB is not built on the basis of a formal model but the authors refer to the following theoretical perspectives:

"A sufficient (but not necessary) set of conditions for the index of economic well-being which we propose would be that societal economic well-being can be represented as the well-being of a "representative agent", if:

- (1) such an agent has a risk-averse utility function (i.e. diminishing marginal utility);
- (2) from behind a "veil of ignorance" as to his/her own characteristics, each person draws an individual income stream (and prospects of future income) from the actual distribution of income streams;
- (3) each person has a utility function in which both personal consumption and bequests to future generations are valued;
- (4) individual income streams are exposed to unpredictable future shocks; and
- (5) capital markets and public policies do not always automatically produce a socially optimal aggregate savings rate. "(Osberg and Sharpe, 2002: 294)

This conception reflects a methodological individualism that we will discuss later.

Given their conception of economic well-being and the above-mentioned theoretical grounds, the authors define the economic well-being according to a temporal perspective (present, future)

and to a representation of society (individual, collective) (Jany-Catrice and Kampelmann, 2007:116). This is synthesized in the following table:

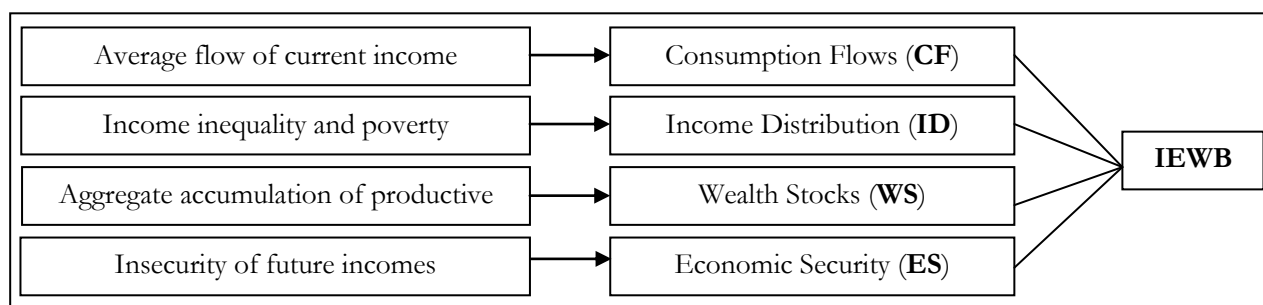
Table 1 : Conceptual framework of the IEWB

Concept	Present	Future
"Typical Citizen" or "Representative Agent"	Average flow of current income	Aggregate accumulation of productive stocks
Heterogeneity of Experiences of All Citizens	Distribution of potential consumption -- income inequality and poverty	Insecurity of future incomes

Source : Osberg and Sharpe (2011: 16)

On the methodological level, Osberg and Sharpe operationalize this conceptual framework into the four dimensions of a composite indicator, that is, a weighted mean of heterogeneous elements, aiming at covering both present and future economic well-being, as well as both trends in average outcomes and trends in the diversity of outcomes: the average flow of current income is indicated by "effective per capita consumption flows" (indicated by "consumption flows"); aggregate accumulation of productive stocks by "wealth stocks"; distribution of potential consumption/income inequality and poverty, by "income distribution" and insecurity of future incomes by "economic security". These four dimensions, that will structure this paper, are represented in the diagram below:

Diagram 1. Concepts and dimensions of the IEWB



Source: Authors' diagram on the basis of Osberg and Sharpe (2003: 10)

Arithmetically, the IEWB is computed as follows:

$$IEWB = \alpha CF + \beta WS + \gamma ID + \delta ES.$$

Where CF is Consumption Flows, WS is Stocks of Wealth, ID is Income Distribution, ES is Economic Security and α , β , γ and δ are coefficients corresponding to the weights attributed to each variable. Each dimension is normalized through linear scaling⁹ and weighted according to a scheme which is open to any changes by users¹⁰.

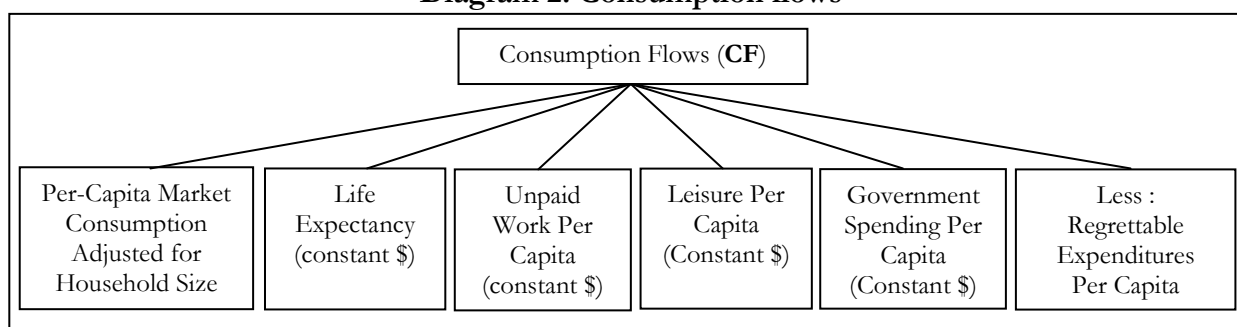
⁹ Linear scaling is used to standardize the range of a variable. In the case of the IEWB, an estimate is made for the high and low values for all time periods and/or for all countries analyzed (denoted Min and Max, respectively). The data is then scaled according to these values. If a variable increase corresponds to an increase in economic well-being, the variable (Value), is scaled according to the formula $(Value - Min)/(Max-Min)$. If, in contrast, an increase in

We now investigate these four dimensions in order to shed light on the variety of axiological implications their construction implies (sections 2 to 5). We then question the way they are articulated within the IEWB (section 6).

2 PRESENT WELL-BEING OF A REPRESENTATIVE AGENT : CONSUMPTION FLOWS

In line with Nordhaus and Tobin (1973:512) for whom "the goal of economic activity, after all, is consumption", Osberg and Sharpe place consumption flows at the heart of economic well-being. They compute an "effective per capita consumption flows" dimension adjusted for regrettable costs, government services, the value of leisure, life expectancy and, where it is possible, household production.

Diagram 2. Consumption flows



Source: Authors' diagram on the basis of Osberg and Sharpe (2003: 10)

This computation is founded on the same principle as in the Index of Sustainable Economic Welfare (ISEW – Daly and Cobb 1989) and as in the Genuine Progress Indicator (GPI – Anielski and Rowe 1999) even if the variables included slightly differ among these indicators¹¹.

This dimension is computed as follows:

$$(C - RC + UP + G + WT) * (LE)$$

Where C is the personal consumption per capita, RC is the value of total regrettable costs, UP is the value of per capita unpaid labour, G is the per capita current government spending excluding

(Value) corresponds to decrease in economic well-being, the Value is scaled according to (Max-Value/Max-Min). For more details, see Salzman (2004) and Jany-Catrice and Kampelmann (2007).

¹⁰ Illustratively, the authors, on the CSLS website suggest various weighting schemes in their spreadsheets among which a weighting giving much weight to consumption (0.4, (CF), 0.1 (WS), 0.25 (ID) and 0.25 (ES)) and an equal weighting (0.25, (CF), 0.25 (WS), 0.25 (ID)) and 0.25 (ES)).

¹¹ISEW = personal consumption + public non-defensive expenditures – private defensive expenditures + capital formation + services from domestic labour – costs of environmental degradation – depreciation of natural capital; GPI= Personal consumption adjusted for income inequalities + Value of housework and parenting + Services of consumer durables + Services of highways and streets + Value of volunteer work + Net capital investment – Cost of household pollution abatement – Cost of noise pollution – Cost of crime – Cost of air pollution – Cost of water pollution – Cost of family breakdown – Loss of old-growth forests – Cost of underemployment – Cost of automobile accidents – Loss of farmland – Net foreign ending or borrowing – Loss of leisure time – Cost of ozone depletion – Loss of wetlands – Cost of commuting – Cost of consumer durables – Cost of long term environmental damage – Depletion of non-renewable resources. See Brian *et al.* (2003: 8) for a synthetic overview of the differences between ISEW and GPI.

debt charges, WT is the value of changes in working time¹² and LE is an index of life expectancy¹³. All the variables are adjusted for changing household economies of scale through the use of an index of equivalent income¹⁴. Consumption flows are valued in money terms and in constant prices¹⁵.

We now question the quantification of consumption's adjustment variables (2.1). We then broaden the discussion by assessing the consistency of associating consumption and economic well-being (2.2).

2.1 Questioning various aspects of the consumption "flows" adjustment variables

The way consumption is adjusted is questionable for it might give rise to various – sometimes conflicting – appreciations. We systematically review here regrettable costs (RC), unpaid labour (UP), government expenditures (G) and leisure (WT).

Regrettable costs – Following Nordhaus and Tobin (1973), Osberg and Sharpe extract from real personal consumption per capita those activities that "are evidently not directly sources of utility" (Nordhaus and Tobin 1973: 515) themselves but are regrettably necessary inputs to activities that may yield utility. Total regrettable costs include costs of crime, of commuting, of household pollution abatement and of automobile accidents. These regrettable costs are computed following the GPI's methodology (Anielski and Rowe 1999). Along those lines, they are accounted as the money value of their compensation¹⁶.

¹² The real value of changes in working time is indicated by the imputed value of leisure per capita with unemployment adjustment (1996\$). The latter is computed as the product of the average after tax compensation per employed person per hour, the working age population as a percentage of the total population, and the average annual number of hours of unemployment per person aged 15-64 relative to the 1971 benchmark year. The average after tax compensation per employed person per hour = $(1 - (\text{General Government Current Receipts, as a Percentage of Nominal GDP}/100)) * \text{Average Compensation per Employed Person per Hour}$. The average annual number of hours of unemployment per Person Aged 15-64 = $((\text{Average annual number of hours worked per person} * \text{Employment over Working Age Population Ratio, \%})/100) * \text{Average Annual Number of Hours of Unemployment per Person Aged 15-64}$.

¹³ In Osberg and Sharpe compute this dimension as $(C + UP + G + WT) * (LE)$, where C is the real per capita consumption adjusted for regrettable costs. For the sake of clarity, we have decided to make this adjustment explicit in the formula.

¹⁴ Index of equivalent income (US 1971=1.00) = Square Root of Family size / Square Root of family size in US 1971 (Note: Index of Equivalent Income was calculated on the basis of one half rate of change of family size.) Source : Census Data, <http://www.census.gov/population/socdemo/hh-fam/hh-fam-6.txt>;

¹⁵ The use of deflators is not neutral and would deserve some attention, in the fact that deflators and price consumption indices, on one hand, imperfectly reflect quality changes and, on the other, are generally based on average baskets of goods, not considering distributional issues related to the way changes in certain prices (basic goods for instance) affect the economic well-being of specific socioeconomic categories. But it exceeds the aim of that paper. See Stiglitz *et al.* (2009) and Conseil National de l'Information Statistique (2006).

¹⁶ Crime is accounted as "the cost of crime to victims based on their out-of-pocket expenditures or the value of stolen property" (Anielski and Rowe 1999: 18). Costs of commuting encompasses: "the money spent to pay for the vehicle, or for bus or train fare" and "the time lost that might have been spent on other, more enjoyable or productive activities"¹⁶ (Ibid. 1999: 28). Costs of household pollution abatement are the expenditures made for equipments and other defensive expenditures aimed to compensate for pollution. Costs of automobile accidents account the economic losses which "cover only motor vehicle accidents on and off the road and all injuries regardless of length of disability. Economic loss includes wage loss; legal, medical, hospital, and funeral expenses; insurance administration costs; and property damage." (Ibid. 1999: 31)

The monetization of costs is a methodological choice which might be diversely appreciated according to the ends pursued by the indicator's commentators. On the one hand, monetary accounts of regrettable costs have the advantage of allowing for assessing and providing compensation allocations in cash. As long as the means of action are monetary, it appears difficult to praise an intervention that would not be expressed in money terms. On the other hand, however, assessing costs through money implicitly implies some form of substitutability between the damages and their money compensation. Commentators might then wonder how to reflect the non substitutability and/or the irreversibility of certain losses such as the ones occasioned by pollution or car accidents, for instance.

Unpaid work – Osberg and Sharpe (2001) included unpaid work as part of consumption in the original version of their index for Canada (Osberg and Sharpe 1998)¹⁷. They indeed wanted to consider the unpaid work generating effective goods and services, and along the way contributing to economic well-being, though not accounted in GDP (see Jany-Catrice and Meda 2011). To that end, they attributed a money value to unpaid work by multiplying a number of reported hours of unpaid work by the wage rates implemented in the corresponding market sector. There again, the fact of attributing to unpaid work a money value can be differently welcomed.

On one side, such a choice certainly responds to a criticism addressed to GDP by feminist movements and followed by a large part of the stakeholders, for it leads to consider some types of work which have too often been socially hidden or misperceived though it contributes to economic well-being through the services provided¹⁸: "Obviously, the more accurate the measures, the more valuable the data will be for those struggling to improve women's situation. The more successful women are in assuring that their work, both paid and unpaid, is accurately recognised and valued highly, the stronger their capacities to demand supportive public policies." (Luxton 1997: 438).

Nonetheless, on the other side, valuing unpaid work with a wage rate is also criticized for it introduces market rationality into a sphere of activity basically founded on different mechanisms and value schemes than the market (Harribey 2009). Pricing the value of unpaid work at the wage rates implemented in the care sector, though it might give an order of magnitude of the work made, would be implicitly accepting the assumption according to which, for instance, the value of the labour of a CEO is hundred times higher than the one of a nursing auxiliary. Such a hierarchy of values is anchored in the balance of power underlying the market and implicitly accepts a specific definition of productivity (theoretically reflected in the wage rate) that is questionable when considering care, for which the quality of the service is often inversely proportional to the productivity (defined as quantity divided by time). If unpaid work is to be taken into account, one might wonder whether relying on labour market prices for building an index of economic well-being is liable to accurately reflect the ends to be reached. As Gadrey (1997) suggests, the concept of productivity is anchored in a mode of consumption and production adapted to a quantitative

¹⁷For now this problem appears mostly theoretical: given problems of data availability across countries, and the resulting lack of comparability, this dimension has been retrieved from the index.

¹⁸ "Unpaid productive work such as domestic work and child care should be included, where appropriate, in satellite national accounts and economic statistics" (Agenda 21, Chapter 8, <http://www.gdrc.org/decision/agenda21chapter8.html>)

growth regime while a potential source of emancipation of our development models lies in the consideration of quality rather than quantity.

Public Expenditures – "The provision of non-marketed or heavily subsidized services by the government is part of the consumption flow" (Osberg and Sharpe 2001: 9). Including government expenditures constitutes an interesting initiative for the question of public expenditures quantification is at the heart of the debates on national accounting. But the way government expenditures are accounted raises question. Indeed, as in the national accounting, the IEWB includes these services through a cost approach: public services are tracked through the inputs needed for their production, not informing on their outcomes¹⁹.

Moreover, the destination of the public services is not stipulated, while expenditures on defence do not have the same effect on economic well-being as expenditures on social security, for instance²⁰.

Once again, though there is an important demand in the debates for accounting for public sector services in the assessment of economic well-being (Stiglitz *et al.* 2009), measuring their impact through the cost side and not defining the allocation of these costs among sectors prevents us from grasping their impacts on the population. We might think of a thinner measure of the public sector, tackling outcomes rather than inputs and distinguishing between various sectors of expenditures allocation.

Leisure – Consumption flows are adjusted to the imputed value of leisure. The latter is calculated as the product of the average after tax compensation per employed person per hour and the average annual number of hours of leisure, expressed relatively to 1971 (the benchmark year) and adjusted for unemployment. Leisure is thus valued as the opportunity cost of labour. Here again, such a quantification choice can be received in different ways. On the one hand, considering leisure time in an index of well-being is claimed by many stakeholders to the debates (OECD 2009). But on the other hand, it might be considered that assessing leisure as an opportunity cost of labour conveys a conception of relation to time which is not autonomous from a productivist reference. Indeed, quantifying leisure as the opportunity cost of labour reflects a conceptual reference analysing peoples' behaviour in terms of consumer choice and labour supply. As Downward (2004) notes it, there is a "dual-decision" hypothesis of households: in the income-leisure trade-off model of labour supply, leisure is defined as the (residual) dual of work, which provides income for consumption. Leisure is thus not thought independently of consumption and labour, while consumption might prove detrimental to people's well-being (as we have seen it in 2.1).

These four monetized sub-dimensions are, by one way or another, at the heart of a divergence between different – even conflicting – ends: while money appears the most tractable standard and means of action for including categories that were not accounted by GDP and therefore constitutes a progress in the view of some actors, it seems at the same time that monetization

¹⁹ Such an argument has been developed in Cassiers and Thiry (2009).

²⁰ Another difficulty encountered when evaluating public expenditures lies in the defensive aspect of some expenditure. For the detailed argument, see Daly and Cobb (1989).

conveys the risk of deploying a market rationality from which other actors in the debates want to escape when criticising GDP. While monetization of regrettable costs facilitates the evaluation of their short-term compensation, it introduces a market dynamic that assumes that any damage can be compensated by money, eluding the irreversibility of some activities. In the case of unpaid work, monetization allows for effectively and symbolically valuing spheres of activity that are often ill-perceived or not considered. Such a money valuation could signal the institutional recognition of the positive externality engendered by unpaid work and, as a corollary, ease the access to financial support proportionally to the quantitative contribution of unpaid work to society (Luxton 1997). Nonetheless, such a way of accounting would imply the perpetuation of a market understanding of relationships and activities in a sphere that is basically not subject to such rules. Accounting for public services as part of the population's well-being constitutes a solid argument in favour of public intervention but not considering the outcomes (efficiency of the public sector and destination of the expenditures among sectors) does not ensure the system to be ecologically or socially sustainable. Finally, while leisure reflects a crucial aspect of quality of life, computing it as the opportunity cost of labour reduces the conception of spare time to a productivist vision, from which some actors in the current debates appeals to escape if the ecological limits are to be respected.

2.2 Does consumption necessarily lead to well-being? Can well-being be grounded in consumption?

The divergences of appreciations observed for each of these sub-dimensions lead us to question a more fundamental choice underlying the IEWB²¹: would the above-mentioned conflicting issues be as stringent if the present individual economic well-being was not based on consumption?

Indeed, even though the "consumption flows" dimension is the most explicit on the association between consumption and economic well-being, it is worthwhile noticing that consumption is underlying all the IEWB's dimensions, as we shall see it in details in the further sections. "Wealth stocks" are supposed to indicate whether current investments ensure future consumption. "Equality" indicates incomes inequalities and income poverty (in an index where incomes are indicated by "consumption flows"). "Economic Security" measures the risk associated with a loss in incomes.

This leads us to question the relevance of consumption in the quantification of economic well-being. In our view, the association of economic well-being to consumption suggests confusion between ends and means: why consuming? To respond to basic needs or because societies are anchored in consumerist logics where having is inextricably associated to being? What are the outcomes of consumption on people and on societies?

Such confusion between ends and means is not anodyne. If consumption remains a source of economic well-being in situations of relative deprivation, it appears clearer and clearer that the link between consumption and economic well-being should be questioned at least on two levels :

²¹ This discussion might be addressed to many other indicators, such as the Index of Sustainable Welfare (ISEW) and the Genuine Progress Indicator (GPI).

first, above a certain threshold of living standards and second, at a societal level, in spheres where consumption becomes the main medium of social identification and relations to others, that is, in consumerist societies.

At the interpersonal level, it has been shown for a very long time that consumption involves habit effects and social comparison. Both these factors imply a relentless upward revision of aspirations and create a perpetual frustration, giving rise to a perpetual *rat race* which does not increase well-being (Jackson 2009, Cassiers Delain 2006, Easterlin 1974, Veblen 1899).

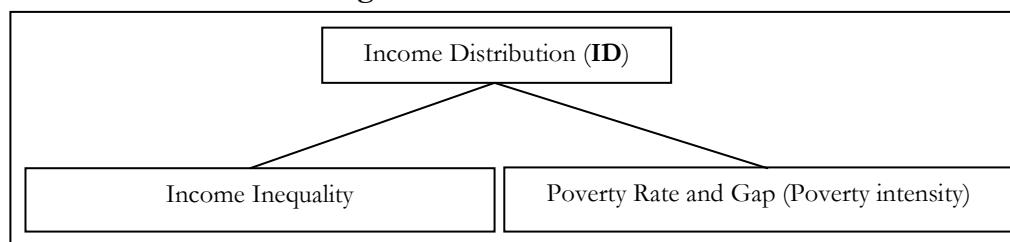
In a more structural perspective, as consumption becomes culturally over-determined and characterized by "an individualist mode of consumption that is dependent on the market, quantitatively insatiable, invasive, hedonistic, focused on novelty, using signs rather than things, and prodigal in its use of natural and human resources" (De Munck 2011:103), one shifts from consumption to consumerism. The latter raises a lot of critiques. Among other, doubt has been progressively shed on the desirability of the kind of life produced and reproduced by the consumption society, where consumerism becomes the symbol of alienation and homogenization.

Consumerism has also been deplored for its ecological impacts: consumption's growth is "*extravagant, wasteful, and self-destructive*" (de Munck 2011). This criticism concerns the management of scarcity, where the latter is "*broadened to encompass global ecological scarcity, which is barely accounted for in classical economics. The core argument of this critique is that development as it is currently practiced can be neither materially nor environmentally sustainable, since the type of consumption that gratifies the masses while offering equal access to wealth rapidly destroys the very natural resources that make production possible.*" (*ibid.*)

As the above-mentioned arguments suggest, more consumption does not necessarily give rise to more economic well-being. It can even negatively affect economic well-being both individually and socially. Basing an index of economic well-being on consumption therefore becomes questionable and alternative frameworks are to be investigated, as we shall do it in section 6.

3 PRESENT WELL-BEING AND HETEROGENEITY OF EXPERIENCES: INCOME DISTRIBUTION

" Would economic well-being remain the same, if a society in which everyone has \$500 income had a redistribution of income so that half the population had \$999 and the other half 1\$?Average income would remain unchanged, but the more equal society is likely to generate more aggregate utility" (Osberg and Sharpe, 2002: 303). For Osberg and Sharpe, economic well-being of the population is affected both by inequalities in the distribution of all incomes and by the situation of the least well-off that is, the extent of poverty.

Diagram 3. Income Distribution

Source: Authors' diagram on the basis of Osberg and Sharpe (2003: 10)

The index of income distribution is computed as follows:

$$ID = 0.75 * (LIM) + 0.25 * (Gini)$$

Where ID is the income distribution, LIM²² is the intensity of poverty ($LIM = LIM_{gap} * LIM_{rate}$, where LIM_{gap} is the difference between the poverty line and the average income of the poor population and LIM_{rate} is the poverty rate) and *Gini* is the Gini coefficient for after tax income.

These two sub-dimensions raise two specific issues which we shall treat in this section. First, while inequalities are one of the major reasons at the origin of GDP's criticism and thus appear as a crucial dimension to be taken into account, some actors in the debates consider that accounting for *income* inequalities is not an accurate – or at least sufficient – way to tackle disparities of access to resources for it remains enrooted in a consumerist logic (3.1). Second, the important weight of poverty in this dimension suggests a specific conception of social justice, which is questionable in regard of the arguments found in the "deep ecology" approach (3.2).

3.1 Income inequalities: an accurate way to tackle disparities of command over resources?

In the IEWB, inequalities of command over resources are quantified by income inequalities, measured through the Gini coefficient. The latter is a ratio, the value of which varies between 0 (complete equality) and 1 (complete inequality)²³. Inequalities of access to resources are one of the most important contemporaneous social issues which are not captured by GDP. Many alternative indicators include a distributional dimension based on the Gini coefficient. That is the case, among others, of the ISEW, GPI, and the HDI-I. Nonetheless, some actors wonder whether *income* inequalities are the most accurate way to apprehend the inequalities of command over resources.

As Baudrillard stated it already in 1970, focusing on income inequalities might be the wrong way to address the deeper problem of inequalities of command over resources, for it does not appeals for questioning the system in which those inequalities arise: "*Poser le problème en termes d'égalisation*

²² LIM means Low-Income Measure, whereby the poverty line is defined as a fixed proportion of the median income.

²³ More precisely, the Gini index measures the area between the Lorenz curve (which plots on the y axis the proportion of the total income of the population that is cumulatively earned by the bottom x% of the population) and the hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. (See <http://stats.oecd.org/glossary/detail.asp?ID=4842>)

consommatrice, c'est déjà substituer la quête des objets et des signes (...) aux véritables problèmes et à leur analyse logique et sociologique." (Baudrillard, 1996 [1970]: 62)

A redistribution system that would only concentrate on incomes would only tackle the "visible" inequalities, those that are objectively measurable through incomes, those that allow for distinguishing the "poor people" and "the others". These redistributive systems, in the name of equality, would actually contribute to *displace* inequalities by creating new spheres of discrimination: "*S'il y a de l'égalité (si pauvreté et richesse ne sont plus un problème), c'est précisément qu'elle n'a plus d'importance réelle. Ce n'est plus là que ça se passe : les critères de la valeur sont ailleurs. La discrimination sociale, le pouvoir, etc., qui restent l'essentiel, se sont transférés ailleurs que dans le revenu ou la richesse pure et simple*" (p.68, emphasis in original).

This perspective is highlighting: if consumption becomes a means of differentiation more than a means of satisfaction, one might wonder whether inequalities should be thought of only in terms of incomes and consumption.

Is this to say that *income* inequalities should disappear from the IEWB? Certainly not. This aspect of distribution is crucial. As Jackson (2009) notes it, "income levels speak directly of status and sometimes of authority, power and class as well. But, in addition (...) income provides access to the 'positional' or status goods that are so important in establishing our social standing". (p.76)

Nonetheless, if one aims at representing the degree of equality of *command over resources*, it is crucial to complete the income dimension by different types of dispersion measures. Indeed, inequalities are cumulative. This has to be considered and transposed into indicators. In that respect, considering inequalities in the non-monetary dimensions of quality of life, the Stiglitz report stresses that "each of these inequalities is significant in itself, which underscores the importance of avoiding the presumption that one of them will always encompass all the others." (p. 205). In terms of policy action and indicators, it is argued that "some of the most important policy questions for quality of life relate to how developments in one area affect those in others, and how developments in various fields are related to those in income. The consequences for quality of life of having multiple disadvantages far exceed the sum of their individual effects. Developing measures of these cumulative effects requires information on the "joint distribution" of the most salient features of quality of life (such as affect, health, education, political voice)" (p.217)²⁴.

The displacement of discrimination as well as the cumulative aspect of inequalities could thus be tackled through multidimensional measures of inequalities. Following a capability approach, many studies have been led to settle multi-dimensional distributional measures. In the field of poverty and well-being assessment in advanced economies, for instance, Balestrino (1996) analyzed whether a sample of officially poor people are functionings-poor (that is, in terms of education, nutrition or health failure), income poor, or both. Zaidi Burchardt (2005) focused on the deprivation of disabled people. Chiappero-Martinetti (2003) and Robeyns (2003) assessed gender inequalities in advanced economies. The Stiglitz report stipulates that: "Inequalities in quality of life should be assessed across people, socio-economic groups, gender and generations, with

²⁴ See OCDE 2011 for examples of multi-dimensional joint distributions.

special attention to inequalities that have arisen more recently, such as those linked to immigration." (Stiglitz 2009: 15).

In terms of indicators, the Millennium Development Goals are an interesting illustration of the willingness of considering the multidimensional aspects of inequalities and poverty. Tackling education, hunger, health and sustainability, these objectives respond to a comprehensive vision of inequalities and poverty²⁵. One can also mention the multidimensional poverty index, developed by the Oxford Poverty and Human Development Initiative (OPHI). "The MPI assesses the nature and intensity of poverty at the individual level, with poor people being those who are multiply deprived and the extent of their poverty being measured by the extent of their deprivations. The MPI creates a vivid picture of people living in poverty within and across countries, regions and the world. It is the first international measure of its kind, and offers an essential complement to income poverty measures because it measures deprivations directly" (Alkire and Santos 2010: 1).

In France various initiatives have been led in the sense of multidimensionality. Let us point out the "BIP-40" (Barometer of Inequalities and Poverty), conceived by the French network "Réseau d'alerte sur les inégalités" (Alert Network on Inequalities). This indicator encompasses six major dimensions: health, housing, education, justice, labor and employment, and incomes. Each of them is evaluated by variables collectively chosen, since they express gender, social and intergenerational inequalities, and also because they matter in the French debates and appears to reflect major contemporaneous social problems. Within the aggregation process, various dimensions are divided in sub-dimensions which allow for enlarging a multidimensional approach of poverty and inequalities.

In line with the BIP-40, a regional index of social health (RISH) has been developed (Jany-catrice and Zotti 2008). This RISH has been simplified, allowing for easiest interpretations and for comparisons of the different regions. This index encompasses the 12 dimensions of the national BIP-40. Each dimension is represented through one or two variables. The variables are chosen according to working group discussions, enhancing the democratization of the index.

3.2 Tackling poverty: what conception of social justice?

By giving to the intensity of poverty three times the weight of inequalities, the authors espouse a Rawlsian conception of redistribution. One could argue that the Rawlsian influence of the IEWB can be reduced by giving this dimension a smaller weight within the index. Nonetheless, whatever the weight of this dimension in the IEWB, its internal construction (whose the weighting scheme is not open to changes) reflects an approach of social justice based on the *maximin* principle. It appears important, in our view, to think of this conception of justice, beyond the specific case of the IEWB, for it is at the origin of major anti-poverty policies.

According to Rawls's second principle of social justice, "Social and economic inequalities are to satisfy two conditions. First, they must be attached to offices and positions open to all under

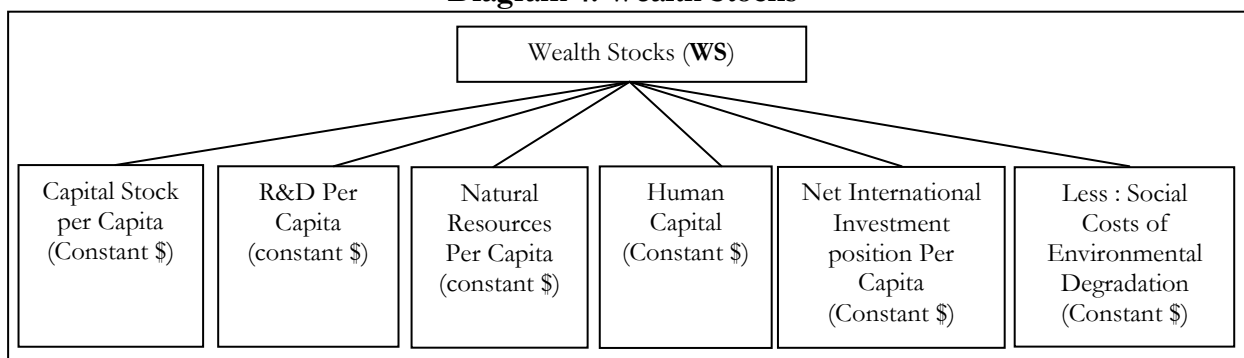
²⁵ See <http://www.un.org/millenniumgoals/> for more details.

conditions of fair equality of opportunity; and second, they must be to the greatest benefit of the least advantaged members of society" (Rawls, 1971: 302). This ethical posture raises questions as soon as one accounts for ecological limits. Since this issue refers to the global coherence of the index, we just evoke it here to study it in detail in section 6.

4 ECONOMIC WELL-BEING OF A REPRESENTATIVE AGENT OVER TIME : WEALTH STOCKS

"If individuals alive today care about the well-being of futures generations, measurement of trends in current well-being should include considerations of changes in the well-being of generations yet unborn. This consideration of future generations could also be justified on the grounds that a concept of "society" should include both present and future generations." (Osberg and Sharpe 2002: 10).

Diagram 4. Wealth Stocks



Considering that "the well-being of future generations depends on their inheritance of real productive assets, broadly conceived to include natural and human resources as well as physical capital stock" (Osberg and Sharpe 2002: 300), the IEWB's authors include a stocks dimension in their indicator. This dimension is computed as follows:

$$WS = K + RD + HC + NR - D - ED$$

Where WS are total wealth stocks, K is the total net capital stock (including non resource capital, housing, government owned fixed capital and durable goods owned by consumers), RD is the net stock of R&D fixed intangible capital, HC is human capital, NR is the total real value of natural resources, D is the net foreign debt and ED is the greenhouse gas emission costs. All these variables are *per capita* and expressed in constant prices.

Though accounting for stocks is one of the major demands underlying the debates on new indicators of progress, the way this dimension is built is far, however, from reaching a consensus among the actors advocating the consideration of nature in the current debate. As for the Adjusted Net Savings, this dimension of the IEWB, though not formalised as the ANS, carries a particular conception of sustainability. Since we have made a deep analysis of the ANS in Thiry and Cassiers (2010), we recall here the major observations to be done for this dimension.

End of sustaining stocks – In the IEWB, the ultimate end of maintaining stocks is to ensure well-being across time, the latter being understood as the insurance of a continued flow of consumption. "These real stocks will determine whether a society is on a long-run sustainable

trajectory of aggregate consumption" (Osberg and Sharpe 2002: 300). Associating well-being and sustained consumption flows across time refers to a conception of sustainability defined as the non declining value of utility (Pezzey 1992). It will be worthwhile to keep this specific conception in mind in section 6, where we think of the global coherence of the approach underlying the IEWB.

Substitutability between various forms of capital – Expressing all these forms of capitals in money terms and summing them up implicitly suggests that they are substitutable. Such a computation does not prevent any excessive use of resources, for ecological limits are not properly accounted. For instance, an increase in the R&D stock or in human capital, if it more than compensates a loss in the value of the stock of natural resources, is liable to increase the value of the "wealth stocks" dimension.

Pricing nature – Pricing assets such as natural resources introduces an instrumental relation to nature, where "environmental resources that do not qualify as economic "assets" (such as air or biodiversity) are thus excluded from the measurement of degradation." (Stiglitz *et al.* 2009: 92)²⁶.

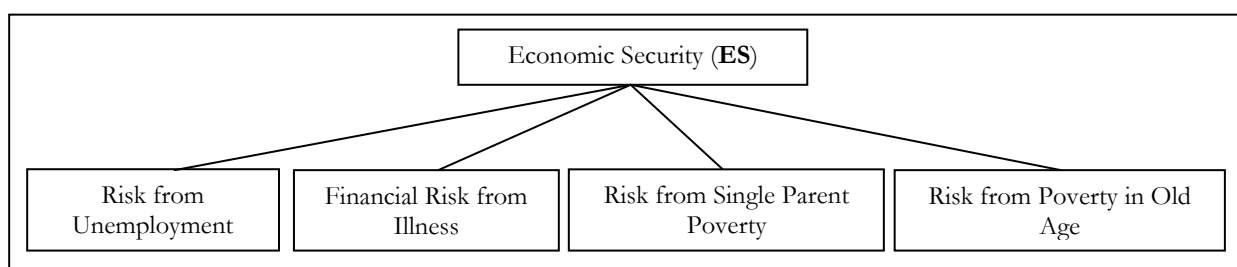
Human capital – Considering human capital, the IEWB holds a productivist approach of human wealth. In this vision, any increase in education expenditures should lead to the improvement of productivity of the human resources. Such a conception is strongly related to the objective of economic growth, which is questioned by a growing part of the stakeholders to the debates on going beyond GDP.

In this wealth stocks dimension, which carries a weak sustainability approach, investment and growth remain at the heart of sustainability. Well-being across time is understood in a productivist approach where increasing educational capital first serves the future opportunities of consumption of produced goods and services. While an agreement appears on the need for considering sustainability, the way sustainability is quantified in the IEWB (and in many other indicators) is positively appreciated by some for it allows going on growing in a "green" way, while it is rejected by others for it avoids properly considering the issue of respecting ecological limits (Martinez-Alier 1987, Daly 1999, Daly 1968) and remains anchored in a productivist logic which appears untenable to them.

5 ECONOMIC WELL-BEING OVER TIME AND HETEROGENEITY OF EXPERIENCES : ECONOMIC SECURITY

In the IEWB, economic insecurity is conceived as "the anxiety produced by a lack of economic safety – i.e. by an inability to obtain protection against subjectively significant potential economic losses (...)" (Osberg and Sharpe 2009: 7). In Osberg and Sharpe's conceptual framework, this dimension refers to the frame future/heterogeneity of experiences of all citizens.

²⁶ We have treated this question in detail in Thiry and Cassiers (2010).

Diagram 5. Economic Security

The dimension is computed as follows:

$$ES = \alpha(\text{UR}) + \beta(\text{ILL}) + \gamma(\text{SPP}) + \delta(\text{Old})$$

Where α , β , γ and δ are the objective weights for the sub-components of economic security, such that $\alpha + \beta + \gamma + \delta = 1$ ²⁷, and where UR reflect security from job loss and unemployment (UR=Employment rate*ratio of unemployment Insurance beneficiaries to the number of unemployed), ILL is security from illness (ILL = Private expenditure on health/disposable income), is security from single parent poverty (SPP=Rate of divorces(as proportion of all families)* poverty intensity for households headed by single female parents) and Old is security from poverty in old age (Old = poverty rate of old persons* Intensity of the average poverty of old persons).

Osberg and Sharpe's core hypothesis "is that changes in the subjective level of anxiety about a lack of economic safety are proportionate to changes in objective risk" (Osberg 2009: 19).

Let us note that the computation of risk from unemployment has recently been modified by the authors. Originally, the economic risk from unemployment was measured as "the probability of becoming unemployed (proxied by the unemployment rate) multiplied by the fraction of wages not replaced by unemployment insurance benefits"(Osberg 2009: 6). According to the authors "this probabilistic approach ignored any non-economic costs to non-employment, and implicitly assumed it was irrelevant which component of the compound probability of financial loss changed – all that mattered was the “bottom line” of financial loss due to unemployment" (Osberg and Sharpe 2009: 19).

New literature on self-reported happiness or life satisfaction has shown "that the risk of unemployment imposes substantially greater disutility than the mere financial losses associated with unemployment" (*ibid.*: 20). Therefore, the computation has been revised : "in the aggregation of the overall employment security index it is now given a weight of four-fifths, compared to a weight of one-fifth for the financial protection variable – which represents a significant change from the earlier methodology where the unemployment rate and unemployment benefit system were weighted equally". (*ibid.*: 20).

²⁷ α is the normalized proportion of the population aged 15-64 in the total population, β is the normalized proportion of the population at risk of illness ($\neq 100\%$), γ is the normalized proportion of the population comprised of married women with children under 18, δ is the normalized proportion of the population in immediate risk of poverty in old age.

5.1 Critical analysis of the dimension by the authors themselves

"Insecurity in Osberg's work is conceived as the degree to which an individual or household will lose financially if hit by one of the named risks. It is thus closely related to mainstream indices of personal income and expenditure. Although it is framed in money terms, however, insecurity causes loss of well-being additional to that of mere poverty." (Osberg 2009: 6)

This security dimension constitutes one of the major innovations brought by the IEWB. Since economic security conditions the access to resources in the future, it is important to take it into account in an index reflecting present and future well-being. As Méda notes, this dimension allows us to realize the strong contribution of economic insecurity from unemployment and from single-parenthood to the low scores of the IEWB. This enlightens us on the lacks of public policies: the message transmitted is that unlike what is too often said, policies in charge of major risks do increase economic well-being, while they appear mainly as a cost in the GDP (Méda in Sharpe et al. 2003).

Though very innovative, this dimension is subject to possible improvements. Computing the IEWB for France, Jany-Catrice and Kampelmann (2007) question the consistency of quantifying the risk of unemployment as the product of gross replacement rate and employment rate: "*Dans les débats autour de la question du chômage français, l'indicateur central des jugements reste incontestablement celui du taux de chômage. Or, l'IBEE ne se centre que sur le risque économique du chômage vécu par ceux qui sont en emploi. Ce choix, qui peut être pertinent dans le contexte canadien, l'est nettement moins dans le cas français.*" (Jany-Catrice and Kampelmann 2007:127).

Osberg (2009) himself has stressed possible improvements. The author points out various questions with respect to the four aspects of the economic security dimension: security in the event of unemployment, of sickness, of old age and of single parenthood. Among other possible progresses, Osberg points out that: "Our index of "economic security" has emphasized security against the risk of poverty, and the IEWB should be interpreted in that light. However, the peculiar nature of the current recession has also raised the question as to whether a broader and more complex measure of „economic security“ among the non-poor also deserves some consideration." (*ibid.*)

Since Osberg (2009) already points out a lot of possible improvements, we shall rather focus on one aspect of "economic security" which has not been questioned in Osberg (2009).

5.2 What risks are considered?

Since all the risks constituting this dimension concern individual trajectories, one might wonder why they appear in table 1 at the junction between "heterogeneity of experiences of all citizens" and "future". While the latter dimension seems obvious, this is not the case of the former. What does "diversity of experiences" exactly mean? It is often perceived by commentators of the IEWB as a way to grasp the "collective" dimension of economic well-being, for economic security refers to collective mechanisms of insurance.

In our view, however, though these insurance mechanisms are crucial aspects of economic security, important collective risks are not tackled in the IEWB and "economic security" should be seen a dimension. On the social level, if unemployment (and the anxiety it engenders) is related to the flexibilization of the economic system, is it enough to add a dimension reflecting the financial and psychological impacts of unemployment in a broader indicator which relies on the economic system – more and more at the source of labour's quality degradation through flexibilization – without questioning it further? At the ecological level, what about the risks resulting from current ecologically unconscious behaviours? Since these questions refer to the index' global coherence, we shall treat them in section 6.

What should be stressed at this stage is that the risks are understood in this dimension as risks of monetary poverty. As in section 3.b., such a focus on income variables might be questioned and will effectively be questioned in the next section.



Before questioning the IEWB's global coherence, we synthesize what have been said at this stage of the paper. Sections 2 to 5 have shed light on a series of appreciations of the IEWB (applicable to indicators similarly built) that were in tension. These tensions result from the gap between the axiological message transmitted through the accounting of various variables, and the normative impacts of the way they have been computed within the indicator. Table 2 below offers an outline of the major tensions observed for each dimension.

Table 2: Synthetic overview of sections 2 to 5

IEWB's Dimensions	Underlying Conceptions	Measure options	Normative Impacts: tensions observed between various interpretations (often conflicting)
Consumption flows	Present well-being of a representative agent is determined by access to resources, via consumption.	General observation	Monetization of effective per capita consumption flows → Consumerist approach of well-being vs. consumption not necessarily leading to well-being
		<i>Regrettable costs</i>	Compensation need vs. no consideration of irreversibility
		<i>Unpaid Work</i>	Symbolic and effective recognition of misperceived activities vs. risk of extending market to a sphere not ruled by economic rationality
		<i>Public expenditure</i>	Considering the impact of public services on people's well-being vs. no consideration of effective outcomes
		<i>Leisure</i>	Considering the pivotal role of leisure on well-being vs. definition of leisure as the opportunity cost of labour → productivist vision
Income Distribution	Present well-being and diversity of experiences of all citizens is affected by inequalities of access to resources and by poverty	<i>Income inequalities</i>	Need for accounting the disparities of individual situations vs. restrictive overview of inequalities; could be enlarged by alternative measure choices more accurately tackling determinants of inequalities
		<i>Poverty intensity</i>	Rawlsian conception of social justice vs. accounting for ecological limits (see section 6.d.)
Wealth Stocks	Well-being of a representative agent over time depends on inheritance of real productive assets;	<i>Ends of sustaining stocks</i>	Ensuring future flows of consumption vs. jeopardizing the possibilities of production/consumption in the long-term
		<i>Substitutability between capitals</i>	Ecological limits : weak sustainability vs. strong sustainability
		<i>Pricing Nature</i>	Valuing nature vs. instrumental relation to nature
		<i>Human capital</i>	Human capital vs. human wealth
Economic Security	Economic Well-being over time and diversity of agents; affected by future uncertainties	<i>From illness, poverty in the event of old age, unemployment, single parent poverty</i>	Osberg's suggestions for improvement (2009) Focusing on income poverty risks vs. considering broader collective risks (on the social and ecological levels)

6 QUESTIONING THE GLOBAL COHERENCE OF THE IEWB

Osberg and Sharpe show a willingness to consider the interrelations existing between most ecological, economic and social challenges : "although the importance of "sustainability" and intergenerational inheritance has long been a refrain of the environmental literature and although international debates on development and social policy increasingly recognize the importance of distributional issues—particularly poverty and social exclusion— we argue that these issues should not be considered in isolation, as if tradeoffs between them might not matter." (Osberg and Sharpe 2005: 312). This intention appears fruitful given the new challenges to be faced. Nonetheless, one might wonder whether the IEWB's methodology – and the methodology of indicators similarly built – is liable to coherently articulate these various issues in one single composite indicator.

Indeed, sections 2 to 5 have highlighted the normative scope of quantification choices and the fact that this could give rise to diverse – sometimes conflicting – interpretations. Concomitantly, we suggest that this diversity of interpretations could result from some conceptual fuzziness related to the hypotheses underlying the IEWB. The latter might encompass some deficiencies for building an indicator pretending to integrate economic, social and – though to a less extent – ecological issues in a coherent way.

We study here some of these deficiencies more in depth and suggest conceptual paths liable to bring more coherence in the accounting of economic, ecological and social issues.

6.1 Diversity of experiences and average outcomes: what about asymmetry?

From the analysis of both consumption and income distribution dimensions, a methodological question arises: is it relevant to add a dispersion dimension to an average consumption dimension to reflect the diversity of situations? Indeed, through such a computation, more inequalities accompanied by more consumption would give the same net variation as fewer inequalities accompanied by less consumption, though the realities reflected would be totally different. Could an alternative way of combining consumption and inequalities better reflect this asymmetric relation, where "plus by plus" is not the same as "minus by minus"?

This questions the consistency of linearly aggregating variables that are fundamentally not substitutable²⁸. Bosello *et al.* (2011) explore the properties of the Non-Additive Measures approach (NAM) and consider that it is "sufficiently general to cover a lot of preference structures of the Decision Makers (also called DM) and allows for the modeling of many types of interactions going from the compensative to the substitutive attitude of the DM. The first indicates that her/his satisfaction is high **only if all the criteria are satisfied** (...). The second that her/his satisfaction is high **if at least one of them is high**"(Bosello et al. 2011: 21, emphasis added).

²⁸ In the present case, a variation in average outcomes can uneasily compensate for a variation in inequalities; at least, the foundation of such a possibility of substitution should be explicitly questioned.

The NAM appears to us a fruitful way to improve the combination of various variables and could be applied to the IEWB.

Practically, the NAM consists of asking the respondents "to weight each possible combination of indicators, but considering just their best or worst level. These [are] not defined in quantitative terms (...). It is up to the respondent to "imagine" what "best" and "worst" mean in each case. A weight of "0" corresponds to the WORST case where all indicators in a node have the worst performance, and "100" to the BEST one where all indicators have the best performance". Furthermore, the respondents are required to respect the *monotonicity criterion* in weights assignment. This means that "the weight of a coalition cannot be less than the lowest weight of each sub-coalition included" (Bosello *et al.*).

Here is an illustration helping us to understand the method:

SUSTAINABILITY			Weights	Normalized weights	Möbius transformation
Economic	Social	Environment			
Worst	Worst	Worst	0	0	0
Best	Worst	Worst	20	0.2	0.2
Worst	Best	Worst	50	0.5	0.5
Worst	Worst	Best	30	0.3	0.3
Best	Best	Worst	$x \geq 50$ e.g. 60	0.6	$0.6 - (0.2 + 0.5) = -0.1$
Best	Worst	Best	$x \geq 30$ e.g. 50	0.5	$0.5 - (0.2 + 0.3) = 0$
Worst	Best	Best	$x \geq 50$ e.g. 90	0.9	$0.9 - (0.5 + 0.3) = 0.1$
Best	Best	Best	100	1	1

Source : Bosello *et al.* (2011)²⁹

In the case of IEWB, such a method would allow us to avoid assigning to "- by -" the same value as to "+ by +" and would better take advantage of the interesting initiative of including dispersion in the index.

Bosello *et al.* (2011) refer to DM opinions in the setting of the weights. One might envisage broadening these criteria of weights assignment beyond surveys. We think here of a set of principles that would emerge from a clearly defined ethical/conceptual framework that would imply the respect of specific value hierarchies regarding the interaction between society and the ecosystem, such hierarchies determining the weights of the various coalition of variables³⁰.

²⁹ "The Möbius transformation (Grabisch, 2003) is applied to take into account synergic and redundancy interactions among indicators. If the Möbius weight is null, no interaction exists (...) if it is positive there is a synergy, if negative, a redundancy." (Bosello *et al.* 2011: 24)

³⁰ This ethical/conceptual framework is the object of another ongoing paper.

6.2 Individual well-being and inequalities: overcoming a consumerist perspective?

Section 2 has shown that consumption did not necessarily lead to well-being. It was argued in section 3 that tackling inequalities in terms of incomes and/or consumption was not sufficient to undertake the broader problem of discriminations and even indirectly contributed to displacing discrimination by leading the decision-makers to focus on a specific type of inequalities. The same observation could be made with regards to economic security (section 5). It appears therefore necessary to search for an alternative conceptual framework that could combine well-being and social justice in a way such that their concomitant accounting does not contribute to a mutual cancellation, in other words, in a way which is not eventually "detrimental" to them.

The capability approach appears interesting to conceive command over resources in a way that could enlarge a consumerist perspective and overcome the problems it raises. At least four reasons explain, in our view, the accuracy of the capability approach in the search for a new conceptual framework of indicators of progress.

Enlarging the traditional economic understanding of well-being – The capability approach appears to be a fruitful way of emancipating the concept of well-being from a consumerist approach for it "challenge[s] a more narrow economic efficiency-rationale by pointing at the (unintended) side effects of particular policies on people's capabilities" (Robeyns 2008:7). Along the way, the capability approach explicitly carries a normative scope. "The capability approach is a broad normative framework for the evaluation and assessment of individual wellbeing and social arrangements, the design of policies, and proposals about societal change. It can be used to empirically assess aspects of an individual's or groups' well-being, such as inequality or poverty" (*Ibid.*: 6). This normative aspect does not imply that the capability approach imposes a vision of good life. It rather questions the conditions of its possibility (in all its possible declinations), even if some authors (Sugden 1993; Stewart 2001; Nussbaum 2003) suggest a list of basic capabilities.

This potentiality of the capabilities responds to Osberg and Sharpe's desire of enlarging the notion of well-being, in a sense that could overcome the criticism of a "too consumerist" anchorage of the IEWB. Knowing the various negative externalities of consumerism on the social and environmental fields, this might contribute to enhance the internal coherency of the indicator.

Operational scope – "The capability approach has also been used to discuss and empirically assess policies, such as educational policies or the principles for welfare state reform. For example, Schokkaert and Van Ootegem (1990) showed that compensating the Belgian unemployed for their income-loss does not help in alleviating all their functionings deprivations" (Robeyns 2008:5). Let us note that this is in line with the new methodology of the IEWB in its "security from unemployment" dimension.

This operational concern of the approach (see Kuklys and Wiebke 2005) appears empirically applicable to very different entities: "as the American Human Development Report itself confirms, the human development concept is as relevant and applicable to the home of the

world's largest economy as it is to the home of the smallest" (SSRC, 2008: 2). This could enhance the comparability of the data between various entities, which is of interest for the construction of a highly comparable IEWB.

Democratic openness – This approach is liable to respond to the democratic stake raised by indicators' construction. In that respect, Alkire (2002) and Wolff and de-Shalit (2007) offer interesting illustrations of the application of qualitative methods in fields such as deprivation in affluent societies. Such participative techniques, very compatible with a capability analysis, are liable to respond to the democratic imperative underlying the construction of new indicators (see FAIR 2011).

Osberg and Sharpe are extremely concerned with the democratic aspect of the IEWB. As we mentioned earlier, they therefore leave the weighting scheme open to any user/commentator of their index. If this is already a positive step toward democratization of the index computation, it could be broadened through the above-mentioned participative methods. In this case, people's opinion would not only be expressed on hierarchies of weight *within* preexisting categories but on the categories themselves, along the way enhancing the citizens' influence on what should appear in an index of economic well-being.

Correlations between life satisfaction and capabilities – Anand *et al.* (2005) have empirically shown the relation between capabilities and well-being (defined as life satisfaction). Certainly, difficulties remain: "One problem with the capability approach is that of identifying suitable empirical measures which can be used in its support with the result that its relevance has been questioned. Srinivasan (1994), for example, argues that the only conceptually appropriate metrics for valuing functionings and capabilities have to be personalized prices or values, namely, sets of values that are specific to the situation, location, time and state of nature" (Anand *et al.* 2005: 6).

In the specific case of building a composite indicator like the IEWB, the question of how to aggregate capabilities arises. While authors like Nussbaum consider it impossible to substitute between capabilities (each capability must be considered for itself), the empirical work of Anand *et al.* (2005) has shed light on the fact that some capabilities matter more than others and could therefore be the focus of indicators.

In terms of indicators, capabilities have given rise to a large range of initiatives, namely gathered under the multiple extensions of the HDI³¹. Nonetheless, even though capabilities constitute a fruitful path for considering well-being and social justice in a more coherent way than an approach centered on consumption, it is not properly aimed at integrating the question of sustainability. This leads us to investigate further the way sustainability is quantified in the IEWB.

³¹ See Dervis *et al.* 2011, Stanton 2007, Robeyns 2005.

6.3 Is sustainability, conceived as non-decreasing utility, "really" sustainable?

Even though the stock accumulation dimension is not mathematically formalized in the IEWB, it appears in line with the idea that a sustainable investment results from the constrained inter-temporal utility optimization problem of a representative agent. To that respect, let us remind one of the principles to which the authors refer to define economic well-being: "(3) each person has a utility function in which both personal consumption and bequests to future generations are valued" (Osberg and Sharpe 2002: 294). Such a rationale applied to an indicator raises – at least – two questions.

Substitutability: what pricing scheme? – Summing up various determinants of well-being (among which nature) within the same utility function comes to deny the non-commensurability of nature and economic variables: there is a tacit hypothesis of substitutability between the different determinants of utility (monetarily evaluated).

This weak sustainability approach, which assumes that human knowledge can engender technological innovations liable to compensate for the depletion of nature resulting from growth, is broadly criticized by the advocates of deep ecology and the ecological economists.

This criticism is often confronted by the following theoretical argument of the tenants of "green growth": substitutability between forms of capital is not the source of the problem regarding the non-respect of ecological limits. Theoretically, it is possible to calibrate the model such that it respects the Hotelling rule, according to which, in an efficient exploitation of non-renewable resources, the percentage change in net-price per unit of time should equal the discount rate in order to maximize the actualized value of resource, or any other rule in regard of which prices become infinite while resources are being depleted.

But this argument only functions theoretically under certain conditions³². In reality however, resource prices have been proved underestimated with respect to the Hotelling rule (Ferreira and Vincent 2005, Stiglitz *et al.* 2009). As soon as theory is applied to an indicator, which is empirical by nature, in a reality where resources are underestimated, such a theoretical basis implies that ecological limits are *de facto* not considered, for their price allows for over-depletion.

Non-decreasing utility: what constraint? – Thinking of sustainability as non-decreasing utility across time implicitly assumes that utility maximization coincides with ecological sustainability, that is, non-decreasing stocks of resources. Such an assumption is only possible under a well-defined constraint and under the assumption that the agent is perfectly informed on the impact of its own behaviour on the environment and is ontologically altruistic towards others and nature. If such an assumption is plausible theoretically, it raises far more doubts (and rather sounds as a utopia), on the empirical level.

³² Gaudet (2007) explore the slope of the resources price path in different market structures. He shows that as soon as imperfections are introduced (he studies monopoly and oligopolistic competition respectively), the price path is flatter than in perfect competition.

There again, in the debates, in front of the criticisms according to which non-decreasing utility does not necessarily imply non-decreasing stocks of resources, many economists respond that non-decreasing utility and non-decreasing stocks are perfectly compatible as long as the constraints are well-defined so that a critical resources thresholds are respected. But once applied to an indicator, intrinsically at the hedge between theory and empirical experience, such an argument is not credible anymore: many informational imperfections prevent us from knowing the resource threshold to be respected, thus from correctly defining a constraint, and human behaviors' complexity cannot coincide with the theoretical rationality of a representative agent.

These two sub-questions (what prices? what constraints?) shed doubt on the consistency of considering sustainability in a theoretical way that does not empirically allow for considering ecological limits. It appears from our analysis that an indicator that would pretend to tackle sustainability could not do it on the basis of a utility function. The informational lacks and the inability of the markets to generate prices sufficiently high to ensure resources preservation appeal to consider various alternative options of quantification.

In that respect, it is often suggested that we create accounting prices. But the degree of uncertainty surrounding these prices prevents any consensus from emerging (Stiglitz *et al.* 2009). Another option which is more and more investigated consists in abandoning the money accounting in favor of physical accounting (though this does not prevent the informational lacks in terms of resources). Unlike money which can be infinitely created, physical units are limited. This *de facto* implies the consideration of the ecosystem limits when accounting for the impacts of human activities on nature. Footprints (ecological, carbon, water, etc.) are the most famous physical indicators. In favor of this way of accounting, ecological economics appears an interesting alternative framework. In that perspective indeed, the question of an ecological economy is first and foremost a question of size rather than a question of composition or of allocation. Ecological limits are thus at the heart of the approach and conceived as conditioning the possibility of any human activity³³.

6.4 The *maximin* principle and the nature: are they compatible?

Can a single composite indicator coherently account for both social justice in a perspective based on the *maximin* principle and ecological limits? Our analysis of the IEWB shed light on some incoherence that might arise according to the way social justice and nature are thought of and quantified.

According to Rawls's second principle, social and economic inequalities are to satisfy two conditions, one of them being that "they must be to the greatest benefit of the least advantaged members of society." (Rawls 1971: 302). In an index aiming at reflecting both social justice and sustainability, this second condition, the *maximin*, is to be revised.

³³ We study in detail the contribution of ecological economics in the construction of new indicators of progress in another ongoing paper.

As a matter of fact, according to that principle, a situation A where the richest own 100 units of wealth and the poorest own 4 units is preferred to a situation B where the richest hold 5 units of wealth and the poorest only 3. This conception of justice broadly sustains the anti-poverty policies based on economic growth. However, once the ecological limits are at stake, that principle becomes problematic. If we come back to the abovementioned example: the situation A implies the production of 104 units of wealth while the second only implies 8 units. Given the impossibility of absolute decoupling, that is, absolute decrease in resources use while production increases (and thus while economic growth occurs), such situation A is not necessarily preferable to B according to a sustainability criterion.

In other words, as Szoc (2011) rightly mentioned, once the productivist compromise that allowed for the illusion of an absolute decoupling appears broken, resources distribution raises back deep conflicting issues. If current inequalities, though at the advantage of the least well-off today, jeopardize the future distribution of resources by eroding the future capacity of resources to flourish again, such inequalities finally jeopardize the conditions of possibility of future "beneficial" inequalities to happen. Such an integration of the ecological limits appeals for the elaboration a new principle of justice.

Such an ethical innovation is complex to reach. As Flipo (2009) stresses it, when considering ecological and social inequalities, "the challenge raised by the articulation of ecological inequalities and social inequalities is complex because the discussion bears both on the definition of what is good and of what is bad (...) and the way good and bad are distributed"³⁴ (p.1). While economics and social issues are interdependent of a common vision of the world, where the former refers to management, accounting, etc. and the latter to employment, unions, labor division, etc., ecology belongs to a distinct register: "Justice theories only treat "justice", but seldom "ecological justice": the article "justice" of the Moral and Ethic philosophy dictionary does not even evoke it"(Flipo 2009: 3).

In terms of indicators, the point is to circumvent compartmentalizing social and ecological issues, in order to avoid that "justice principles" be mobilized at the cost of the environment, in the name of an implicit hierarchy between environmental and social issues. It is a question to avoid the kind of situations illustrated by Aubrée and Bonduelle (2011:7) where the Constitutional Council of France has mobilized an argument founded on social equity to block a project of energy taxation.

In a composite indicator such as the IEWB, a conception of justice that would inclusively integrate social and ecological issues would imply valuing the mutual impacts of consumption and investment on one another. The methodology should allow for changing the relative value of one dimension according to the size of the damage a variation in that dimension caused to another.

In that respect, the NAM approach presented in section 6.1 once again appears fruitful. In this case, it would not be a question of combining average outcomes and dispersion of outcomes, but

³⁴ "Le défi posé par l'articulation des inégalités écologiques et des inégalités sociales est complexe en ce que la discussion porte tant sur la définition de ce qui est « bien » et de ce qui est « mal » (...) que sur leur répartition."(p.1)

a question of consumption and sustainability. However, at the difference of what was said in 6.1, since sustainability depends on uncertainty about the impact of human behaviors of the ecosystem, decision-makers' opinions are not sufficient – even not accurate – to assign weights to coalitions of indicators.

7 CONCLUSION

Our analysis has aimed at offering a systematic view of the various normative questions raised by the computation of the IEWB that were liable to raise conflicts of values between the users/commentators of this index. The major computational aspect we pointed out is the gap between the axiological message carried by the fact of integrating various dimensions and the axiological implications resulting from the computation method of these dimensions.

While the fact of taking inequality, wealth stocks or economic security into account responds to various criticisms addressed to the GDP, the *way* these dimensions are computed gives rise to normative impacts that might appear in tension with the initial aim underlying the integration of such dimensions. Table 2 is a synthesis of these tensions between the *explicit* values reflected in the intentional choice of the dimensions encompassed in the IEWB and the *implicit* normative impacts resulting – often unintentionally – from the methodological and theoretical apparatus that originated their computation.

First, while the IEWB aimed at responding to the demand for integrating outcomes, it makes it through a consumption flows dimension. We have shown however that consumption does not necessarily lead to well-being and can generate outcomes that should not be accounted positively (social comparison, discrimination, etc.).

Second, while the IEWB integrates a distributional dimension, we have seen that doing it through income inequalities was not sufficient to capture the inequalities of command over resources and indirectly tended to displace discrimination.

Third, while the IEWB accounts for stocks, the latter are computed on the assumption of substitutability of different kinds of capital. It does not therefore integrate the ecological limits though these limits are at the origin of the claim for stocks accounting.

Besides these conflicting appreciations observed for each dimension separately, section 6 has shed light on the fact that the various dimensions of the index could enter in conflict with one another in the total valuation of the index, implying a lack of global coherence.

We have seen in section 6.1 that though more consumption accompanied by more inequalities reflects a very different evolution than less consumption together with less inequality, the IEWB does not reflect this contrast quantitatively, therefore shedding some fuzziness on the interpretation of the global index.

Section 6.2 has shown that the central place of consumption in the index does not emancipate economic well-being from a consumerist perspective which is though detrimental to social

cohesion and to nature. On the social level, consumerism is a source of discrimination. The latter is in tension with the "income distribution" dimension that aims at positively valuing a higher degree of equality. On the ecological level, consumerism entails various ecological damages, while the wealth stocks dimension aims at quantifying the damages caused, among others, by consumerism.

In section 6.3, we have stressed that sustainability, in the IEWB, is a matter of utility. Sustainability is conceived as the insurance of a sustained well-being, the latter being operationalized through consumption flows. We have shown that such a conception does not ensure the ecological limits to be respected as soon as the reality does not respond the theoretical hypotheses on prices and constraints. If sustained consumption – and underlying production – jeopardizes the survival of the ecosystem, which eventually conditions any possibility of life – and thus of consumption – in the future, this conception of sustainability appears meaningless and intrinsically contradictory in its terms³⁵.

Eventually, section 6.4 sheds light on the fact that a conception of social justice based on the *maximin* principle intrinsically requires growth while growth is broadly denounced in the debate on going beyond GDP as being detrimental to the nature and, to a certain extent, to social cohesion (rat races due to positional goods, social comparison, discrimination, etc.). This is in tension with the "wealth stocks" dimension supposed to account for sustainability and with the "equality dimension" which is aimed at tackling social cohesion.

Given this lack of coherence *within* and *between* the IEWB's dimensions, we suggest that at least two major conceptual postures should be questioned: first, the fact of founding the indicator on utility, which implies methodological individualism and commensurability between the various determinants of well-being; second, the reliance on growth, while growth appears problematic on the ecological level and, where unequal and alienating, on the social level.

Osberg and Sharpe's initiative has the great merit to have been very innovative at the time of the IEWB's elaboration. The authors' concerns for social and – to a less extent – sustainability issues are to be saluted. However, the IEWB's dimensions are quantified according to a conceptual apparatus that maintains the authors' innovative initiative a prisoner of its methodological and conceptual limits. Emancipating the authors' initiative thus requires referring to a new conceptual framework. We suggest that the combination of ecological economics and the capability approach is liable to provide a more coherent framework than the one currently underlying the IEWB, for these approaches rely neither on growth nor on utility as guiding individual rational choices.

This is a major conclusion of our analysis: if an indicator or set of indicators has to become the new milestone for public policies, it could only reach global coherence if it is not built on categories that encompass factors at the origin of the current measures' criticisms. Otherwise, notwithstanding the good intention underlying it, it won't be able to properly integrate the social

³⁵ This opens up a broad questioning on the contribution of indicators' analysis, through their specific epistemological position at the edge of theory and of empirical experience, in the criticism of weak sustainability. It is the object of an ongoing paper (to be the last chapter of my PhD thesis).

and ecological challenges it pretends to tackle. There is a need for a change in paradigm. Decision-makers should be aware of this in order to start a transition towards a beyond-GDP era.

The question then is whether such a change in paradigm would still allow for building an index of *economic* well-being. Separating *economic* well-being from global well-being reflects a conception of the "economy" and of its relation to society and to the ecosystem that should deeply be revised if the new ecological and social challenges are to be tackled. This opens a new research question that we shall investigate in a later paper.

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