GDP AS A MEASURING INSTRUMENT FOR THE HUMAN DEVELOPMENT

CRISTINA BALACEANU
PROFESSOR PHD, Dimitrie Cantemir Christian University,
e-mail: movitea@yahoo.com

DIANA MIHAELA APOSTOL, Postdoctoral Student
ASSOCIATE PROFESSOR PHD, Dimitrie Cantemir Christian University,
e-mail: altai78@yahoo.com

Abstract

Probably the main movement of the economy is abandoning the traditional index of growth (GDP / GNP) as a tool for reflection the welfare and introducing alternative indicators of qualitative growth and development, eventually complementary, as it does for example ul Haq (1995), which makes the quantitative growth and development two terms mutually dependent. The main problem with the GDP is that it may increase while the inequality, poverty, mortality, disparities between regions, etc. can grow simultaneously; at the same time, GDP is an index that does not reflect the environmental damage and the depletion of a resource.

Key-words: *new economy, sustainable development, human development*

JEL Classification: *O31, O44*

GDP reflects a purely maximalist understanding of economics and reality (Dasgupta 2006) and O'Neill (2011) argues that GDP is rather a mere abstraction and a very poor indicator of progress and, obviously, it is necessary to change it. Sen (1987) for example shows that GNP per capita may increase while some indicators such as life expectancy at birth and mortality rate under 5 years to be both higher than in countries with lower GDP values, and vice versa: economies to indicate low levels of GNP but high values on the quality indicators. However, Sen's results show that Oman and South Africa had in 1985 the highest values of GNP (6.730, respectively 2.010 USD per capita), but instead reported the lowest values in life expectancy at birth and mortality rate under five years, and vice versa, China and Sri Lanka had the lowest values of GDP in 1985, with 310 and 380 USD per capita, but reflected the highest values on the quality indicators.

Other arguments that notice the separation GDP / GNP from almost all of the indicators of life quality or the ecological indicators are provided by Dasgupta (2006, 2007), Mazur (2010), Schnaiberg et al (2000). Mazur (2010) argues for increased energy consumption to take place without the inherent growth in the consumer lifestyle. He shows that the developed economies exploit resources as an aim in itself, or what he calls, in the line of Schnaiberg et al (2000), the treadmill of production (the routine of the production growth). The main argument is that energy consumption is correlated with several indicators of life quality and there is a quality-of-life-frontier from where any increase in energy consumption ceases to add something to its quality; he argues that GDP does not grow actually far beyond purely fiduciary growth. Thus, the nations that use approximately 20MGW of electricity per capita have a life expectancy of more than 70 years. Increased electricity consumption adds little in terms of life expectation at this moment, for example, at a consumption of 180MGW, the life expectancy is less than 80 years. The energy consumption increase works for Mazur as a treadmill of production in affluent countries, moreover indicates that poor countries will suffer more from the growth of energy consumption by affluent societies, under the argument that the level of pollution decreases according to the environmental Kuznetz curves or ceases to increase with increasing energy consumption. In other words, more efforts will be devoted to efficient technology regularization, remediation etc, while the poor economies will inevitably suffer. For Mazur, the increase in consumption / savings in rich societies is not equivalent to a real increase in the lifestyle or quality of life, in addition it emphasizes the impact of the ecological footprint over less developed economies; the economies' growth in affluent societies could be associated with a decrease in the global quality of life than with an increase (Mazur's results are based on data

from 135 countries).

For Dasgupta (2007, 2008), if GDP is a instrument for measuring the output of an economy, meaning the value of finished goods produced by an economy and valued on the market, it does not tell us much about the stock of wealth or how it is distributed; GDP is a measurement tool that was originally designed for the markets and the flows of values which they produce. For example, Dasgupta shows that the income per capita is now about $ 8,000, while in the early Christian era, per capita income was $ 515 per year. If at the beginning of the era almost everyone lived with about $ 1 per day, ie nearly everyone was below the poverty line, in the early nineteenth century the gap between Western and African countries widened three times. The gap between the U.S. and Africa, for example, has increased almost 20 times in the last 200 years (ie $ 38,000 per year vs. $ 1,850). Over the past four decades, per capita GDP grew at an annual rate of 2.4% in rich countries, while in poor countries it grew at a rate of 1.8%; worse, the sub-Saharan region has experienced a real decline in GDP per capita. Because at an annual rate of 2% per capita the GDP doubles every 35 years, disparities between regions tend to accentuate rather than to improve. For example, the U.S. GDP increased 30 times in the last 200 years, implying that the average annual per capita income growth was around 1.7%. By contrast, Ethiopia has today almost the same income per capita as Europe 200 years ago, less than $ 700 per year.

Haq (1995) and Sen (2004) argue for a number of additional problems concerning GDP / GNP. Beyond the fact that GNP tells us nothing about how wealth is distributed or basic needs are satisfied, for Haq, GNP seems to miss the true purpose of development. That is human welfare. Haq believes that GNP reflect a focusing problem of economy / economist in general, for which a man is only a means in the growth process, not an aim, and calls for refocusing the economy on the human as an aim of growth and not as a mean. Growth must be accompanied by appropriate policies distribution. For him, if economies grow, the development issues will also raise, for example health and development expenses have fallen from 21% of GDP in 1972 to 9% in 1982 in developing countries, while military spending increased from 7 billion to $ 100 billion over the same period. Similarly, the South Asian region has experienced a significant increase in GDP, but here is found almost 80% of the world's poor, in terms of absolute poverty. Focusing on GNP is undoubtedly an error in terms of development, reflecting conventional political and economic thinking.

Sen (2004) argues for abandoning GDP as an index of welfare, especially for informational inherent poverty that implies. For him, if the capabilities and functions (economic, cultural / educational, social, personal and political) which an individual has are converging in / to the achievement his personal of the life that he wants (development as freedom), GDP as per capita income of a country is then probably the most inadequate measure of a nation's well-being. The conventional GDP is limited to per capita income, or this fact overlooks the fact that the income is just one of the capabilities available to an individual to achieve the desired living level. Sen argues for the difference between income poverty and capabilities poverty: the opportunities generated by the growth of the income are obviously enhanced by the social support and training (higher / good levels of literacy, education, general health care, etc.) and inversely - all these capabilities enhance a person's ability to achieve income and obviously to came free from poverty. In other words, the impact of the income on capabilities is contingent and obviously conditioned or dependent. For Sen, there is no doubt that restricting welfare to income measurement represents an error in a developmental perspective. GDP / GNP are probably the poorest welfare index, limited to the income that an economy is in general producing.

Other arguments that reject the conventional GDP come from the supporters of sustainable degrowth. O'Neill (2011) for example reject GDP as an instrument for measuring the degrowth (it was a mere abstraction when it was measuring growth) or the process by which an economy decreases in volume and production capacity, in consumption, production growth rates, etc. in the idea of the transition towards a steady state (Daly 2008) - steady state as reintegration and maintenance of the society subsystem in terms of economic capacities, consumption, living standards etc. in what Commoner (1980) called *natural balance* or *ecological cycle* (e.g. "in a cycle it cannot accumulate organic wastes because nothing is wasted", p.123 –cit. from Romanian edition) or the four laws of nature (*Everything Is Connected to Everything Else*, *Everything Must Go Somewhere*, *Nature Knows Best* and *There Is No Such Thing as a Free Lunch*) that form the so-called *closed circle* or *logic of ecology* etc.

O'Neill's main arguments are that GDP follows only cash flows, namely do not reflect the changes in stocks, particularly in the stock of natural capital (on the contrary, depletion of natural capital can be seen as

revenue in the GDP), fails to distinguish between growth in quantity and quality development or do not have any information about non-monetary (social) values, such as volunteering or how the income is distributed currently. In other words, it does not say anything if what is happening is socially sustainable or whether the current level of resource use is ecologically sustainable. For O'Neill, the zero level of the GDP growth may still be accompanied by a decline in natural capital stocks or by an increasing inequality, which obviously would be in conflict with the objectives of a steady state economy. "I would argue that it is not enough to change the target on a bad indicator. The indicator itself needs to be changed" (O'Neill 2011, p.3).

A less explicit case regarding the rejection of GDP (as an index of welfare and as an indicator for measuring the unsustainable growth), but far more explicit for the reorganization of economic tools to create a new economy logic based on the law of entropy, thus exceeding the *rationality of optimality* (or the traditional business model of quantitative growth) and entering into the *rationality of sustainability*- is Emil Dinga (Dinga and Ionescu 2006; Dinga 2009, 2011). On line of Georgescu-Roegen, Dinga believes that the economic instruments are arithmomorphic, i.e. they behave like mathematical conceptual tools with some realities that can not be described by acuity, simplicity, distinction, permanence etc with which the abstract objects of mathematics can be described or withstand the time and require an more or less mechanical understanding of the world.

If arithmomorphism reflects a fundamental inadequacy when it tends to burden reality by translating it in numbers, for Georgescu-Roegen this numerical representation is combined with a mechanistic understanding of the world dominated by invariant relationships between variables. For Roegen, the economy is doomed to deny historical time or narrative flow and only a non-mechanical law could represent the so called *passage of time* or *arrow of time* (Levallois 2010 Adelman 1972; Gowdy and Mesner 1998; Maneschi and Zamagni 1997 Heinzel 2012). Obviously, Georgescu-Roegen apply here to the economy the second law of thermodynamics, which means that the economy behaves like a perfect dissipative system that converts the low entropy energy of the environment to high entropy energy indefinitely, until exhaustion or destruction. What makes the Roegen stance particular is that he rejects any combination of entropy with a mechanistic view of the world: for him, irreversibility can not be ignored, the same way of living is an irreversible process that can hardly be ignored by biologists, and the exhaustion of the resources of energy and minerals should enter to the attention of economists (Georgescu-Roegen 1996 Levallois 2010).

On the contrary, for Boltzmann the entropy increase could represent the convergence of the system in the most probable state. And Boltzmann's statistical interpretation of entropy stood against the interpretation of entropy as a possibility of disturbance of a nature's law or which would be outside the reach of classical mechanics or dynamics (Prigogine 2003). Somewhat similar, Prigogine argues that the natural state of the system is the irreversibility resulting from the interactions of the systems / non-integrable parts, including where, for instance, a gas is in equilibrium: collisions continue to occur, and the interactions are never eliminated. But although he substitutes the classical dynamics a vision and a vocabulary as *evolutionary universe*, *non-equilibrium physics*, etc., which "has given us a better understanding of the mechanism of the emergence of events." (Ibid, p.19), the events are associated with what he called *bifurcations*, which means that the irreversibility or the entropy of a system results in *the appearance of different dissipative structure* (or new formula for non-dynamic/mechanic equilibrium). In other words, neither Boltzmann nor Prigogine do not seem to split the second law of thermodynamics from the formation of new dissipative mechanical / non-dynamic structures, while for Georgescu-Roegen the arrow of time reflects the purely irreversible and / or eternal incremental nature of the disorder (Adams 1978).

In this framework of entropic irreversibility, i.e. the finding that human systems are dissipative systems that convert the low entropy energy into high entropy energy at infinity, and the inability of the economy to come off the inherent arithmomorphism, Dinga introduce a whole vocabulary that makes the economy rather a hermeneutics of the economic phenomena than a science in a "strong sense", while establishing a *sustainable evolution* program, i.e. the transition to *the rationality of sustainability, or,* even clearly, of achieving the trinomial sustainability – society, nature and the individual (Dinga 2009, 2011; Dinga and Ionescu 2006). For example, if the law of entropy does not allow establishing exactness (as the classical paradigm case of economic optimality), but only directions of evolution, the economic concepts can then be only dialectical (or what he calls *semantic and dialectical penumbras*); for example, the purpose of an economic activity is to introduce some

reversal of entropy, ie entropy within the system decreases into / through the production of goods, increasing the overall entropy (by the consumption of energy and resources) (see Adelman 1972), or this excludes the possibility of establishing some *invariants* in the terms of the traditional economy (see the so called *Oedipus effect* indicating the fact that changing the initial conditions excludes the possibility of establishing exactness in an arithmomorphic sense - Dinga 2009).

What is significant is that for Dinga, if the arithmomorphism is inadequate in reflecting the economic phenomenon, he is instead responsible for the movement and / or the support granted to the economy in terms of paradigm or rationality of optimality (current era), which means the intensive reducing of the internal level of low entropy due to the accentuated increase of the external or global level of entropy. The rejection of GDP as an appropriate index of the growth and development is almost inherent, though not stated explicitly anywhere by Dinga. If the optimality paradigm is based on the continued growth of economies / GDP, i.e. on the efforts to reduce the internal entropy of the system, he believes that every economic paradigm (stationary, optimal, sustainable) reflects a critical development threshold, which requires a change of paradigm, in this case the sustainability paradigm: for him, the threshold is here: the entropic perturbation of the environment, coupled with conscience (new ethical values, consumption reduction, green lifestyle, etc.), the intensive generation of low entropy through the production of goods and through services of the industrial paradigm is unsustainable at a global level, requiring the development of a new morality and values specific to the ecological sustainability during the emerging period (Dinga, 2009, 2011).

Conclusion

The irrelevance or even the elimination of the GDP as an index is almost inherent, because the emergence of the rationality of sustainability is inseparable from the returning to the pre-industrial or stationary growth model (which is based, obviously, on a weaker increase of external entropy), where GDP, regardless of how it is used, can no longer be an adequate index of economic (sustainable) performance. If we return to Georgescu-Roegen and the conceptual difference that he made between *the flows* and *the funds*, we see that GDP is inadequate in reflecting the performance of a sustainable economy, for example: "However, those neoclassical economists adopting the substitution (i.e. assume that any factor can always be substituted for any other factor) assumption have not paid due attention to the essential distinction between flows (_quantities of materials qualitatively transformed in the process) and funds (_agents transforming a given set of inflows into a given set of outflows) in the material production process (Georgescu-Roegen, 1971). Neglecting this distinction results in a systematic indifference to the biophysical foundation of economic activities". And further: "The expression of heterogeneous factors in monetary units in aggregate production functions […] makes the situation worse […]. This homogenization of inputs hides the biophysical side of production activities and clouds the issue of sustainability. This misconception introduced by a description of the production process in monetary terms is inherent in the definition of weak sustainability usually adopted by neoclassical economists: ''the total value [in monetary terms] of all capital stocks be held constant, man-made and natural'' (Mayumi et al 1998, p.116).

Acknowledgment:

This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/159/1.5/S/134197 „Performance and excellence in doctoral and postdoctoral research in Romanian economics science domain".

References

[1] **Baumgartner, S., Quaas, M.,** Sustainability economics –general versus specific, and conceptual versus practical. *University of Luneburg Working Paper Series in Economics*, No.169, 2010; http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1601202

[2] **Bălăceanu, C., Apostol, D. M., Penu D.,** The Information Society and its Eco-dis/advantages. *'Ovidius' University Annals, Economic Science Series*, Vol. XII, Issue 2/2012;

[3] **Bălăceanu, C., Apostol, D. M**., Development and Eco-Efficiency in the Information Society. *International*

Journal of Academic Research in Business and Social Sciences, Vol. 2, No. 10, 2012; http://www.hrmars.com/admin/pics/1273.pdf

[4] **Capra, F.,** Development and Sustainability. *Center for Ecoliteracy*, 2005; http://www.ecoliteracy.org/

[5] **Cheibub, A. J.**, How to Include Political Capabilities in the HDI? An Evaluation of Alternatives. *Human Development,* Research Paper 2010/41; http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_41.pdf

[6] **Chichilnisky, G.,** The Global Environment in the Knowledge Revolution. *Conference -Managing Human-Dominated Ecosystems*, March 27-29, 2001; http://www.chichilnisky.com/pdfs/papers/177.pdf

[7] **Chichilnisky, G.,** Global Property Rights. The Kyoto Protocol and the Knowledge Revolution. *Changement Climatique*, No. 08, 2006; http://www.iddri.com/Publications/Collections/Idees-pour-le-debat/id_132006_graciela_kyotokr.pdf

[8] **Easterlin, R. A.**, Will raising the incomes of all increase happiness of all?. *Journal of Economic Behavior & Organization*, Vol. 27, 1995; http://www.bsos.umd.edu/socy/vanneman/socy789b/Easterlin95.pdf

[9] **Haq, M. ul**, *Reflections of Human Development*. Oxford University Press, 1995;

[10] **Harding, R., Wantchekon, L**, The Political Economy of Human Development. *Human Development,* Research Paper 2010/29, http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_29.pdf

[11] **Hughes, B. B., Irfan, M. T., Moyer J. D., Rothman D. S., Solórzano J. R.,** Forecasting the Impacts of Environmental Constraints on Human Development. *UNDP Humand Development* Research Paper 2011/08, http://hdr.undp.org/en/reports/global/hdr2011/papers/HDRP_2011_08.pdf

[12] **Kuhlman, T., Farrington, J.,** What is Sustainability?, *Sustainability*, No.2, 2010; http://www.mdpi.com/2071-1050/2/11/3436

[13] **Neumayer, E.,** Human Development and Sustainability. *Human Development,* Research Paper 05, 2010; http://hdr.undp.org/en/reports/global/hdr2010/papers/HDRP_2010_05.pdf

[14**] O'Neill, D. W.,** Measuring progress in the degroth transition to a steady state economy. *Ecological Economics*, XXX, 2011; http://degrowth.org/wp-content/uploads/2011/05/oneill_degrowth-transition-to-a-steady-state-economy.pdf

[15] **Pearce, D., Atkinson, G.,** The concept of sustainable development: An evaluation of its usfulness ten years after Brundtland, *Swiss Journal of Economics and Statistics*, Vol.134 (3), 1998

[16] **Prigogine, I.,** Is Future Given?Changes in Our Description of Nature. *World Scientific Publishing Co. Pte.Ltd*, 2003

[17] **Sen, A.,** Food and Freedom. D.C. October 29, 1987; http://library.cgiar.org/bitstream/handle/10947/556/craw3.pdf?sequence=1

[18] **Sen, A.,** Dezvoltarea ca libertate. Editura Economică, 2004

[19] ***UNPD Human Development Reports*, Research Paper 2011/11, http://hdr.undp.org/en/reports/global/hdr2011/papers/HDRP_2011_11.pdf