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**PERSPECTIVES ON THE QUALITATIVE
AND QUANTITATIVE APPROACHES
OF THE ECONOMIC GROWTH IN RELATION
WITH THE CONCEPTS OF WEAK SUSTAINABILITY AND
STRONG SUSTAINABILITY***

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Abstract

Approaching economic growth in quantitative and qualitative terms arising from endogenous or exogenous variables that can contribute to record an upward dynamic of Gross Domestic Product (GDP) often turns out to be an eclectic one. In this paper we focus on the necessity of rebuilding a model of economic growth and development based on sustainable principles. Almost any of the concepts of development, justice and sustainability are not in the traditional model of allocation and distribution of wealth. Starting from a logical analysis based on the identification of some theories that define the relationship between wealth and sustainability, the paper campaigns for highlighting the tension between a multifaceted model of qualitative development and a model of quantitative growth and development. Also, in this paper there are identified some hypotheses concerning the nature and the quality of relationship between wellbeing, Human Development Index (HDI) and the rate of GDP.

Keywords: economy, environmental sustainability, Gross Domestic Product, growth, Human Development Index, natural resource

1. Introduction

The current economic context in which traditional approaches face a series of conceptual insights generated by new waves of post-crisis theorists seems to make things difficult for the current growth model of economies. The wave of downturns that also hit economies that have experienced a few leaps of economic growth shows that the growth nature

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is rather cyclical than continuous, constant, cumulative indefinitely; the moment of cyclical peak is invariably followed by what Lipietz (1999) used to call scarcity crisis, with disruptions in the system of allocation and distribution, possibly with bifurcations and / or the appearance of different dissipative structures, to express ourselves in terms of thermodynamics of Prigogine (2003). The challenges imposed by a philosophy of unlimited growth based only on the market mechanism of supply and demand, are multiple. As such, you can not get infinite growth within a finite system (natural) (Daly, 2008).

The crisis has highlighted the cyclic fragility and unpredictability of economies, emphasizing the vulnerability of the world's nations and of their social systems when the markets that financially support them collapse; other crises, of high amplitude and duration, although not as stormy describe the relationship of man with the natural environment to which he belongs (what Lipietz calls the crisis of abundance or new scarcity of natural resources, threatening the industrial model) and severe large disparities between North & South which seem to be situated exactly in the heart of the current model of growth and development which is in full economic crisis.

This paper emphasizes the cyclical nature of economies, the need to address growth through the rational, sustainable use of natural resources, acting with speed and responsibility on the congruence between economy and nature, through the concept of sustainability.

The definition of *sustainable development* concept includes all the elements of the development structure: economics, development, ecology, i.e. allocation and needs, sustainability, equity inter/intra-generational or justice. The duty to the next generations constitutes a normative target, whether questioned in terms of preserving the ability of the economy to meet these needs (the economists' thesis) or environmental degradation under the impact of the economy and consumption (the environmentalists' thesis). In both cases, a concept of fairness seems included within the concept of growth- qualitative and quantitative- and development. In this context, we focus on references for heuristic understanding the complex process of sustainability (Dietz and Neumayer 2006).

This paper emphasizes the multi-criteria and multi-dimensional nature of the current economic growth model by highlighting the qualitative aspects, how to generate well-being, as well as quantitative aspects as prerequisites for reallocations at the societal level in terms of social equity.

2. Qualitative and quantitative aspects of sustainability

The "more with more" principle which is specific to the industrial society has to be abandoned, in favor of the "more progress with fewer resources" principle that needs to be placed at the basis of the relation between economy, society and environment (Chichilnisky, 2001). The main issue taken into consideration is that a concept of strong sustainability is rather normative and ethical than analytical and operational. The main weak argument is that what determines the future generations' ability of developing their wellbeing/utility is the quantity and quality of capital goods that are at their disposal. The issue of allotment is obviously inherent, especially because without an efficient allotment, the production would be placed over the marginal cost, and this would mean energy and resources waste. We believe that allotment can be integrated in de/growth and development paradigms that are totally different from the traditional approach.

The issue of allotment resides in the scale dimension and the intensity of growth, which leads to perverse effects over a finite ecosystem, such as the Earth's ecosystem, which cannot sustain a continuous growth of economies by introducing new and new needs (Korchak, 2013). The level of satisfaction regarding the society that an individual requires is not only correlated with his income, but also with a certain state of well-being, namely an indicator that incorporates a healthy and unpolluted natural environment, the freedom to choose to cohabit with nature, the existence of fair premises regarding the income distribution in society. The

duty to the next generations constitutes a normative target, whether questioned in terms of preserving the ability of the economy to meet these needs (the economists' thesis) or environmental degradation under the impact of the economy and consumption (the environmentalists' thesis). In both cases, a concept of fairness seems included within the concept of growth and development. To simplify, regardless of focusing on needs and/or the environment, the development interferes with the equity and the justice. In other words, human development can be sustainable if it faces the present and future needs the same way, i.e. on condition of fairness or justice; the concept is multicriterial, includes qualitative and quantitative (Baumgartner and Quaas, 2010; Toman et al., 1998).

If the human development task is to meet the main human needs, this cannot happen unless the ability of future generations to meet their own needs is not diminished or neglected. However, at the current level of allocation, distribution and consumption one cannot consider only the current level of resources, freezing or even emphasizing the regional disparities and inequalities but also the fact that the imbalances generated by the exploitation of resources and emissions into the atmosphere, a series of climate changes, biodiversity losses, etc., simply become irreversible. It is very important to analyse the proportion of environmental burden and other aspects of environmental domain (Popoviciu, 2012). An umbrella concept could be plausible on the condition of a general operationalization, but the difficulties of appropriating concepts such as human development and sustainability, whether in the form of weak/strong sustainability are current (Neumayer 2004, 2010; Schnaiberg et al., 2000).

Obvious difficulties are arriving from all directions: in terms of the weak sustainability, the main problem is that the substitution of manufactured capital to the natural environment is particularly problematic specially in terms of side effects which are not entirely known (exhausting the resources, threatening the biodiversity, sustaining a higher level of CO₂ into the atmosphere etc.), even if, for example, the economic effect of deforestation is compensated by the benefits and/or the socio-economic advantages of installing a toys factory on her turf, while in terms of the strong sustainability, reducing the exploitation and/or the nature-economy deal could put into the question the satisfaction of needs, re/adjusting the capital base which would be available for future generations, on the direction of its reduction.

Now, if a multicriterial solution is technically better prepared to meet the complexity and the plurality of the environmental, social and economic issues and challenges and more easily to operationalize, instead it disadvantage us in the thinking of a sustainable coherent or intrinsically consistent paradigm, because the methodologies, the objectives and / or the policies of different insights are rather conflicting (Bălăceanu and Apostol 2012; Willard and Harder 2003). This is the reason why authors like Neumayer (2010) have shown the difficulty of keeping high levels of human development with high levels of environmental sustainability, and others like Ost (2007) have argued for a more environment-society dialectic approach doubled by consecutive endorsement of the growth and development and environmental protection, the simultaneous endorsement being the main problem of sustainable development solutions. Clearly, a multicriterial solution (ecological, ethical, economic, and social) is problematic, but it is inevitable if we are to develop a truly sustainable model of growth and development.

We believe that, to constitute the new path of the world economies, a solution for sustainable development should combine the *basic needs* (efficient allocation and human development) and *steady state* (environmental sustainability) or, should reintegrate the economy as a subsystem into the natural world between the natural limits of absorption, regeneration or ecosystem resilience (Capra, 1997, 2005; Commoner, 1980; Holling, 1996). A program for sustainable degrowth for the North economies is undoubtedly taboo for the philosophy and the economic policies of the last 150 - 200 years, but now it is probably the time to think about it in other terms (O'Neill, 2011). An example is the degrowth debate inspired by The Club of Rome and the texts of some specialists (Demaria et al., 2011; Georgescu-Roegen, 1996; Gowdy and Mesner, 1998; Levallois, 2010; Schneider et al., 2010).

Simultaneously, the old paradigm of the industrialized economies based on continuous growth and comparative advantages could be abandoned in the South. Chichilnisky (2001) indicates that something like that is already happening internationally by reviewing the attitude regarding the public goods (air, CO₂ emissions etc.) and socializing the negative externalities, which are regarded as public goods private produced and internationally regulated in the form of emissions 'rights - Kyoto-Protocol, with the inherent costs cover by the manufacturer.

3. Human Development Index and report - new tools and methodologies

Gross Domestic Product (GDP) criticisms have brought economy's openness to other indicators, as we have already seen in Haq (1995) or Sen (1987, 2004). Moving towards measuring instruments of quality rather than quantity of growth and development, is probably at today's debate center.

Human Development Index (HDI) is one such tool: it focuses on what we have called in this paper the qualitative development or increase, particularly related to the name of Haq (1995) and Sen (1987, 2004) and includes measurements of main indicators of human development, like income (poverty, inequality etc.), health (life expectancy, mortality rate etc.) and education (literacy, primary education etc.). A few positions may be formulated here. Criticisms that have been made to HDI are multiple. Perhaps the main criticism is that the index of development, although focused on the qualitative dimension of growth, is in conflict with a series of environmental targets, namely other indicators of quality. It is focused exclusively on the needs hides the challenges the environment has brought to economy (Dasgupta, 2008). A number of efforts of styling indicators and expansion of their use have been made, as we have them today in Human Development Report (HDR) (<http://hdr.undp.org/en/>), an inclusive index integrating a number of indicators such as deforestation, ecological footprint, political participation etc., under one and the same umbrella of development starting with the year 2010 (Zambrano 2011). Critics like Neumayer (2004, 2010) or Kuhlman and Farrington (2010) made clear the difficulties of convergence between indicators.

The efforts to expand the index reflect the increasing need for a multidimensional approach. Cheibub (2010) insists on Sen's line over HDI expansion in order to include a number of political capabilities (Sen, 2004). His main reproach is that GDP and generally the indicators based on per capita income are insufficient and inaccurate when there is a question of reflecting the qualitative increase level, namely of concrete capabilities available to an individual to achieve one's own goals. For Cheibub (2010), civil and political institutions generally affect the political opportunities and/or capabilities of individuals. This requires a correction and augmentation of the HDI for the measurement of political and civil freedom of individuals. Without going into details, Cheibub (2010) introduces an indicator that takes into account a series of measures to capture democracy, political and civil freedom, broadly "this may mean the occurrence of competitive elections, or the existence of a menu of practices that indicate the ability of citizens to express their opinions and act on them, or specific patterns of authority, or government accountability". HDI augmentation's conditions are undoubtedly simple and intuitively accessible. Therefore, political capabilities should be descriptive, reliable and clearly implementable as any of HDI indicators, to allow observation of a democracy's progress/regress. The main advantage is that political and civil augmentation of human development index inclusively enables observing some connections between political and social capabilities. For example, Sen (2004) argues that major food crises have occurred in undemocratic or authoritarian regimes. This means that democracy can be a vehicle for development in the line of revenues equalization/raising.

Connections can also be seen where, for instance, countries with higher levels of HDI have low indicators of political and civil freedom such as Cuba. On the contrary India is at the other end from Cuba; it has small HDI values and high political and civil values. Similarly,

Harding and Wantchekon (2010) argue for the connection between social, political and civic variables of development index. If democracy can cause economic development, then economic development cannot in turn cause democracy. For them, the positive impact of democracy institutions on development originates mainly from the provision of accountability structures. By providing these structures, democracy offers development opportunities. Obviously, if factors such as information and participation are absent there, development opportunities may be missed.

Now, the views that emphasize the conflict rather than a trade-off between development variables are very many. Zambrano (2010) argues that these focus more on what the index does not measure or are to be found only at the level variables implicitly contained in the development variables such as sustainability or social inclusion. However, trade-off problems between development indicators cannot be avoided when meeting the needs interferes with the environment, as unsustainable as it is. Dasgupta (2006) for example, makes no distinction between HDI and GDP in relation to ecosystem's sustainability. Both indicators are likely to obscure environmental degradation. Kuhlman and Farrington (2010) argue that there is a conflict between development and sustainability particularly generated by the confusion between development targets and ecological targets. Such confusion is included right in the Brundtland Report (1987) when it understanding, for example, that environmental preservation is as important for the present generations as for the future one. Therefore, and to avoid the confusion, the difference between present and future generations is to Kuhlman and Farrington (2010) the difference between development and sustainability.

A balance must be struck between the needs of the present (wellbeing) vs the needs of future generations (sustainability), but without claiming that they represent different facets of the same coin. Under these conditions, focusing on issues of the present generations' development or welfare could leave us with a clear mind in terms of how or what policies we should develop to preserve environmental quality needed by future generations. The whole question then revolves around natural capital's substitutability, namely how much and/or how we can afford to use in order to meet the needs of the present. Kuhlman and Farrington (2010) argued that weak/strong sustainability need not be conflicting in these conditions, but rather complementary: use of natural capital at the expense of future generations generates capital that rises to the wellbeing level of present and future generations. This is extremely important, and the collaboration between ecologists and economists, between the developments of well-informed ecological policies the economic decisions to be taken becomes crucial from this moment on.

Neumayer (2004, 2010) is more impressive when arguing that the countries with high levels of HDI record very high levels on sustainability indicators, for instance ecological footprint (especially CO₂ emissions are taken into account). That seems to exclude a very strong convergence between human development variables/HDI and ecological targets. HDI fails to consider sustainability in measuring present generations' wellbeing; and vice versa, most sustainability indicators (here as Genuine Savings) are only focused on the ability to provide utility in the future without including current welfare's measurement (Neumayer 2004); sustainable progress in human development may be unsustainable if past progress has been achieved via reducing existing (natural / manufactured) stocks of capital. Obviously, Zambrano (2010) has no reason to be extremely sure of the internal trade-off of current human development variables, when their implications on the deal with natural environment are so uncertain, even if it is not explicitly included therein. Neumayer (2010) argues that development and sustainability have to learn from each other, i.e. with the emphasis that development places on a wider range of capabilities, sustainability has a tangential point with development, namely that people derive utility from many other things than income: economic/human development should be at the same time about much more than the income increase per capita. However, Neumayer does not believe that an adjustment of HDI could allow adding/reviewing some items in order to include sustainability.

In terms of weak/strong sustainability, this means that achieving a high level of HDI cannot be done strong in terms of strong sustainability. Neumayer's evidence indicates that economies with high levels of HDI have strong economies in terms of weak sustainability; and vice versa: countries with low levels of HDI reflect great difficulties in achieving savings in the sense of weak sustainability. Without going into further details, Neumayer sees in a state of conflict how development and sustainability can be achieved rather than in a state of complementarity, as resulted from the indicators used (HDI and Genuine Savings). Hughes et al. (2011) are by far very clear about the relation relationship between human development targets and environmental constraints and, we would say, convergent with the results provided by Neumayer (2010). Their results show that the impact of ecological constraints or slow down economies progression, or directly, or through a variety of indirect ways; under disastrous conditions, on the contrary, they can reverse it. For them, the least developed countries are the most vulnerable in relative terms, while middle income countries may suffer the greatest impact of constraints in absolute terms.

Developed economies are the most resilient or stable (resilience) to ecological constraints. Without going into further details, Hughes et al. (2011) have separated HDI variables and found that the education component could continue growing while the other variables could record declines under the constraints' impact. Finally, no matter how many efforts of methodological approach may be made, multidimensional and/ or multi-criteria solutions remain difficult. That does not mean that efforts should be abandoned.

4. Conclusion

Multi-dimensional and multi-criteria approaches is what we think best describes the conceptual issues of sustainable development. Human development, economic justice, sustainability or sustainable development trinomial is undoubtedly something like this: it combines elements of ethics with the ones of capabilities and targets development and / or ecological constraints. At the same time, the duty to the needs of present generations should not hide the debt to future generations. At the heart of sustainable development there are justice and / or equity.

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References

- Baumgartner S., Quaas M., (2010), Sustainability economics – general versus specific, and conceptual versus practical, *Ecological Economics*, **69**, 2056–2059.
- Bălăceanu C., Apostol D.M., (2012), Development and eco-efficiency in the information society, *International Journal of Academic Research in Business and Social Sciences*, **2**, 443-451.
- Brundtland Report, (1987), Report of the World Commission on Environment and Development: Our Common Future, On line at: <http://www.un-documents.net/our-common-future.pdf>.
- Capra F., (2005), Development and Sustainability, *Center for Ecoliteracy*, On line at: <http://www.integrateddevelopment.org/capradevelopmentandsustainability.pdf>.
- Cheibub A.J., (2010), How to Include Political Capabilities in the HDI? An Evaluation of Alternatives, United Nations Development Programme, Human Development, Research Paper 2010/41, On line at: http://hdr.undp.org/sites/default/files/hdrp_2010_41.pdf
- Chichilnisky G., (2001), The Global Environment in the Knowledge Revolution. Conference - Managing Human-Dominated Ecosystems, March 27-29, On line at: <http://www.chichilnisky.com/pdfs/papers/177.pdf>.

- Commoner B., (1980), *The Closing Circle* (translated in Romanian), Political Publishing House, Bucharest, Romania.
- Daly H.E., (2008), A steady-state economy. A failed growth economy and a steady-state economy are not the same thing; they are the very different alternatives we face, Sustainable Development Commission, UK, April 24, On line at: http://www.sd-commission.org.uk/data/files/publications/Herman_Daly_thinkpiece.pdf.
- Dasgupta P., (2008), Nature in economics, *Environmental and Resource Economics*, **39**, 1-7.
- Demaria F., Scheneider F., Calsamiglia A., Blanco L., Domeneghini D., (2011), Degrowth in South Europe: complementarity in diversity, On line at: http://degrowth.org/wp-content/uploads/2011/05/esee2011_fca078_1_1311324846_8820_2134.pdf.
- Dietz S., Neumayer E., (2006), Weak and strong sustainability in the SĒEA: Concepts and measurement. *Ecological Economics*, **61**, 617-626.
- Georgescu-Roegen N., (1996), *The Entropy Law and the Economic Process* (in Romanian), Expert Publishing House, Bucharest, Romania.
- Gowdy J., Mesner S., (1998), The evolution of Georgescu-Roegen's bioeconomics. *Review of Social Economy*, **LVI**, 137-156.
- Haq ul M., (1995), *Reflections of Human Development*, Oxford University Press, Oxford, UK.
- Harding R., Wantchekon L., (2010), The Political Economy of Human Development, United Nations Development Programme, Human Development Reports, Research Paper, On line at: http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_29.pdf.
- Holling C.S., (1996), Surprise for science, resilience for ecosystems, and incentives for people, *Ecological Applications*, **6**, 733-735.
- Hughes B.B., Irfan M.T., Moyer J.D., Rothman D.S., Solórzano J.R., (2011), Forecasting the Impacts of Environmental Constraints on Human Development, United Nations Development Programme, Human Development Reports, Research Paper, On line at: http://hdr.undp.org/sites/default/files/hdrp_2011_08.pdf.
- Korchak J., (2013), Share issue: what is it and why issue shares?, *Shares and Shareholders*, On line at: <http://www.informdirect.co.uk/shares/why-issue-shares/>.
- Kuhlman T., Farrington J., (2010), What is Sustainability?, *Sustainability*, **2**, 3436-3448.
- Levallois C., (2010), Can de-growth be considered a policy option? A historical note on Nicholas Georgescu-Roegen and the Club of Rome, *Ecological Economics*, **69**, 2271-2278.
- Lipietz A., (1999), Working for a global ecological sustainability. For a "New Great Transformation" (in German), *Kurswechsel*, **3**, 50-71.
- Neumayer E., (2004), Sustainability and well-being indicators, United Nations University, World Institute for Development Economics Research (WIDER), Research Paper No. 2004/XX, On line at: http://www.lse.ac.uk/geographyAndEnvironment/whosWho/profiles/neumayer/pdf/Sustainability_wellbeingarticle.pdf.
- Neumayer E., (2010), Human Development and Sustainability, United Nations Development Programme, Human Development Reports, Research Paper, On line at: http://hdr.undp.org/sites/default/files/hdrp_2010_05.pdf.
- O'Neill D.W., (2011), Measuring progress in the degrowth transition to a steady state economy, *Ecological Economics*, **84**, 221-231.
- Ost T., (2007), The Green Technology-Lifestyle Change Dialectic. On the Possibility of an Ecologically Rational Growth, On line at: http://www.enhr2007rotterdam.nl/documents/W15_paper_Ost.pdf.
- Popoviciu G., (2012), Strategies for a Collaborative Eco-development. *Journal of Environmental Protection and Ecology*, **13**, 720-729.
- Progogine I., (2003), Chemical kinetics and dynamics, *Annals of the New York Academy of Sciences*, **988**, 128-132.
- Sen A., (1987), Food and Freedom, On line at: <http://wphna.org/wp-content/uploads/2015/02/1985-Sen-Food-and-freedom.pdf>.
- Sen A., (2004), *Development as Freedom* (in Romanian), Economic Press, Bucharest, Romania.
- Schnaiberg A., Pellow D., Weinberg A., (2000), The Treadmill of production of Environmental State, On line at: <http://www.ipr.northwestern.edu/publications/papers/urban-policy-and-community-development/docs/schnaiberg/treadmill-of-production.pdf>.
- Schneider F., Kallis G., Martinez-Alier J., (2010), Crisis or opportunity? Economic degrowth for social equity and ecological sustainability. Introduction to this special issue, *Journal of Cleaner Production*, **18**, 511-518.

- Toman M.A., Lile R., King D., (1998), Assessing Sustainability: Some Conceptual and Empirical Challenges, *Resources for the Future*, Discussion Paper 98-42, On line at: <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-98-42.pdf>.
- Willard T., Halder M., (2003), The Information Society and Sustainable Development, On line at: http://www.iisd.org/pdf/2003/networks_sd_exploring_linkages.pdf.
- Zambrano E., (2011), Functionings, Capabilities and the 2010 Human Development Index, *UNPD Human Development Reports*, Research Paper 2011/11, On line at: http://hdr.undp.org/en/reports/global/hdr2011/papers/HDRP_2011_11.pdf.