VIOREL-FLORIN GÎLCĂ[1]

THE ECONOMIC CYCLE AND SUSTAINABLE DEVELOPMENT

Abstract: *In the context of promoting a reduction of people's environmental footprint, of addressing the gap between generations, individuals and nations and maintaining economic efficiency, reaching the goals of sustainable development is only possible with a change in people's mindsets and with communities capable of using resources rationally and effectively and uncover the economic potential of economies, ensuring prosperity, environment protection and social cohesion. The complexity of the phenomenon as a basis for economic fluctuations in the macro-system warrants the intensive research activities of the main schools of economic thought in order to explain the economic cycle, to subsequently become in itself a foundation of the sustainable development process.*

Key words: *sustainable development, economic cycle, financial crisis, bio-economy, resources.*

1. Introduction. The crisis of resources and the context of sustainable development emergence

The concept of sustainable development was first stated in 1987 in the Brundtland report, then promoted at the World Conference for Sustainable Development organized by the United Nations in 1992 in Rio de Janeiro[2].

In response to the emergence of environment issues and the crisis of natural resources, the 1972 Environment conference of Stockholm first recognized at global level that human activities damage the environment and jeopardize the future of the Earth. The important issues of sustainable development are: integrative approach, the principle "Think globally – act locally!" the long term vision on development.

The concept of sustainable development can be characterized by three defining central pillars, i.e. economic, social and environment. Two additional transversal pillars have been introduced:

– **education,** both in the specialized field and the transdisciplinary field, "long life learning", which is based on EU life long learning programmes for cooperation in the field of education and vocational training in order to boost exchanges, cooperation and mobility between the education and vocational training programmes;

---

[1] PhD.

[2] "Sustainable development is the development process addressing the current needs without endangering the capacity of future generations to fulfil their own needs. [...].In order to achieve sustainable development, environmental protection shall constitute 17 an integral part of the development process and cannot be considered in isolation from it." (Source: the Declaration of Environment and Development, Rio de Janeiro, 1992.)

An. Inst. Cerc. Ec. „Gh. Zane", t. 25, Iași, 2016, p. 73–83

– **entrepreneurship,** which puts into practice new, innovative ideas. Supporting this entrepreneurial behaviours requires the initiation of training from the early training stages, the role of the human capital for the economy being paramount.

Development is sustainable when it is based on both economic and social and environment objectives. Moreover, sustainable development is a fundamental objective of the European Union[3].

The 7 priority axes of the EU Strategy for Sustainable Development, as reviewed in 2006, are the following: climatic changes and energy, sustainable transport, preservation and management of natural resources, sustainable consumption and production, public health, social inclusion, demography and migration, global poverty and the challenges of sustainable development.

1.1. *The concept of integrated sustainable development*

The concept of integrated economic development is a natural theoretical and conceptual addition to the two initial concepts of sustainable economic development and human development, being considered an attempt to summarize and integrate social, economic and environmental policies. From a not too far perspective, the integrated economic development can become an authentic framework for approaching the surrounding realities and relationships between human society and the environment.

In the future, this concept prepares a balancing between the legitimate social and economic needs of people and of the environment. The main indicators of sustainable development, and implicitly of the integrated economic development, are grouped into three large categories and have a relatively equal weight in terms of significance. These indicators include:

- Economic indicators, such as: the technological endowment, the production of goods, purchasing power, income from salaries and other alternative sources etc.
- Environment indicators, i.e. natural capital (natural resources)
- Social indicators related to human capital, such as: educational level, human development ratios, quality of life ratios, etc.

1.2. *Integrated urban sustainable development. The 2014–2020 Cohesion Policy*

Cities are the true engines of the European economy, which can be considered as key centres for innovation and creativity within the EU. Around 68%

[3] Sustainable development has become an EU-wide goal with its inclusion in the Maastricht Treaty in 1997. 2001 saw the adoption of the Gothenburg Sustainable Development Strategy, supplemented with an external dimension in 2002 in Barcelona, and the reviewed EU Sustainable Development Strategy of 2006.

of the EU population lives in a metropolitan region, and these regions account for 67% of the EU's GDP. However, this is also the venue of permanent issues such as unemployment, segregation and poverty.

The European Commission's proposals on the 2014–2020 cohesion policy aim to stimulate integrated urban policies in order to drive sustainable urban development to consolidate the role of cities in the framework of the cohesion policy. These proposals are:

a) integrated investment strategies with a stronger strategic and holistic character: as a basic principle, the European Fund for Regional Development (EFRD) should support sustainable urban development by means of strategies addressing economic, climatic, and social and environment challenges.

b) earmarking of funding for integrated sustainable urban development: at least 5% of the EFRD resources assigned to each Member State will be invested in integrated actions for sustainable urban development, implemented via the Integrated Territorial Investment Tool (ITI), managed and applied by cities.

c) the urban development platform: on the basis of a list of cities, prepared by the member States under the partnership agreement, the Commission will establish an urban development platform including 300 European cities, which will encourage European-wide exchanges between cities and the Commission on urban development, mainly aimed at political issues[4].

d) innovative actions in urban areas: in order to encourage new and innovative solutions in terms of sustainable urban development, EFRD can encourage, at the initiative of the Commission, innovative actions limited to a ceiling of 0.2% of the total EFRD contribution[5].

e) a stronger emphasis on strategic urban development: based on the guidelines of the Common Strategic Framework, (CSF), partnership contracts should establish ways to ensure an integrated approach on CSF funds for the sustainable development of urban areas[6].

f) improved tools for integrated actions: Integrated Territorial Investments (ITI) represent a new method of implementation, which provides a funding package from several priority axes of one or several multidimensional and intersectoral intervention programmes[7].

g) increased opportunities on approaching urban challenges targeted by investment priorities: four of the thematic objectives to be supported by the CSF funds to contribute to the Europe 2020 strategy for smart, sustainable and inclusive growth contain appropriate investment priorities specific to urban areas[8].

---

[4] Article 8 of the proposed Regulation for an European Fund for Regional Development.

[5] Article 9 of the proposed Regulation for an European Fund for Regional Development.

[6] Articles 11, 14 and 87 of the proposed Regulation establishing common provisions on the funding of the 2014–2020 Common Strategic Framework.

[7] Article 99 of the proposed Regulation establishing common provisions on the funding of the 2014–2020 Common Strategic Framework.

[8] Articles 5 and 7(1) of the proposed Regulation on the European Regional Development Fund, art. 3 of the proposed Regulation on a European Social Fund.

h) financial tools: Member States are encouraged to extensively use the financial tools to support sustainable urban development[9].

i) networking: under the European territorial cooperation objective (CTE), the exchange and learning program designed for cities will continue to provide them with networking opportunities for the development and exchange of good practices in terms of urban development.

2. Technical and methodological approaches

One of the most important works on the topic of sustainable development in terms of the documentation it provides, or, even more, of general mobilization towards saving civilization is a book by Lester Brown, "Plan B 4.0". The author began researching and documenting global issues as early as 1984, with a compendium called "State of the World". In 2000, the author initiated the series of Plans B (which stop at 4), an initiative which cyclically updates solutions to a global crisis in a reviewed edition.

„Plan B 4.0" is a collection of all the suggestions which the author gives to world leaders. Lester Brown became famous for certain radical standpoints. He was among the first to oppose the transformation of cereals into biofuels, and we witness today food stocks dwindling, while the hunt for land in the developing world is tantamount to contemporary colonialism.

2.1. *The bio-economy concept. The visions of Nicholas Georgescu-Roegen and Lester Brown*

In 2001, Lester Brown launched the eco-economic theory, which underlines the significance of ecology and environment for the sustainable development of mankind, raising the alarm on the limited resources of the Earth. The Romanian-born American scientist, Nicholas Georgescu Roegen, launched, 40 years ago, the concept of bio-economy, which approaches the role of people in the entropic systems, with a statistically-proven need regarding the negative energy balance in case of excessive consumptions of raw materials and the lack of perspectives for future generations.

The rational use of environment resources involved the emergence of a new paradigm, the eco-bio-economy, which is based on three large concepts: economy, ecology, biodiversity.

The term "bio-economy" designates an economy which uses biological resources of the soil and seas, including waste, as raw materials for foodstuffs, animal feed and industrial and energy production, including the use of ecologic

[9] Articles 32–40 of the proposed Regulation establishing certain common provisions on the funding of the 2014–2020 Common Strategic Framework

processes for sustainable industrial sectors. One example to such extent is bio waste, which shows a significant potential as an alternative to classical chemical fertilizers or for the conversion to bioenergy, a contribution assessed to approx. 2% of the EU goal on renewable energy.

At the same time, bio-eco-economy is based on three large types of "growth": smart growth across three axes (a Union of innovation, the Europe digital agenda and Youth on the move), sustainable growth with at least three pillars (resource efficiency, a global policy for the age of globalization), inclusive growth (agenda for new skills and new jobs; the European platform against poverty).

2.2. *Short introduction of the strategy "Innovation for sustainable growth: a bio-economy for Europe"*

The strategy seeks connections and complementarity with other policy fields, tools and funding sources with the same objectives, which it approaches in a similar manner, such as the Cohesion Funds, the Common Agricultural Policy (CAP), the Common Fishing Policy (CFP), the Integrated Maritime Policy (IMP) and environmental, industrial, employment and energy and health policies.

The Commission's proposal is also one of the operational proposals based on the flagship initiatives "A Union of Innovation" and "A resource-efficient Europe" under the EU 2020 Strategy. The need to increase public funding for research and innovation in the field of bio/economy was recognized by the future Commission's research programme, entitled Horizon 2020", which proposed the allocation of EUR 4.7 billion for the Challenge "Food security, sustainable agriculture, marine and maritime research, and the bio-economy", with complementary funding in other fields of Horizon 2020.

2.3. *The economic cycle, a basis for sustainable development*

In the economy, cyclicality is the form of a moving economic activity in a country subject to an alternative succession of expansion and contraction economic periods. The period between the successive alternations of contraction stages with expansion stages is the economic cycle.

An economic cycle implies four stages: expansion, peak, recession and the threshold. At the same time, the cyclicality is one main feature of economic progress and its very basis, even helping to explain economic driving forces and their causes. The phenomenon of cyclicality can be explained by both internal and external causes. From the external causes, we will insist on the political cycle theories and the technological cycle theory.

The political cycle theory explains that the periodicity of elections in democratic systems, together with the force of governments in stimulating economies cause economic cycles with a duration similar to that of legislative periods.

The technological cycle theory explains the existence of the Kondratieff long cycles, because there are times when the action of certain key scientific discoveries leads to the emergence of new technologies stimulating investments, demand and jobs. While the new products become accessible for an increasing number of people of several countries, the cycle remains in an expansive stage. Once the markets become saturated, investments stop, companies are closed and recession sets in, in the expectation of a new technological wave. Technical progress expressed by the advance of the transportation means is a key of various historical cycles (trains in mid 19th century, motor vehicles at the beginning of the 20th century, and airplanes after the Second World War).

The economic cycle consists in the period between two contractions of the overall economy. It includes several stages with different names. The cyclical movement includes the following stages: **the expansion**, characterized by: increase of production, GDP, employment, jobs, salaries, sales and profits; the business becomes lucrative, and credit becomes cheaper; the value of securities increases.

At a certain point in time, due to the exhaustion or limitation of possibilities for further expansion, obstacles emerge and put an end to expansion: decrease of productivity; reduction of profits; disruptions reflected in: fluctuation and decrease of securities; more expensive loans; less loans and investments. When the economic crisis (stagnation or decrease of production, increase of bankruptcies and of the unemployment) engulfs the entire economy, a new stage sets in: **depression**. In this stage, characterized by economic imbalances (the supply exceeds demand), enterprises reduce costs and replace and upgrade their fixed assets. The investments carried out allow overcoming the depression and setting a new upward stage in the economic cycle.

The end of the crisis (depression) occurs as follows: the upgrade of fixed assets leads to a growth of fixed and working capital demand, stimulating output in the respective industries; this determines an increase of jobs in the industries manufacturing production means; thanks to higher revenue, the employees increase demand of consumer goods, thus absorbing and reviving manufacturing in their enterprises, increasing employment in that sector as well. A new expansion phase begins, followed by another contraction that portends a new economic cycle, representing a progress from the previous economic cycle. The economic cycle includes two different states: **recession** (economic crisis and depression), marked by negative effects; the **boom** (a resuming of economic growth and expansion), characterized by positive phenomena. While the *recession* can be characterized by stagnation or negligible reduction of business, wide-ranging and long-term reduction of business, ***expansion*** can be robust, and could include most or all economic fields.

The cyclical evolution is a feature of contemporary economies, and each of its stages fulfils a specific role, namely: the expansion quickly satisfies some economic aspirations; the recession restores, at a certain social cost, some economic balances and ensures the restructuring and renewal of production factors.

3. Economic crisis

3.1. *The crisis typology of economic systems*

Economic crises are classified according to: their volume (singular, local, systemic); their general economic level (mega-, macro-, mezzo-, micro-); their cause (cyclic, normal, and arbitrary); their impact (catastrophic, devastating, and painful); their length (long, medium, short term); their origin (internal, external, mixed, and artificial); overcoming possibility (independent, with external assistance, or which cannot be overcome).

The main measurement systems for overcoming crises are:

- at macro-level – national economy means, including external loans;
- at mezzo-level – the means of the region, municipality and state subsidies;
- at micro-level – exclusively the means of economic organizations (as they are the only ones having access to own assets), as well as the administrative involvement of state bodies (courts of law, prosecutors, bankruptcy commissions etc.).

The causes of economic crises. Visions of the economic history

According to Karl Marx, the cycles of capitalist reproduction as a result of the main contradiction of the capitalist means of production lie in the social character of production and the private character of acquiring the results. The build-up of such contradictions leads to acute disproportions within the capitalist reproduction, the polarization of income, unemployment, the decrease of purchasing power, the decrease in demand.

According to Hayek, investments too large, state over-funding of corporations (facilitating credits, very advantageous state orders, tax relief). This leads to over build-up of profit and the unbalanced increase of production, while the corresponding demand decreases suddenly.

According to Schumpeter, each stage of the reproductive cycle has its own psychological frame, determining the respective attitude towards investment. The panic caused by the crisis narrows investments and vice versa, the effusion stimulates the competition concerning investments, which afterwards leads to their over build-up and the sudden decrease of demand.

According to Jevons, the economic cycle is explained by the fluctuation of crops corresponding to the succession of seasons. Such natural factors determine the farmers' demand, which influences the functioning of the corresponding branches.

According to Keynes, the typical cause of the crisis is not the interest increase, but the decrease of the maximal efficiency of the capital, determined by the crisis.

3.2. *The Jevons paradox and the rebound effect*

The increase in eco-efficiency represents, however, a controversial issue in the relevant literature. As far back as the 19th century, William Stanley Jevons (1865) endorsed the thesis known as the "rebound effect" or Jevons' paradox, according to which the technological progress increases the efficiency with which a resource is used and which tends to rather increase than decrease the consumption rate of the respective resource.

This paradox, based mostly on reasoning and theoretical and intuitive deductions with a view to the conditions of modern economic theories, has been toned and customized, so that, apart from reducing the necessary quantity corresponding to a certain production volume, the improved efficiency decreases the relative cost of using the resource, which leads to an increase in demand.

The Jevons paradox arises when the rebound effect is above 100%, exceeding initial efficiency gains. According to expert studies, in developed countries the rebound effect is usually low, so an improvement in eco-efficiency would normally reduce the total volume of resource use.

The Jevons paradox has been reviewed in the '80s (Khazoom, Brookes, 1987), meaning that further arguments were brought regarding the decrease of energy consumption by increasing economic efficiency will simply lead to an increased energy demand, at national economy level. In 1992, Saunders issued the hypothesis that the improvement of energy efficiency will rather increase than decrease the energy consumption, in the sense of the Khazoom – Brookes postulate, in two ways: an increased energy efficiency leads to cheaper energy, which encourages an increased consumption (the rebound effect); a higher energy consumption at macro economic level will lead to a higher rate in economic development which, in its turn, will increase again the volume of energy use per overall economy.

3.3. *The particularity of the economic crisis according to Georgescu-Roegen. The entropic perspective*

The initial premise is that the main cause of economic crises is the constant attempt to create the so-called "contraband entropy", as qualified by the great economist Nicholas Georgescu–Roegen. The expression refers to artificially creating an energy which does not exist. I will try to explain the economic crisis from the entropy point of view. Practically, I will explore the theoretical possibilities opened by value analysis and inflation with a view to entropy, and I will try to show that it can be considered responsible for economic crises and cycles.

The thermal energy of a closed system is continuously degrading into related energy. The extension of this feature of thermal energy is based on the second principle of thermodynamics, the entropy law. This law establishes that the entropy (the quantity of related energy) of a closed system grows constantly, or that the

order of such a system is gradually transformed into disorder. All activities, and especially the economic processes, inevitably constitute an entropic process.

In short, from the thermodynamics point of view, everything that is comprised in the economic process represents valuable natural resources, while everything that comes out of it represents waste without value, so the matter-energy absorbed in the economic process is in a low entropic state, while the one which is eliminated is in a high entropic state. According to Georgescu-Roegen, the purpose of this process is simple, the "immaterial flow" named "the joy of living".

3.4. *Value as part of the Roegen paradigm*

"The primordial objective of the economic activity is the self-preservation of the human species al" said Georgescu-Roegen, while out of all human needs, only the biological ones are truly indispensable. This means that a primordial condition for self-preservation is the satisfaction of biological needs, and, as the satisfaction of such needs implies accessing low entropy resources, we can establish the first condition for the utility of something. However, utility does not lead to value.

In Roegen's view, all the goods consumed by humans in order to fuel their "joy of living" have value, whether they are produced or picked from the environment, provided that all of them have low entropy.

Roegen's minimum bio-economic program, considered as utopian even by its author, recommends a decrease in the consumption of resources, matter and energy, by relinquishing the production of arms and other futile "luxuries", the decrease in population numbers up to a level where food may be ensured only by eco-agriculture and freeing the current human from the sick tendency to produce and consume "fashionable" goods.

4. The resilience of economy – diminishing the effects of the economic crises

The resilience term was used for the first time in physics and starting with the 1970s it was introduced in other areas, including economy. By definition, the economic resilience represents the capacity of an economy to resist the negative effects of external economic shocks and to rapidly heal after the impact.

Some of the fundamental traits defining the resilience of an economic-social system, with a view to its infrastructure component, are: the existence of reserves (positive redundancy), which facilitate the amortization of shock; flexibility, capacity to correct/adjust imbalance; maintaining social cohesion; social and political capital, social and political dialogue institutions, which allow negotiation and reaching compromises (especially in democracies); economic performance, which ensures sustainability; capacity to adapt, self-organize and learn, which

would allow the development of "anti-bodies" and buffers for predictable and unpredictable shocks.

Climate changes indicate disorders in the relation between humans and nature, random and unpredictable phenomena, wars, terrorist attacks which have a strong effect due to their unpredictability. Here, we need to include extreme phenomena, whose proliferation invalidate even their perception as extreme and rare events[10].

Some of the causes which diminish economic resilience are: increasing the inter-connectivity degree, which affected resilience to the extent that contamination effects intensify without instruments to stop them; epidemics spread faster with a view to the intense circulation of humans and goods, and when control means are ineffective; new information and communication technologies increase the vulnerability of informatics systems which are one step behind in the defence against viruses and forbidden accessing (hackers).

As globalization is not accurately managed, it has made systems vulnerable even in developed countries. Not even the most developed and mature economies cannot efficiently absorb the shocks created by the competition of countries which assimilate advanced technologies and own cheap labour.

In Romania, the resilience of the system was tested over the years by the shocks caused by ample floods (whose effects are aggravated by deforestation and precarious dams). Education and infrastructure subsidies are other major weaknesses which affect the resilience of the domestic economic system.

Inadequate policies as rules of the EU game have fostered the emergence of large external imbalances (of two digits) in the past decade, which determined painful corrections with a view to freezing financial markets. There is also an insufficient orientation of resources towards the production of goods and services for export and which can cover internal needs. Agriculture is still under developed, there is still massive import of basic foods; the dependency of GDP (of crops) to meteorological conditions is determinant in this field. Also, the weakness of state institutions represents a trait of how the Romanian society works, which affects its economic performance.

5. Conclusions

Ascendant and descendant movements in production, inflation, interest rates and occupation form the economic cycle which characterize market economies. Such fluctuations happened as of the start of the XIXth century, and by research these it was concluded that the alternation of expansion and contraction periods take place with a certain frequency. The in-depth knowledge of economic mechanisms

[10] Tail events/black swans, as defined by Nassim Nicholas Taleb – The Black Swan: The Impact of the Highly Improbable, Curtea Veche, 2008

has stimulated competition between various schools of economic thinking with concern to the causes of the economic cycle.

In conclusion, Georgescu-Roegen speaks for the decrease of negative phenomena of production and consumption models which deplete natural capital. Practically, the so-called "rebound effect", firstly mentioned by Jevons, has also been analysed by Nicholas Georgescu-Roegen, who supported the idea of economic "decrease" (décroissance économique) meaning that a production and consensus model should be put into practice in order to avoid and diminish waste and unnecessary consumption of natural capital, by using a mix of policies promoting the passing from "high" entropy to "low" entropy, so as to slow down the process of gradual dissipation of matter beyond the possibility to "reassemble" (reuse).

At an economic science level, it becomes very clear that we need to accept that the universe where we find ourselves is finite, not inexhaustible, and this leads to a conceptual redefining of all variables determined by this conclusion.

References

Chiriţescu Vergina, Popârlan Alina Maria, Marica Mariana Daniela, Corfu Gabriela, Kruszlicika Mihaela – Economie agrară şi dezvoltare rurală. Realităţi şi perspective pentru România, ediţia a II-a, Studiu preliminar privind gradul de dezvoltare economică integrată în macroregiunea 2 a României.

Dezvoltare urbană durabilă integrată, Politica de Coeziune 2014–2020 – http://ec.europa.eu/regional_policy/sources/.

Georgescu Nicholas Roegen – Unele elemente de orientare în ştiinţa economică, Editura Expert, 2009.

Georgescu Nicholas Roegen – The Entropy Law and the Economic Process, Harvard University Press, 1971.

Georgescu Nicholas Roegen – Energia, resursele naturale şi teoria economică, Editura Expert, 2008.

Lester Brown – Planul B 4.0 Mobilizare generală pentru salvarea civilizaţiei, Editura Expert, 2011.

Lostun, Andreea Maria, – An entropic perspective on economic crises, MPRA, 2011.

Muntean Octavian Liviu – Evaluarea impactului antropic asupra mediului, Editura Casa Cărţii de Ştiinţă, 2005.

Musters A.P.A. – The Energy–Economy–Environment Interaction and the Rebound Effect, BIDOC, 1995.

O'Riordan, Timothy – Environmental science for environmental management, Prentice Hall, 2000

Taleb Nassim Nicholas – Lebada neagră, impactul foarte puțin probabilului, Editura Curtea Veche, 2008.

Revista Română de Economie – http://www.revecon.ro.

Ţigănaş Claudiu – Ciclul economic. Un scurt popas doctrinar, Analele ştiinţifice ale Universităţii "Alexandru Ioan Cuza" din Iaşi, 2004–2005.

Zaman Gheorghe, Goschin Zizi – Economie teoretică şi aplicată Multidisciplinaritate, interdisciplinaritate şi transdisciplinaritate: abordări teoretice şi implicaţii pentru strategia dezvoltării durabile postcriză, 2010.

Zaman Gheorghe, Vasile Valentina – Migraţia forţei de muncă şi dezvoltarea durabilă a României. Abordări teoretico-metodologice. Sisteme de indicatori şi modele de analiză, Editura Expert, 2005.

Schumpeter Joseph – Capitalism Socialism and Democracy, Harper, 1975.

Alcott Blake – Jevons' Paradox, Ecological Economics, 2005.