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Abstract. Despite theoretical and methodological improvements by national accounts framework revisions, not without disputes and confrontations of views, the growing complexity of economic and social phenomena under globalization circumstances has led to increasing difficulties in the design, monitoring and implementation of specific policies depending on GDP indicator. The paper focuses on the analysis of the GDP relevance and limitations in its interpretation, including a retrospective view. Some inconsistencies as regards the metrics of GDP (illegal activities, unobserved economy, self-consumption in rural households, owner's imputed rents) are highlighted. Because the GDP does not take into account the impact of important factors of progress (depletion of natural resources, environmental factors, urban concentration and rural depopulation etc.) and does not reflects neither the citizens wellbeing (starting from Easterlin Paradox), efforts to develop new statistical standards in order to complement/substitute GDP with other indicators and/or building composite indicators that integrates various aspects of quality of life have been made, but without meeting a general consensus at the global level. In the end of the paper other derived indicators (GNP, GNI, AIC) are discussed and some considerations regarding the time horizon of Romania's real convergence with the EU, including the accession to Eurozone are added.

Key words: System of National Accounts, GDP limitations, International Comparison Program, wellbeing, Romania EU convergence.

JEL Classification: B15, B41, C82, E01, N10, O11

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1. GDP and National Accounts
1.1 Brief history of National Accounts

The first attempts to estimate the National Accounts dates back to the seventeenth century, being attributed to William Petty (1676[1]) who, in the assessment of income and wealth at the personal and national levels included components such as land, ships, housing and other real estate, recommending that taxes to be paid in other ways than gold and silver, as a result of the increase in fiscal capacity of England, at that time, engaged in a war with the Netherlands.

A century later, Adam Smith (1776[2]) introduced the idea that the wealth of a nation is based not only on activities in agriculture and mining, but the domestic production should include also manufacturing activities, although without providing a concrete way of measuring wealth (or production). After another century of economic thought evolution, in the late of 1800s, the neoclassical approach of welfare, particularly through the work of Alfred Marshall (1890[3]), recorded significant progress towards a more rigorous conceptual and terminological framework of economics (defining supply and demand, marginal utility, costs of production, market value or price), including notions on production metrics.

In terms of measuring the aggregate economic activity, domestic production and the development of econometrics, in the 1930s, the work of Colin Clark (1932[4]) in the United Kingdom and Simon Kuznets (1934[5]) in the United States made a major contribution. The latter, at the request of US Congress, has developed a uniform set of National Accounts, considered the prototype of what was to be transformed afterwards into a system of standards at international level.

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[1] W. Petty, *Essays on Mankind and Political Arithmetic*, Project Gutenberg, transcribed from the Cassell & Co. edition by David Price, London, 2014 (First edition: 1676).
[2] A. Smith, An Inquiry into the Nature and causes of the Wealth of Nations, Edited by S.M. Soares, Metalibri edition, London, 2007 (First edition: 1776).
[3] A. Marshall, *Principles of Economics*, Palgrave Macmillan, London, 2011 (First edition:1890).
[4] C. Clark, *The National Income 1924-31*, Frank Cass & Co Ltd, london, 1965 (First edition: 1932).
[5] S. Kuznets, *National Income, 1929-1932*, 73rd US Congress, 2d session, Senate document no. 124, 1934.

John Maynard Keynes (1936[6]) had a revolutionary approach to economic thought in the interwar period. In his macroeconomic vision, based on the primacy of demand and an active role of the state in moderating the economic cycles fluctuations (*boom and bust*), including the US post-crisis recovery after the '30s *Great Depression* and the *World War II*, the use of new tools of National Accounts was of crucial importance.

Following the theoretical and methodological improvements in the National Accounts framework, including the Gross Domestic (or National) Product measurement, not without disputes and confrontations of views[7], subject on which we shall further return, the growing complexity of economic phenomena and the increasing difficulties encountered by the decision makers in the design, monitoring and implementing specific policies, exacerbated by crises or wars, have imposed the necessity of amending the macroeconomic tools, associated with more clear indicators and methodologies, both nationally and internationally agreed.

Shortly after the establishment of the United Nations in 1947, a committee of experts from the Statistics Commission, under the leadership of the British economist Richard Stone[8] (Nobel laureate for economics in 1984) delivered a report on National Accounts, containing principles and methodological recommendations of compiling them, in order to ensure also the international comparability of data.

This report is considered as substantiating the first version of National Accounts (*System of National Accounts* - SNA) drafted in 1953 by the UN Statistical Commission, which included a set of 12 standard tables, designing a detailed classification of flows in the economy, appropriate practically for all countries in the world.

After slight revisions done in 1960 and 1964, the SNA was considerably extended in 1968, by adding input-output tables, methodological changes that allowed the estimates of indicators in constant prices being also operated.

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[6] J.M. Keynes, *The General Theory of Employment, Interest and Money*, Palgrave Macmillan, London, 2007 (First edition: 1936).

[7] In the context of multiple critics over time about the limitations of GDP as a measure of macroeconomic performance (between them, Nobel Prize winners for economics as Daniel Kahneman, Robert Solow, Joseph Stiglitz, Amartya Sen, Muhammad Yunus) it should be pointed out that Kuznets himself, in arguing the utility and interpretation of the indicator, in 1934, made some remarks about its shortcomings, warning that the welfare of a nation can scarcely result by measuring the national income. Moreover, in 1962, returning to the subject, Kuznets mentioned that one have to distinguish between the quantity and quality of growth, and between the short-term and long-term, and, in case of establishing a specific objective of economic growth, its type and purpose requiring to be clearly specified (European Parliament, *Alternative progress indicators to Gross Domestic Product as a Means Toward Sustainable Development*, EP, Policy Department, Brussels, 2007, p. 12).

[8] United Nations*, Measurement of National Income and the Construction of Social Accounts* (Appendix: *Definitions and Measurement of the National Income and Related Totals* by Richard Stone), Studies and Reports on Statistical Methods, No 7, UN, Geneva, 1947.

Subsequently, the SNA was reviewed in two stages, namely in 1993 by harmonizing National Accounts with other international standards, and in 2008, by updating and adapting, somewhat late in our opinion, to the changes in the global economic environment.

It is worth mentioning that these revisions were coordinated by a working group including experts from five institutions of international importance, namely the UN, IMF, World Bank, European Union (Eurostat) and OECD, that aimed at developing a reference framework of definitions, standards, classifications and accounting rules, e.g. a unified statistical toolkit, able to ensure a consistent set of macroeconomic accounts in order to satisfy the information needs of policy making, analysis and research.

The SNA international standards, although just recommended and not mandatory, were adopted by most countries, with some exceptions, for reasons that are rather related to the economic development level and/or the type of political regime (many countries on the African continent, North Korea, Cuba).

At the European Union level, the SNA standards were adapted to the structures of Member Countries, under the European System of Accounts (ESA), established in 1995 (according to the SNA 1993) and revised in 2010 (according to the SNA 2008).

It must be emphasized that, in accordance with the European Parliament Regulation No. 549/2013, the reporting and publication of National Accounts data, based on the methodology envisaged by ESA 2010 standard, became mandatory for the Member States in September 2014.

The necessity of these last amendments was generated by the accelerating globalization, the fragmentation of the world production and the expansion of international value-added chains led, mainly, by the multinational companies, the increased cross-border movement of persons, goods, services, capital, information and the increasing interconnection of national economies, as well as the financial markets, dramatically highlighted by the global crisis triggered in 2008, with rapid spillover effects around the entire world.

It was found that these new phenomena induced by the globalization have affected the relevance of traditional indicators, including those based on the National Accounts, introducing distortions that have damaged the quality of data and their correspondence with real phenomena in the world economy, directly impacting on their usefulness in decision making and having to be corrected by revising the existing international standards and introducing new ones to compensate the lack of information and the emergence of so-called *data gaps*[9].

Furthermore, we will briefly focus on some major effects of the 2008-2009 global crisis upon some macroeconomic and financial concepts and approaches.

[9] United Nations, *The Impact of Globalization on National Accounts*, UN-ECE, Geneva, 2011.

1.2 Effects of the global crisis on macroeconomic and financial concepts

The shock of the global crisis of 2008-2009 highlighted, in a dramatic manner, the need for another conceptual and methodological approaches to macroeconomic and financial stability, fundamentally different, with effects on GDP relevance, including its interpretation paying maximum analytical attention of the related data.

One of the most important changes has been generated by the observation that a crisis triggered on a financial market niche (the *sub-prime mortgage market* in the US), appreciated as having an insignificant dimension compared to the overall American financial system, could be transmitted extremely fast, by contagion effects, in an interconnected global context, on a large number of markets around the world, which imposed, among others, new connotations regarding the definition and assessment of the systemic risk[10].

In general, the systemic risk is considered as referring to the failure in complying with the obligations, financial or other, of one participant in the system, which has led to the failure of meeting the commitments of another participant, thus jeopardizing the stability of the entire system. From this definition it follows that the systemic risk is associated with all and, respectively, each system / subsystem related to the functioning of global markets mechanisms and can be validated at the local level too, in the sense of countries or group of countries with a major influence on the financial balances and the world economy. For instance, as concerns G-20, a number of 10 countries are listed as having systemically important financial sectors.

In terms of financial stability, the systemic risk is associated with the possibility of occurrence, suddenly and unpredictably, of an event that causes a loss of economic value or confidence in an important area of the financial system, with significant adverse effects on the real economy, under the circumstances of the absence of strong and immediate responses from policy makers or policy-led authorities.

If this definition may be categorized as having an abstract substance, the operationalization of evaluating and monitoring the systemic risk represents a challenge that, at least so far, the academic world and the regulatory national and / or international institutions, have failed to agree on the adequate solutions. In practice, a number of indicators, simple or aggregated, both in the category that have the ability to report phenomena having a crucial role in triggering previous crises (as the widening of current account deficits) and new indicators, with a more complex nature (as the interbank network connections), which implies immediate data access and the use of sophisticated methods and models to process them for assessing and monitoring the credit risk or the *default* contagion risk.

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[10] Gerlach S., *Defining and measuring systemic risk*, Economic and monetary affairs, European Parliament-DGIP, November, 2009.

In order to manage, supervise and assess the systemic risk, on the occasion of G-20 meeting in April 2009, it was decided to establish a Financial Stability Board (the successor to the Financial Stability Forum), which was confirmed at the important summit at the level of heads of state held in September 2009 (Pittsburgh, USA). The Financial Stability Board (FSB) has its own Charter and organizational structure, with the essential task of promoting the reform of international financial regulations. In January 2013, this multinational board was set up as a non-profit organization based in Basel, under Swiss jurisdiction.

The structure of the FSB is extremely complex, comprising, at the level of G-20 member countries, the national authorities responsible for financial stability (ministries of finance / treasury, central banks, supervision agencies / committees), international organizations (EU, OECD), regulatory or financial institutions (IMF, World Bank, BIS), international financial markets committees / associations in specific sectors, involved in developing standards and best practices.

Despite certain progress (mainly, the implementation of Basel III standards in the banking system), as stated in the last report of the G-20 FSB [11], a number of inconsistencies in critical areas concerning, in particular, the implementation of resolution mechanisms, the reform of OTC (*over-the-counter*) derivatives, the prevention of new risks and vulnerabilities arising from changes in the structure and liquidity of markets, the financial institutions misconduct (especially at the level of top management) etc. is still maintaining.

Reducing the risks to financial stability, as clearly stated in the FSB report's conclusions[12], depends on the improvement of information quality, the transparency and due time they are made known, in such a way as to allow economic and financial actors to understand and better manage the risks and the sudden changes occurring in the markets.

In this regard, starting from the IMF / FSB report presented in November 2009[13], on the financial crisis and the scarcity of information, the G-20 have launched the Data Gap Initiative (DGI) and a multiannual action program, which includes 20 recommendations aimed to recover the situation regarding the lack of information in four major areas: risk assessment in the financial sector; cross-border financial links; vulnerability of the domestic economy to external shocks; improving communication of official statistical data.

At the international level, the DGI was coordinated by an inter-agency group chaired by the IMF and including BIS, ECB, Eurostat, OECD, UN and World Bank.

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[11] Financial Stability Board, *Financial Reforms – Achieving and Sustaining Resilience for All*, FSB Report to the G20, November 9, 2015, p. 4.

[12] *Idem*, p. 7.

[13] *The Financial Crisis and Information Gaps*, Report to the G-20 Finance Ministers and Central Bank Governors, Prepared by the IMF Staff and the FSB Secretariat, October 29, 2009.

On the occasion of the Global Conference on the DGI progress held in June 2014, the representative of the IMF Statistics Department, He Qi[14], said that, virtually, in all four major areas of interest, the conceptual and statistical framework needs to be developed further and, more important, despite the existence of this framework, efforts should be focused on collecting data on financial soundness indicators, CDS (*Credit Default Swap*), housing market prices etc., and on improving the communication of official statistical data regarding key global indicators (PGI - Principal Global Indicators)[15].

Clearly, one of the most important indicators which is seeking to eliminate the lack of information is the GDP, including its detailed breakdown on the demand side (expenditures method).

The inter-agency group is trying to contribute to the improvement and implementation of common standards also regarding the methodology based on purchasing power parity (PPP), the harmonization and dissemination of real estate market price indices etc.[16].

Since a detailed analysis of methodological changes suffered by SNA over time exceeds the objectives of this paper, we focus further on the main changes of the ESA 2010 standard compared to 1995 edition, and their effects on the GDP revision at the European Union level.

1.3 Methodological changes of ESA 2010 and the impact on GDP revision

The new ESA 2010 standard imposed a series of conceptual adjustments in the framework of the National Accounts, in its scope and coverage, also by the expansion of quarterly and regional accounts, and the introduction of new chapters concerning the satellite accounts, of the public administration and the rest of the world.

Summarizing, the main changes relate to:

- reclassifying Research and Development (R&D) expenditures from intermediate consumption to gross fixed capital formation, materialized in intellectual property assets, to be recorded in a satellite account;
- reclassifying expenditures for weapons systems from intermediate consumption to gross fixed capital formation;

[14] He Qi, *G-20 Data Gaps Initiative*, IMF/FSB *Global Conference on the G-20 DGI-Progress in Five Years*, June 25-26, Basel, Switzerland, 2014, p. 5.

[15] A database managed by the IMF, designed to provide comparable data to the G-20 member countries, of high quality and easily accessible, including over 100 indicators covering the real sector, external sector, financial sector, public finances, public debt, inflation, exchange rate etc.

[16] International Monetary Fund, *Recent Developments and Current Initiatives*, Statistics Department, IMF, Washington, 2012, pp. 24-25.

- changing the methodology for the financial services assessment by introducing the analytical concept of capital services, registered separately, as a component of the value added;

- redefining the financial assets, by including a wider coverage of the financial derivative contracts;

- introducing new rules for pension funds registration, by including the entitlements and associated flows for all public and private pension schemes;

- changing the registration of purchases and resale of goods subject to processing in the same country or abroad, according to the "change in economic ownership" principle;

- redefining the regime of the financial companies, mainly on "special purpose entities" type, the public-private partnership, the dividends paid by the public corporations, the credit guarantees;

- introducing new accounting rules for the registration into the GDP of illegal activities (prostitution, production and smuggling of drugs, alcohol, tobacco).

Nominal GDP (thousand billion euro)
ESA 2010 compared to ESA 95, in 2000-2013

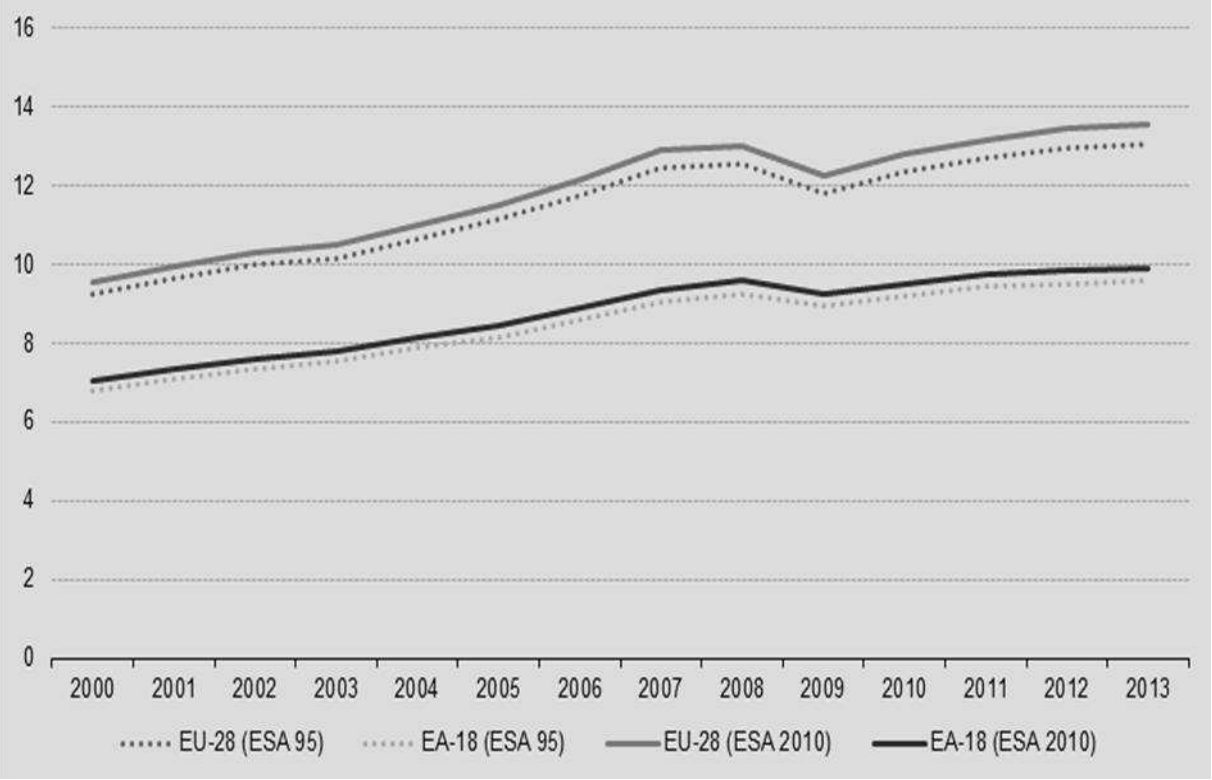

Figure 1

Source: Eurostat Statistics Explained, *Annual national Accounts – how ESA 2010 has changed the main GDP aggregates*, 2015.

In accordance with the preliminary Eurostat estimates published in 2014[17], the implementation of ESA 2010 and the review of the figures for the period 1997 to 2013 resulted in a significantly higher nominal GDP, by 3.5% on average annually over the whole EU-28 for the entire period, compared with the estimations of the ESA '95 methodology, mentioning also a limited impact on the GDP growth rates.

As shown in Figure 1, in terms of nominal GDP, the differences between the two methodologies, in absolute terms, ranged from 2,500 billion euro to almost 4,000 billion euro annually at the EU-28 level, throughout the period 1997-2013[18]. These significant differences following the revision of GDP figures according to ESA 2010 were caused both by methodological changes and statistical improvements, the latter due to the use of new data sources, mainly as concerns the estimation of illegal activities.

In 2010, in some countries, where the differences in the GDP levels estimated under ESA 2010 compared to ESA '95, were significant, comparing also with the average of +2.3% registered at the level of EU-28 (Sweden: +5.5%; Finland: +4.7%), they are explained, almost exclusively, through the impact of methodological changes, mainly due to the reclassification of expenses for Research and Development (see Table 1).

Table 1

The impact of methodological changes and statistical improvements in several EU countries in 2010

- % of GDP -

Country	Difference (GDP increase)	Methodological changes ESA 2010		Statistical improvements
	Total	Total	of which: R&D	
EU-28	3.7	2.3	1.9	1.4
Bulgaria	2.0	0.4	0.3	1.6
Czech Republic	4.3	3.1	1.2	1.2
Cyprus	9.5	1.1	0.2	8.4
Finland	4.7	4.2	4.0	0.5
Netherlands	7.6	1.7	1.7	5.9
Poland	1.5	1.2	0.5	0.2
ROMANIA	1.9	0.6	0.5	1.3
Sweden	5.5	4.4	4.0	1.1

Source: Eurostat, *First estimation of European aggregates based on ESA 2010*, Eurostat News Release no 157/2014 - 17 October, 2014, p. 4.

[17] Eurostat, *First estimation of European aggregates based on ESA 2010*, Eurostat News Release no 157/2014, 17 October, 2014.

[18] For the US, the data revision according to SNA 2008 led to a higher nominal GDP by nearly 4%, while in the case of China it was estimated that the impact of methodological changes on GDP stood at 16% (Independent Evaluation Office, *Behind the scenes with data at the IMF: an IEO evaluation*, IEO-IMF, Washington, February 25, 2016, p. 8).

In other countries (the Netherlands: +7.6%; Cyprus: +9.5%) the differences are due mostly to the impact of statistical improvements. In this context, it is worth mentioning that, the revision by Eurostat of Romania's GDP, showed a difference of +1.9% in 2010, of which +0.6% on the account of methodological changes, and +1.3% due to statistical improvements.

Beside the illegal activities, that continue to encounter major difficulties for an adequate registration, a study of Bruegel[19] pointed out that a significant influence on GDP estimations has the legal hidden economy (*legal shadow economy*) defined as referring to the production and services carried on so-called "black" (or "gray") market.

To these, the tax evasion, which has reached alarming levels, exacerbated by tax optimization practices and intra-group pricing transfer, mainly by the multinationals or their subsidiaries is added. It is estimated that, in 2013, the informal economy accounted for over 20% of GDP in countries like Italy, Greece, Cyprus, Lithuania, Latvia and Slovenia[20].

For Romania, the non-observed (hidden) economy was estimated at 28.4% of GDP by a report of the European Commission published in 2013, which was double compared to the EU-27 average (e.g. 14.3%), noting that half of it was caused by the undeclared work, especially due to the high tax burden on labor[21]. In some emergent countries (India, Philippines) the share of the hidden economy is significantly higher, ranging between 40% and 50% of GDP and, in other countries, usually less developed (many African countries and some from Latin America) even exceeding 50% of GDP[22].

The Implementation Guide of SNA 2008 prepared by the UN experts, in the chapter on time series, revisions and statistical discrepancies, was drawing attention on the fact that, in most cases, the published data cover a historical period of 10-15 years, while the macroeconomic quantitative modeling principles and methods require the use of longer time series, up to 50 years[23].

Under the circumstances of increased uncertainty and lack of reliable data, based on the evolution of real phenomena, the quality of macroeconomic forecasts, as essential tools in the management of policies and the orientation of international financial markets, has deteriorated, both globally and at the regional and country levels, the time intervals for their revision from the responsible institutions becoming smaller and the corrections, in most cases, bigger.

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[19] S. Merler, P. Huttl, *Wellcome to the dark side: GDP Revision and the non-observed economy*, Bruegel, February 26, 2015.

[20] OECD, *Base Erosion and Profit Shifting Project*, Final Reports, OECD Better Policies for Better Lives, Paris, 2015.

[21] European Commission, *Tax reforms in EU Member States 2013 Report*, EC Brussels, 2013, p. 78.

[22] *Countries with the biggest shadow economy*, Bloomberg, USA, 2016.

[23] United Nations, *System of National Accounts 2008*, UN, New York, 2009, p. 395

2. GDP relevance and limitations
2.1 Major methodological inconsistencies in estimating GDP

The conceptual consistency of the three methods for estimating GDP (output, expenditures and incomes approaches) does not always correspond to the effective means of compiling data, due to the diversity of sources, especially for exports and imports of services. Any error in each of these methods is leading to differences, which, necessarily, have to be published as "statistical discrepancies", but, in practice, it does not often happen[24].

The average user will encounter many difficulties to realize, unless the explicit size of statistical discrepancies is made known, if they do not exist, or merely they have not been published, so his degree of attention to this issue needs to be the highest, in order to ascertain a benchmark on the data accuracy.

Beside the statistical distortions occurring mainly because of measurement errors of exports and imports of services, the accuracy of GDP data is affected also by the substitution of the lack of direct sources for data with estimates, such as the case of some expenditures of the central and / or local government, the fixed capital depreciation, the interest paid / received, some emergent activities (Internet, purchase of software, mobile phone services etc.) in rapid expansion.

Another major methodological inconsistency of GDP estimates is generated by the consumption of goods and services in-kind, associated, mainly, with the household sector and the subsistence agriculture.

Although they should be included in National Accounts, the transfer of such goods and services among resident households escapes, usually, to statistics, which have more significant effects in countries where the non-fiscalized economy has a more important size.

Assessing the households' self-consumption in rural areas, which, in many countries, has a significant dimension, shows a high degree of approximation, both due to the difficulties of estimating the contribution of product inventories from the previous period, taking into account the seasonality of production, and the use of relative prices associated to the principle of nearest local market, including the related transportation costs.

In Romania, the share of self-consumption in GDP is relatively high, although registering a downward trend in recent years, namely from 13% in 2004 to 6.4% in 2011 and about 5% in 2014, with the mention that the

[24] In the case of USA, which published the statistical discrepancies, these are significant, in the years 2014 and 2015 being around 200 billion dollars and representing more than 1% of GDP (Bureau of Economic Analysis, *Gross Domestic Product: Forth Quarter and Annual 2015*, BEA News release, US DC, March 25, Washington, 2016, p. 14). In the case of Romania, except for seasonal GDP adjustments, the National Institute for Statistics does not specify the statistical discrepancies.

difference ranging from simple to triple between this ratio in rural and urban areas respectively[25].

In the category of goods and services produced in households for their own consumption the construction / expansion of dwellings, shelters for livestock, warehouses for grains, domestic services for own consumption etc. are also included, making virtually impossible the exhaustive and accurate measurement of the entire self-consumption.

Another methodological problem is generated by the inclusion in the households final consumption of the imputed rent for owner-occupied houses or the market rent collected / paid for rented houses, especially if the proportion of dwellings for rental is high and the real estate market has a high degree of stratification / segmentation (e.g. urban / rural, major regional disparities in the standard of living[26]), as is the case of Romania.

The GDP limitations arise also from the fact that non-market activities escape National Accounts records. Despite many attempts, there is no consensus on the valuation of homework (noted also as *unpaid* or *non-market housework*, sometimes as *household production*) e.g. some domestic activities, especially in the category of services, such as meal preparation, house cleaning, washing, children care and elderly care etc.

Some studies have revealed a monetary value of domestic work estimated at percentages between 30% and 50% of GDP during 1970-1990 in countries like USA, Germany, France and Canada[27].

More recent calculations have pointed out that, in the US, the value of domestic work accounted for 26% of GDP in 2010, compared to 39% in 1965[28].

In most of the EU Member States, the household production was estimated at figures between 20% and 40% of GDP[29].

Even if the numbers have a certain degree of approximation, the downward trend in the share of GDP of the housework value is consistent with the increase in the development level, reflecting the more and more domestic activities transition to the market services.

Although the idea dates back to the 1970s[30], only recently, at the UN level, a development in the context of national accounts has been agreed, the extended (satellite) accounts for highlighting the accounting of non-market

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[25] National Commission of Prognosis, *The projection of main macroeconomic indicators*, CNP, Bucharest, September, 2010 and November 2012, 2015.

[26] United Nations, *idem*, p. 466.

[27] A. Chadeau, *What is households non-market production worth?*, OECD Economic Studies, No 18, Spring, 1992, pp. 85-103

[28] B. Bridgman, A. Dugan, M. Lal, M. Osborne, S. Villones, *Accounting for Household Production in the National Accounts, 1965–2010,* BEA Survey of Current Business, May 2012, pp. 23-36.

[29] V. Miranda, *Cooking, Caring and Volunteering: unpaid work around the world*, OECD Social, Employment and Migration Working Papers, 3 March, 2011, p. 30.

[30] W.D. Nordhaus, J. Tobin, *Is Growth Obsolete?*, Cowles Foundation Discussion Paper No. 319, Yale University, 1971.

activities, especially of social and environmental nature, that can be important growth factors, including capital and household services and unpaid household work.

At the EU level, despite some progress, the record of these activities in satellite accounts is still in the phase of methodological debates, the reconciliation of data and their proper integration remaining a difficult challenge[31].

These methodological deficiencies, whose persistence, through a multiplier effect, lead to considerable margins of error in measuring GDP at national level, are multiplied by international comparisons, which implies the figures conversion into a single currency (usually US dollars or euro, time series in constant prices) by using increasingly volatile exchange rates and / or by using specific methodologies in virtual currencies (PPP, PCS) that take into account the purchasing power parity, in order to ensure the comparability of data.

A more detailed discussion on the matter related to the data comparability shall be made further, where the evolution of the GDP in Romania during the last 150 years, including various international comparisons will be analyzed.

2.2 Criticisms of GDP

The criticisms of GDP are manifold, some of their roots being fundamentally different, but having an interfering area, which, in the attempt - often apparent - of harmonizing them, seems to have drifted on the land of speculations, farther from the frontiers of real phenomena knowledge that face the contemporary world and their dynamics understanding, making almost invisible and, therefore inoperative, the maneuver room in correcting the adverse effects and, respectively, in their orientation towards the desirable objectives of development at the national, regional, continental and global levels.

One of these roots has, as origin, the hegemony of the economic thought after the Second World War, e.g. the approach based on growth (*growth-centric thinking*), prevailing until the '90s, which had, among the adverse implications, the politicization of GDP, by diverting its meaning and function, essentially economic, and assigning it an untouchable nature, which stemmed from the fear that, granting a greater consideration, otherwise rightful, to other factors (the environment for example) would have meant taking decisions with potential political complications, requiring legislative changes, revising the economic, monetary and fiscal policies, that would suppose increases in government expenditures.

[31] Eurostat, *Review on National Accounts and Macroeconomic Indicators*, Eurostat 1/2014, p. 25.

Thus, despite clearer evidences of its limits, the GDP has become a standard of success or failure, the singular measure indicating the course of the development progress, opposed to the gradually increase in the complexity of social and economic issues under the circumstances of more interconnected global markets, diverting and concentrating the attention of all stakeholders and decision makers in one direction only.

At the level of the public perception, it has been induced, by "omniscient" officials, maybe deliberately, the idea that GDP has the ability to compress the diversity and immensity of an economy, condensing into a single measure all phenomena of any kind, which occurs within an area, at national or global levels[32].

Moreover, it has witnessed the foundation and strengthening, *per se*, of a "reversed" logic of the development process, namely, in terms of market economy, rule of law and democracy, by converting GDP, from a means of increasing the population wellbeing, to an end in itself, acting sometimes as a campaigner agent during the general elections, rendering absolute the assessment of the measure in which this policy target is being reached with the real performances of the economy, implicitly, as result of the political power in office[33].

This new paradigm, in a political interpretation, most often wrong, generates the manipulation of voters on the basis of flawed promises (economic growth, employment creation, social assistance etc.) without a real foundation, and, into an economic approach, that could be merely validated, influences, in a decisive manner, the investors decisions and the financial flows on capital and / or goods markets and, to some extent, the national and international policies[34].

An example of an arbitrary manipulation of GDP, its conversion to political ends and distorting the realities, occurred just in Romania during 2007-2008, preceding the economic and social effects caused by the global crisis of 2008-2009, but which, more likely, have even exacerbated them.

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[32] J. Gertner, *The Rise and Fall of the G.D.P.*, The New York Time Magazine, May 13, 2010.

[33] The intentional manipulation is often a case of Goodhart's Law, the popular formulation of which is "When a measure becomes a target, it ceases to be a good measure". Goodhart's Law (named after an economist who was a member of the Bank of England's Monetary Policy Committee) refers to the vulnerability of a statistical indicator to manipulation once it is used to define a policy target (Independent Evaluation Office, *Behind the scenes with data at the IMF: an IEO evaluation*, IEO-IMF, Washington, February 25, 2016, p. 8).

[34] It is noteworthy in this respect, the confidentiality surrounding the GDP estimates before being officially communicated (usually quarterly) and the absolute ban for those holding such information to disclose them before exiting the embargo, especially in the cases of systemically important countries for the global economy. For example, in the US, a team of analysts from BEA (Bureau of Economic Analysis, under the Department of Commerce), after finalizing the figures on GDP in a completely isolated room (*lock-up room*), these are sent in a sealed envelope to the chief of economic advisers at the White House, who, after informing the US President, retransmits them to the BEA, the next day following to be communicated officially by a press conference (Ibid).

Examining the contribution of Romania's GDP growth factors on the demand side (Table 2) it was found an atypical macroeconomic picture during 2007-2009, marked by major structural changes in only three years, i.e. from a situation that seemed favorable (high GDP growth rates in 2007 and 2008) to one of extreme fragility (GDP decline by 7.1% in 2009).

Table 2

Contributions to GDP growth in Romania and other macroeconomic indicators in 2007, 2008 and 2009

- percent -

Years	2007	2008	2009
Gross Domestic Product	**6.2**	**7.3**	**-7.1**
Internal demand	**15.7**	**8.2**	**-14.4**
Final Consumption	8.2	7.5	-6.7
Gross Fixed Capital Formation	7.5	0.6	-7.7
External demand (net exports)	**-9.5**	**-0.8**	**7.3**
Other macroeconomic indicators (% of GDP)			
Balance of consolidated budget	-3.1	-4.8	-9.1
Current account balance	-13.4	-11.6	-4.2
Foreign Direct Investments (net)	5.7	6.7	3.0

Source: based on data from International Monetary Fund, National Commission for Prognosis, National Bank of Romania.

It is worth mentioning that, in 2009, Romania was saved from a financial collapse only by resorting to the external assistance from the IMF and the EU (amounting to 20 billion euro), procured under conditions of extreme emergency. Without going into details, just noting that this slippage, apparently from one extreme to the other, occurred amid a major imbalance between the domestic demand (+15.7%) and the external demand (net exports contribution of -9,5%) in 2007, witnessing an unsustainable increase in GDP in 2007 and 2008, based less on the gross capital formation (helped anyway by the massive inflows of Foreign Direct Investments up to 2008) but mainly on the increase in final household consumption, fueled by the wage rises and the consumer credit boom, under the circumstances of budget deficits widening and of the trade and current account deficits.

The fact that the increase in consumption and, therefore, in generating economic growth, was unsustainable is proved by its transformation from the factor with the biggest contribution to the GDP growth (+8.2% and +7.5% in 2007 and 2008 respectively) in the determinant of GDP decline in 2009 (a negative contribution of 6.7%), offset partially, in an atypical manner for the Romanian economy, by the hyper-positive contribution of net exports (+7.3%), due, in fact, to the fall in imports of goods (38.9 billion euro in 2009 compared

to 57.2 billion euro in 2008) and reversing, in a shock-type manner, the ratio between the indexes used for calculating this contribution.

The Romanian authorities, placed in an election year in 2008, rendering absolute the figures showing high GDP growth rates, without an analysis of its factors, which would have identified specific vulnerabilities, have pushed the government expenditures to excessive levels, especially due to significant wages growth, leading in 2009 to a record budget deficit, accounting for 9.1% of GDP. In June 2010, according also to the conditionality regarding the decrease in the ratio of budgetary sector wages to GDP, stipulated in the IMF-EU agreement for financial assistance concluded in 2009, the public finances recovery imposed severe austerity measures, including the wage cutting by 25% in the budgetary sector, which have had severe economic and social effects, some of them being felt until today.

On the other hand, the authorities have not adopted the most appropriate monetary policy in order to mitigate the momentum of lending (the increase, in 2006, in the reserve requirements ratios to 40% on forex-denominated liabilities of credit institutions and to 20% on those in leu-denominated, in order to contain the credit expansion, has proved detrimental) and did not properly perceived the dangers of a real estate bubble occurring, as well as the severity of external financial imbalances impact, stressed by the global financial crisis triggered in September 2008, which affected, directly and indirectly, the banking system in Romania, dominated by foreign-capital banks, has not been anticipated[35].

Therefore, a radical change in the aggregate demand composition, happened in a relatively short period of time, as shown in the case of Romania, which reveals rather a vulnerable economy, especially if the GDP growth is achieved, mainly, by an excessive increase in consumption.

A sustainable development, even if looked upon through the angle of the evolution of a single aggregate indicator (GDP), requires a long-term balance between the domestic and the external demand contribution and also between the domestic demand components, in such a way that the gross fixed capital formation and, particularly, the investments - private and public - could spread their spillover effects vertically and horizontally, strengthening the overall economic growth in time and space.

Another vulnerability of the economy, unreported by the GDP indicator, even in an apparently stable configuration and balanced growth factors, stems from the fact that it does not reflects the degree of indebtedness nor the international investment position of a country, i.e. the extent to which growth was due to the increase in consumption and / or investments on the account of internal and / or external loans.

[35] Gh. Zaman, G. Georgescu, *Sovereign Risk and Debt Sustainability - Warning Levels for Romania*, in: „Non-Linear Modelling in Economics. Beyond Standard Economics", Expert Publishing House, Bucharest, 2011.

Or, if the rise in the indebtedness degree has not positive effects on raising the productive capacity of the economy and the added value, also by multiplier effects, the payments associated to the outstanding debt and / or the volatility of foreign capital may turn into real barriers to growth.

A significant example in this respect is still the case of Romania, where the public debt, expressed in euro, increased two times faster than GDP between 2000 and 2015, and being in the situation as the annual service (representing over 10% of GDP in the last years) has to be honored mainly by debt refinancing[36].

As regards the conceptual shortfalls, it should be mentioned that GDP, taken as such or *per capita*, does not reflect inequalities in income distribution and could hide disparities, both in time and space, which, as shown in some recent studies[37] have deepened in recent years, becoming of high concern at national, continental and world levels, that witnessed an increase in the degree of poverty, social inequalities and territorial discrepancies, despite the overall GDP growth.

The attempt to bring goods and services domestically produced in a given period to a common value denominator, using average or aggregate prices, is somewhat forced, as many reserves in interpretation due to inconsistencies of estimating the "real" growth by computing the GDP deflator, which is based on a variable basket of goods and services, corresponding only approximately to the complex patterns of consumption and investments and their changes.

The analysis of GDP, both statically and dynamically, is far from be able to provide a clear picture of the situation and the evolution of an economy, lacking in essential information, such as those concerning the fixed capital, the material, financial and human resources, as well as the availability, sustainability and effectiveness of their utilization.

In cases when GDP is taken as a reference, one must not neglect the effects of distortion on other important derived indicators to which it relates, among them, for example, the calculations of productivity, the public debt and the annual service, the different components of the budget spending (defense, education, health, R&D), international investment position etc.

Arguing that GDP still remains the best indicator for measuring the performance of a market economy, a European Commission document published in 2010[38], recognizes explicitly the limits of GDP, especially in terms of its relevance in assessing the progress and social welfare.

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[36] Idem.

[37] T. Piketty, *Capital in the Twenty-First Century*, Harvard University Press, 2014.

[38] V.A. Areces, *Measurement of Progress – beyond GDP*, the 86-th Plenary Session, 5-6 October 2010, Committee of Regions, European Union, ENVE-V-002, Brussels, 28 June, 2010.

Moreover, it stated that some GDP components can be presumed to imply even a drop in citizens' wellbeing, such as, for example, increased defense spending, including the related investments, which absorb some of resources designed for infrastructure development, education and health.

In this regard, a classic example quoted in the literature, is the hypothetical case, in which a government decides to build a pyramid, the huge related costs concurring to the economic growth revealed by the GDP, but having no contribution to the increase in the population standard of living. On the contrary, it diverts funds that could have been allocated to activities associated with the wellbeing of citizens[39].

Other criticisms of GDP refers to the fact that it does not take into account the impact of some important factors reflecting the economic and social progress, such as the depletion of natural resources, the environmental damages, the urban concentration, the rural depopulation, the social inclusion and, taken as such, it provides no perspective on the medium- and long-term dynamics[40].

In a wider approach, in order to understand the sources of growth, as Nakamura showed[41], the economic theory and the measurement of economic phenomena should be developed simultaneously, in a correlated and interdependent manner. Thus, the National Accounts analytical framework, originally built on the basis of industrial and production structures in the middle of the last century, in terms of consumer welfare too, should be developed with other indicators, able to reflect the sources of aggregate growth, and also the intangible assets, as part of individual wellbeing.

In this context, as mentioned by Nakamura, it should be understood that the GDP growth rate is totally inadequate for guiding the economic policies in this century, by far too complex to be guided by the dynamics of a single indicator[42].

The work towards the improvement of macroeconomic tools and the development of new statistical standards, amid the transition from an analytical debate based on accounts to the one having philosophical connotations, focused on two major directions, namely that of complementing GDP with a series of other relevant indicators, reflecting better the wellbeing of citizens, as well as of building a composite indicator that integrates various aspects of the quality of life.

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[39] F. Shostack, *What is up with the GDP?*, Mises Institute Daily, August 23, 2001.

[40] V. Voineagu, C. Mindricelu, D. Ștefanescu, *Beyond GDP – through environmental accounts*, Romanian Statistical Journal, No. 6 / 2010, p. 4.

[41] L.I. Nakamura, *Intangible assets and national income accounting*, Review of Income and Wealth, Series 56, Special issue1, June, 2010, p. S153.

[42] V.A. Areces, *Idem.*

3. Addressing GDP deficiencies

3.1 Stiglitz-Sen -Fitoussi Commission and its recommendations

Starting from the GDP limitations, in February 2008, at the initiative of French President, Nicolas Sarkozy, a Commission for the measurement of economic performance and social progress, led by Joseph Stigliz, Amartya Sen and Jean Paul Fitoussi was set up, in order to assess the validity of alternative tools and the requirements for the coverage of statistical information needs, including to ensure the data sources reliability and to identify other indicators relevant to the progress of society.

In the Commission' work, more than 20 experts from various international organizations (UN, OECD, INSEE), and prestigious universities in the world (Harvard, Princeton, Stanford, Massachusetts, Chicago, Columbia, London School of Economics and other) were co-opted. The activity for almost two years of the Stiglitz-Sen-Fitoussi Commission has ended up in a 300-page report, released in September 2009, in Paris[43].

This report presented, based on an extremely laborious analysis, the problems that the complex phenomena of contemporary society are facing with, ending with a series of recommendations that covers three major areas, as follows:

I. Developments / interpretations related to GDP

- Taking into account, in a larger extent, the income and consumption compared with production;
- Closer association of income and consumption with wellbeing;
- More emphasis in terms of household's perspective;
- Greater attention paid to income distribution, consumption and wellbeing;
- Implementing of tools for revenue measurement to non-market activities.

II. Life quality

- Inclusion, in the surveys conducted by statistical institutions, of questions on evaluations, experiences and priorities of citizens;
- Improved measurement of the public health, education, social connections, environmental conditions and social insecurity;
- Assessing inequalities, in a comprehensive manner, by indicators that reflect the quality of life;

[43] J. Stiglitz, A. Sen, J.P. Fitoussi, *Report by the Commission on the Measurement of Economic Performance and Social Progress*, INSEE Publications, Paris, September, 2009.

- Structuring the surveys so as to allow the assessment of the connections between the different components of the quality of life at the level of each person and using this information in the policy designing in various fields;

- Providing the necessary information for the aggregation of various dimensions of quality of life and for building different indexes. |

III. Sustainable development and the environment

- Building a set of well-defined indicators, required by the assessment of development sustainability;

- Defining the components of this set to allow their interpretation in support of human wellbeing;

- Emphasizing the economic aspects of sustainability, even if a monetary index of sustainability would be appropriate in completing this set;

- Evaluating the environmental aspects of sustainability by monitoring separate indicators in their physical expression.

It can be concluded that the work of the Stiglitz-Sen-Fitoussi Commission, benefiting from a high scientific, analytical and credibility status, at the most prestigious level, demonstrated the need for a comprehensive approach of social wellbeing in relation to GDP, proving to be crucial in changing the manner of macroeconomic indicators interpretation.

The political reflection of this major change was that governments should pursue the social wellbeing and not, in an absolutist way, the GDP, which represented a turning point in the behavior of decision makers and the configuration of economic and social policies.

The European Union authorities, who have closely monitored the work of Stiglitz-Sen-Fitoussi Commission, have taken, at once, in discussion its recommendations, thereby promoting a series of debates with the aim of identifying the most appropriate formula to supplement GDP with other indicators. In 2009, the European Commission, along with the revision of the European System of Accounts (ESA 2010) previously mentioned, sent a communication to the European Council and the European Parliament[44] concerning the need to extend National Accounts and to supplement it with social and environmental indicators, advancing the idea of creating a dashboard for monitoring the sustainable development. In November 2011, the European Statistical System Committee adopted a report launching a concrete action plan to implement the recommendations of Stiglitz-Sen-Fitoussi Commission, including the materialization of the idea of building a dashboard comprising a series of sustainable development indicators[45].

[44] European Commission, *GDP and beyond – Measuring progress in a changing world*, EC COM (2009) 433 final, Brussels, 2009.

[45] Eurostat, *Well-being and Sustainable Development*, Final Report adopted by the European Statistical System Committee, Sponsorship Group on Measuring Progress, Eurostat, November, 2011.

This dashboard was conceived as an instrument of action for the operationalization of the Europe 2020 strategy, including issues of financing (budgets, sectoral programs), containing a total of 10 headline indicators, covering five priority objectives in the fields of employment, R&D, energy and climate change, education, poverty and social exclusion, on which depends the wellbeing of EU citizens, in all Member States and their regions (according to NUTS 2 classification), ensuring also the compatibility of the statistical systems for each level[46].

A significant example of the multidimensional measure of quality of life is the population at risk of poverty or social exclusion, monitored as a key indicator under the Europe 2020 Strategy. The headline target set at the EU-28 level for this indicator is lifting at least 20 million people out of the risk of poverty or social exclusion by 2020 (compared to the 122 million people at risk in 2014, over 8 million people being in Romania).

At the level of OECD, a group of high level experts was set up in 2011 to continue the work of the Stiglitz-Sen-Fitoussi Commission[47], focusing on further research on specific topics such as inequalities and gaps assessing, a work program on measuring wellbeing and progress being launched, based on the evaluation of quality of life and material conditions, as well as their sustainability, initiative on which we will return further. Along with these initiatives at the level of various international organizations aimed at reconsidering the GDP relevance and complementing it with other indicators that reflect the quality of life or environment, some advanced countries have built their own system of indicators.

A notable example in this regard is the United States. After a first attempt dating back from 2002, based on a law adopted in 2008 (*The Key National Indicator Act*), a National system of key indicators managed by a non-profit and non-partisan entity (composed of experts from the academic, scientific, statistical communities), independent of governance structures, was set up, with the associated website: *State of the USA*. This system, divided into 20 sub-indicators, has the mission to provide Americans, transparently, data and information to help them understand and assess the progress of the nation, under the most important aspects of it[48].

As regards all these attempts to address the GDP deficiencies, based on complementary indicators, notable in fact and having indisputably positive effects amid improving the overall quality of macroeconomic analysis, but also of government policies, it should be noted that there remain at least two major inaccuracies of conceptual and methodological nature. On the one hand, the mix of indicators, no matter how well-articulated, is lacking, to a greater or smaller

[46] Eurostat, *Smarter, greener, more inclusive? Indicators to support the Europe 2020 Strategy*, Eurostat Statistical Books, European Union, Luxembourg, 2015.
[47] A. Gurria, Remarks delivered at the Conference *Two Years after the release of Stiglitz-Sen-Fitoussi Report*, Paris, 12 October, 2011.
[48] J. Gertner, *Idem*.

extent, the real consistency imposed by the analytical and interpretive rightness of macroeconomic data. On the other hand, in the case of developing indicators systems at the national level, they may contradict the requirements of international comparability.

Some other attempts, more significant in our view, concerning the construction of synthetic indicators of social wellbeing or systems of alternative indicators that mitigate some of the shortcomings of GDP and of its complementary indicators are presented forwards.

3.2 Indicators and systems of alternative indicators of social wellbeing

Yet in the year 1970, Richard Easterlin has argued that in the US, as in other countries, despite the significant increase in the income per capita, the national average, in terms of wellbeing (happiness) and / or life satisfaction, seemed not to register a real growth on long-term, a phenomenon known as the "Easterlin paradox"[49]. Among the reasons of this paradox there are keeping unchanged the relative position of the individuals' social status, due to the unbalanced distribution of benefits arising from the increased revenues, as well as the total or partial cancellation of such gains by the losses stemming from the deterioration of other important social factors (increased insecurity, lack of confidence in authorities etc.).

The first attempts to substitute GDP are attributed to William Nordhaus and James Tobin, who have defined the measurement of *Net Economic Welfare* (NEW) by amending the gross national product with the "negative" spin-offs (defense spending, public order), environmental damages, adding instead the non-market activities (as leisure and underground economy)[50].

Since then, many studies on the consideration of various measures of welfare have been carried out, among others: the Index of Sustainable Economic Welfare (ISEW) developed by Herman Daly and John Cobb in 1980, which takes into account the links between the economy, society and the environment; the Genuine Progress Indicator (GPI) developed by Clifford Cobb, a version of ISEW that incorporates more aspects of unemployment, crime, leisure time, homework; the Genuine Savings (or Adjusted Net Savings) built by the World Bank, which measures the net investment in human capital, depreciation of fixed capital, depletion of natural resources, damages caused by pollution[51].

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[49] R. A. Easterlin, *Does Economic Growth Improve the Human Lot?* in Paul A. David, Melvin W. Reder, eds., *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz*, Academic Press Inc., New York, 1974.

[50] W.D. Nordhaus, J. Tobin, *Is Growth Obsolete?*, Cowles Foundation Discussion Paper No. 319, Yale University, 1971.

[51] European Parliament, *Alternative progress indicators to Gross Domestic Product (GDP) as a means towards sustainable development*, Policy Department, Economic and Scientific Policy, IP/A/ENVI/ST, October, 2007.

Regarding alternative indicators, an internationally notable attempt dates back to 1990. Under the aegis of UNDP (United Nations Development Program) the economists Mahbub ul Haq and Amartya Sen launched the Human Development Index (HDI), a composite tri-dimensional indicator meant to reflect the human prosperity, built as geometric mean of three normalized indices of life expectancy, education and income per capita (at PPP), published starting with 1990, in the annual UNDP human development reports.

Since 2010, including as a result of the criticism that has been subjected, primarily because of disputable indicators which were considered[52], the HDI has been adjusted by the aggregate level of inequality associated with each of its three dimensions (IHDI - Inequality-adjusted Human Development Index).

According to the report published in 2015, on top positions of the HDI global rankings, which includes 188 countries, were Norway, Australia and Switzerland (with HDI between 0.950 and 0.930, respectively IHDI between 0.890 and 0.860) while Romania stood on a modest 52 position (HDI 0.793, respectively IHDI: 0.711) behind all other EU Member countries, except Bulgaria[53].

At the UN and World Bank levels, the concerns to assess various aspects of the economic and social conditions have resulted in the pursuit of well-being indicators, directly or by expanding various initiatives in this respect, carried on by governmental and / or non-governmental organizations.

For example, in 2002, the UN launched the MDG (Millennium Development Goals) platform, a global partnership for development having eight objectives, to which all Member States agreed, action plans with specific indicators in the areas of poverty, education, health, gender equality and the environment being elaborated.

In 2015, this platform has been updated and converted into 2030 Agenda for Sustainable Development (SDG - Sustainable Development Goals), which monitors 17 economic, social and environmental objectives, 169 targets and about 250 indicators[54].

Also, in 2011, the UN General Assembly adopted a resolution[55], in the explanatory statement arguing that GDP does not adequately reflect citizens' wellbeing, recommending to all Member States and international organizations to develop a new indicator reflecting the happiness of citizens, following the

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[52] The criticism focused on some HDI deficiencies both conceptual (the human development definition and its determinants) and methodological (the aggregation of various indicators, the perfect substitution of the three dimensions) such that, in time, the index suffered certain improvements, including by the calculation of IHDI (M. Kovacevic, *Review of HDI Critique and Potential Improvements*, Human Development Research Papers 2010/33, UNDP, New York, February, 2011, pp. 2-5).

[53] United Nations, *Human Development Report 2015*, UNDP, New York, 2015, p. 216.

[54] United Nations, *Transforming our World: the 2030 Agenda for Sustainable Development*, UN A/RES/70/1, New York, 2015.

[55] UN General Assembly, *Happiness: towards a holistic approach to development*, Resolution No. 65/309, 109th Plenary Meeting, July 19, 2011.

model introduced many decades ago by the Kingdom of Bhutan, build on 4 pillars, 9 areas and 72 indicators[56].

Thus, in 2012, the first annual report on the state of global happiness (World Happiness Report) has been published, under the coordination of a group of independent experts and the aegis of the UN. The report presents a global ranking based on the estimated level of happiness, including a number of more than 150 countries.

It is worth mentioning that the composite indicator of happiness is built based on six key variables (the GDP per capita at PPP, the social support in case of need, the healthy life, the freedom to make choices in life, the prevalence for generosity and the corruption perception at population and companies levels), one of the main data sources being the Gallup surveys (*Gallup World Poll*) focusing on the quality of life.

The World Happiness Report report on 2016[57], according to national scores of population happiness, as average of the period 2013-2015, witnessed on the global hierarchy top countries as Denmark, Switzerland and Iceland (scores between 7501 and 7526), Romania hovering barely the 71 position (score: 5528). Almost surprising appears the poor positions of Japan (53rd), South Korea (58th), Hungary (91th), Portugal (94th), Greece (99th), explained mainly by the unequal distribution of wealth and the determinants of the life quality, despite much higher levels of such positions in terms of GDP per capita at PPP.

The result of an inter-collaborative research project initiated in 2010 by several global leaders in social sciences, gathered in the multinational foundation *Social Progress Imperative*, which has gained increasing recognition from the scientific and international institutions, materialized in the development of the Social Progress Index (SPI). This composite indicator, constructed by the aggregation of 54 indicators, focuses on three dimensions of wellbeing e.g. the covering of basic human needs (food, water, shelter, safety), the access to wellbeing fundamentals (education, information, health, environment) and the opportunities for achieving individual goals and aspirations (rights, freedom of choice, freedom from discrimination and access to the most advanced information).

The Social Progress Index was redesigned in 2015 by Eurostat for the EU regions (NUTS2) focusing on the same three dimensions and including all twelve components. The composite index of regional EU-SPI is built on a set of 50 indicators (differing from the ones of the original SPI), according to the criterion of time series availability and the reliability of data sources. The purpose of building this indicator is to ease the assessment of how the targets of policies and programs pursued by the European Commission for 2014-2020 are

[56] The GNH (*Gross National Happiness*) has a philosophical inspiration, containing many elements of spiritual, ethic and cultural nature.

[57] J. Helliwell, R. Layard, J. Sachs (editors), *World Happiness Report 2016, Update* (Vol. I), UN Sustainable Development Solutions Network, New York, 2016, pp. 20-22.

achieved, in particular those relating to social and territorial cohesion, helping regions to identify and take best practices from other regions with similar levels of development. The publication of the final version of the EU-SPI for the 272 EU regions is foreseen by the end of 2016[58].

Following an analysis of the conceptual framework of wellbeing and the integrated approach to its multidimensional aspects, a group of Eurostat experts proposed in 2009 a methodology for calculating a composite indicator of wellbeing, called *satisfied life expectancy*, based on the concept of *happy life expectancy* introduced in 1996 by Ruut Veenhoven[59], professor emeritus at the Erasmus University of Rotterdam.

The Eurostat experts recommended also a set of 44 indicators of wellbeing, grouped into five components, concerning psychological needs, security-safety, individual and relational activities, skills and self-confidence[60].

As previously mentioned, at OECD level, more than a decade ago, researches on the measurement of wellbeing and progress have started, developing a methodological framework, updated in 2011 by the launch of the *Better Life Initiative*, that focuses more on aspects of life that are considered essential by citizens, as well as improving the information base, in a manner to enable a better understanding of welfare and its determinants trends, including for structuring the related policies. The framework of measurement the individual wellbeing is built on two dimensions (the quality of life, with eight areas, and the material conditions, with three areas) having associated more than 30 indicators, attempting also an evaluation of capital resources (natural, economic, human and social) needed to ensure the sustainability of improving the wellbeing of citizens.

The report for 2015 stated that, despite the progress of the OECD average compared with the crisis year 2009, in some countries (Spain, Portugal, Italy, Greece) several pressure factors on material conditions and quality of life have been felt, due to the decrease in real income of households, high unemployment and limited housing access. Also, an increase in the disparities, including at regional levels, has been revealed by many indicators (income distribution, access to services, employment opportunities, personal security, air pollution), which is affecting the resources for future improvements of wellbeing[61].

In conclusion, despite many attempts to address the deficiencies of GDP, by methodological updating, using complementary indicators or substituting it with the composite or alternative indexes, of which those that seemed more relevant were presented in this chapter, one can say that, at least so far, the

[58] European Commission, *The EU Regional Social Progress Index: Methodological Note*, EC, DG Regio, Economic Analysis Unit, Brussels, 2015, p. 3.
[59] R. Veenhoven, *Happy Life-Expectancy. A Comprehensive Measure of Quality-of-Life in Nations*, Social Indicators Research, Vol. 39, 1996, Springer, pp. 1-58.
[60] Eurostat, *Feasibility Study for Well-Being Indicators. Task 4: Critical review*, European Commission, 2009, pp. 33-40.
[61] OECD, *How's Life? 2015: Measuring Well-being*, Better Life Initiative, OECD Publishing, Paris, 2015, pp. 32-35.

academic research, the national, international and / or global institutions, the governmental or non-governmental organizations have failed to reach a consensus on the best way of measuring the wellbeing and social progress.

If this failure can be attributed, superficially, to economics as a social science, in whose object of study is found, according to most recognized definitions, the issue of wellbeing, welfare and prosperity of nations, on a broader level, it should be admitted that, in essence, the defining elements of wellbeing are outside the perimeter of this science, their metric being influenced, in a decisive manner, by the subjective perceptions of reality at the individual level, incompatible in relation to specific generalizations that substantiate the economic laws.

Equally true is that the accelerating globalization has led to rising interconnections and interdependences of world phenomena, their increasingly greater complexity putting to a tough test the ability of policy makers to understand and manage them adequately, much less to identify the most appropriate ways to soften their negative externalities and to head in desirable directions the sustainable development of mankind, under conditions of extreme uncertainty[62].

Without diminishing the merit of these attempts and stressing the importance of continuing efforts to identify other ways of reflecting the citizens' wellbeing, further on we will return to the GDP, which remains the reference indicator, in one way or another, in the quasi-majority of studies devoted to assessing the performance of economies and the social progress, at the level of the most important institutions and organizations.

Thus, the GDP indicator, expressed *per capita*, converted to a single currency of reference and taking into account the purchasing power parity of various currencies, will be examined in the context of international comparisons, including Romania's evolution from this point of view, of its position in the global and / or European rankings, and the perspectives for reducing the development gaps against the advanced countries on the medium and long term.

4. International comparisons

4.1 Romania's GDP during 1870-2000

The purpose of this section is to reveal the results of researches on the evolution of Romania's Gross Domestic Product over a historical period of over 130 years, not as long as duration but disrupted by radical changes in the system and even territorially.

The efforts of professor V. Axenciuc to build long data series have required an extremely careful archival documentation, coupled with laborious

[62] G. Georgescu, *The world trade data distortion and its contagion impact*, MPRA Paper No 69483, Munich, 2016.

calculations, based on an own methodological argumentation, in order to ensure a higher degree of data comparability[63].

The GDP *per capita* data series for the period 1870-2000, based on the principles and methodological calculation criteria specified by V. Axenciuc, was built sequentially, as follows:

- for the period 1870-1947, the data on GDP *per capita*, initially converted and expressed in comparable lei 1913, were equated in US gold dollars 1913, based on the metal parity ratio of 5.18 lei = 1 $; thereafter, the data series was recalculated by converting the US dollars 1913 to US dollars at 1990 purchasing power parity, multiplied by a factor of dollar depreciation during the period 1913-1990, of 11.07, calculated by Williamson[64];

- for the period 1950-1979, the National Income indicator has been transposed into Gross Domestic Product indicator according to SNA methodology, then converted in comparable prices and in US dollars at 1990 purchasing power parity, to ensure the comparison and continuity with both the previous series of GDP during 1862-1947, and the subsequent 1980-2000 (data series published by the National Institute of Statistics in current prices), making possible also the international comparisons.

For a period far back in time, comparing Romania's GDP with other countries encounters many difficulties. The calculation methods of some institutions or foreign authors, aiming at ensuring the GDP compatibility in international currencies were different; as a consequence, the resulted GDP, expressed in international dollars, was also different.

Table 3 presents some historical series of GDP *per capita* in Romania, calculated and published by various institutions, presented for comparison with our data series. The calculation methodology is specified in the data sources.

It was found that figures calculated by V. Axenciuc for Romania's GDP *per capita* in the first half of the last century, especially for the period 1926-1947, are relatively close to those provided by A. Maddison and the University of Warwick (the only data sources for this period) i.e. between $ 900 and $ 1,200 *per capita*.

In Romania's communist period (1950-1989), however, the figures begin to differentiate, the assessments made by A. Maddison for the end of this period (about $ 4,000 *per capita*) stood at half of the figures estimated by us.

Moreover, for the decade 1990-2000, the calculations both by A. Maddison and those of the University of Warwick, shows a decrease in GDP *per capita* of about $ 3,000 in the last year of the period, i.e. below the level recorded by Romania three decades ago, which is not confirmed from the analysis of GDP (at PPP) evolution, that will be presented below.

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[63] V. Axenciuc, *Produsul Intern Brut al României 1862-2000*, Editura Economică, Vol. I, II, București, 2012.

[64] S. H. Williamson, *Six Ways to Compute the Relative Value of a U.S. Dollar Amount, 1774 to Present*, Measuring Worth, 2008.

Table 3

GDP *per capita* in Romania, from different statistical sources, in comparable dollars, during 1870-2000

Years	OECD Maddison international dollars 1990[1,2)]	UN National Accounts dollars 2005[3)]	Atlaseco Université de Sherbrook dollars PPP 2000[1,4)]	University of Gröningen dollars PPP 1996[5)]	World Table Pennsylvania University dollars 1996[1,6)]	University of Warwick dollars PPP 1990[7)]	V. Axenciuc GDP per capita dollars PPP 1990
1	2	3	4	5	6	7	8
1870	931					1143	481
1880	.....						763
1890	1246					1395	754
1900	1415						819
1913	1741					1705	1020
1926	1258						888
1927	1241						886
1928	1225						860
1929	1152					1102	907
1930	1219						893
1931	1229						908
1932	1144						823
1933	1184						828
1934	1182						836
1935	1196						897
1936	1194						922
1937	1130					1206	955
1938	1242						934
1950	1182					1176	1044
1951	1256						1337
1952	1333						1324
1953	1411						1495
1954	1496						1508
1955	1578						1822
1956	1623						1585
1957	1672						1848
1958	1724						1712
1959	1783						1892
1960	1844				1477		2072
1961	1951				1714		2234
1962	2007				1858		2288
1963	2137				2070		2501
1964	2258				2131		2729
1965	2386				2323		2939
1966	2643				2457		3209
1967	2743				2740		3458
1968	2739				2888		3611
1969	2824				3055		3980

Years	OECD Maddison international dollars 1990[1,2)]	UN National Accounts dollars 2005[3)]	Atlaseco Université de Sherbrook dollars PPP 2000[1,4)]	University of Gröningen dollars PPP 1996[5)]	World Table Pennsylvania University dollars 1996[1,6)]	University of Warwick dollars PPP 1990[7)]	V. Axenciuc GDP per capita dollars PPP 1990
1	2	3	4	5	6	7	8
1970	2853	1679			3262		4360
1971	3221	1877			3626		4647
1972	3396	2057			4013		4962
1973	3477	2253			4233	3457	5551
1974	3637	2506			4802		5548
1975	3761	2737			5404		5615
1976	3917	3013			5658		6187
1977	3966	3234			6446		6394
1978	4063	3439			7282		6890
1979	4148	3624			7642		7060
1980	4135	3753	7639		7715		7296
1981	4087	3731	7645		7369		7252
1982	4072	3857	7907		7426		7504
1983	4027	4076	8360		7486		7933
1984	4178	4306	8826		7717		8378
1985	4159	4283	8779		7632		8333
1986	4215	4364	8951		7836		8489
1987	4110	4378	8987		7820		8518
1988	4085	4335	8887		7789		8437
1989	3941	4067	8336	7576	7254		7910
1990	3511	3829	7851	6739	6969	3460	7449
1991	3063	3338	6845	5926	6019		6491
1992	2797	3098	6348	5461	5576		6020
1993	2843	3150	6454	5695	5634		6119
1994	2957	3277	6717	5931	5841		6364
1995	3174	3519	7214	6371	6177		6832
1996	3307	3670	7527	6636	6443		7127
1997	3114	3457	7085	6195	6074		6711
1998	2972	3297	6761	5760	5923		6402
1999	2943	3266	6693		5814		6337
2000	3002	3348	6838		6141	3008	6474

1) Calculated at the current la territory of Romania.
2) A. Maddison, *The World Economy: Historical Statistics*, OECD Development Center Studies, 2004.
3) ONU Statistics Division, *National Accounts*, Main Aggregates Database.
4) Atlaseco, *Perspectiv Mondo*, Université de Sherbrook.
5) B. van Ark, *Economic Growth and Labor Productivity in Europe. Half a Century of East-West Comparisons*, Gröningen Growth and Development Center, University of Gröningen, 2000.
6) *World Table*, The Center of Internationl Comparisons, Pennsylvania University.
7) S. Broadberry, A. Klein, *Agregate and per capita GDP in Europe, 1870-2000: Continental, Regional and National Data with Changing Boundaries*, University of Warwick, United Kingdom, 2011.

Source: V. Axenciuc, *Produsul Intern Brut al României 1862-2000*, Editura Economică, Volumul I, Bucureşti, 2012, Table A24, pp. 83-84.

We appreciate that V. Axenciuc estimates for Romania, i.e. a level of GDP *per capita* situated between $ 6500 and $ 7500 during 1990-2000, are

closer to reality, and, as seen from the data in Table 3, in line with estimates by other institutions (the universities of Sherbrook, Groningen and Pennsylvania) and, as to show further, with the ones of the United Nations and the World Bank, according to the International Comparison Programme.

Skipping over the different levels of historical series regarding the GDP *per capita*, from the different authors and institutions, we think that the major disparities between countries revealed by these estimates are much more important. For example, the calculations carried out by professors Stephen Broadberry and Alexander Klein of the University of Warwick[65], showed that in the last 130 years, the relative and absolute gaps between Romania and other European countries in terms of GDP *per capita* at PPP increased, compared both to the advanced Western countries and the Eastern countries.

Table 4

The evolution of GDP *per capita* (PPP) gaps in Romania (=1.00) compared to other European countries, during 1870-2000

Region / Country	1850	1870	1890	1910	1925	1938	1950	1973
Western Europe	-	-	-	-	2.25	2.45	2.85	1.66
France	1.75	2.08	2.09	2.21	2.83	2.73	3.56	2.23
Germany (West)	1.62	2.03	2.18	2.30	2.25	3.28	2.92	2.11
Italy	1.46	1.49	1.26	1.19	1.52	1.61	1.85	1.25
Netherlands	2.25	2.41	2.38	2.30	2.88	2.68	3.19	1.72
Eastern Europe	-	-	-	-	1.00	1.48	1.78	1.37
Bulgaria	-	1.05	1.02	0.88	0.96	1.22	1.33	1.29
Czechoslovakia	-	-	-	-	1.59	1.60	2.46	1.79
Poland	-	-	-	-	0.78	1.08	1.74	1.35
Hungary	-	-	-	-	1.16	1.31	1.76	1.36
Romania	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Note: the country boundaries are those from the respective years.
Source: authors calculations, based on GDP data, in 1990 dollars, PPP, from: S. Broadberry, A. Klein, *Agregate and per capita GDP in Europe, 1870-2000: Continental, Regional and National Data with Changing Boundaries*, University of Warwick, United Kingdom, 2011.

The data presented in Table 4 show that, if in 1870, the GDP *per capita* at PPP in Germany, France, Italy, the Netherlands, was 1.5-2.1 times higher than that of Romania, in 1937 this ratio increased to 2.9-4.0 times, and in 2000 to 6.3-7.2 times.

Also, compared with 1870, when the GDP *per capita* at PPP in Bulgaria represented only about 70% of that of Romania, in 2000, it was 1.7 times higher than that of our country.

[65] S. Broadberry, A. Klein, *Agregate and per capita GDP in Europe, 1870-2000: Continental, Regional and National Data with Changing Boundaries*, University of Warwick, United Kingdom, 2011.

Relatively to Czechoslovakia, Poland and Hungary, compared with 1913, when the GDP *per capita* at PPP in Romania's case was only 1.2-1.4 times lower, in 1973 this ratio reached 1,5- 2.0 in disfavor of our country, increasing to 2.4-3.0 in 2000.

Considering another attempt in building long data series of macroeconomic indicators, belonging to the Swiss historian Paul Bairoch[66], the evolution of differences between Romania's GDP *per capita* at PPP and some countries in Western Europe, respectively Eastern Europe, during the period 1850-1973 is presented in Table 5.

Table 5

The evolution of GNP *per capita* gaps in Romania (= 1.00) compared to other European countries, during 1850-1973

Region / Country	1870	1890	1913	1937	1950	1973	1990	2000
France	1.53	1.59	1.90	3.49	4.20	3.77	5.23	7.06
Germany	1.76	1.98	2.45	4.01	3.76	3.75	5.36	6.30
Italy	1.61	1.44	1.60	2.88	3.04	3.32	4.64	6.30
Netherlands	2.11	2.00	2.08	3.97	4.49	3.86	4.99	7.18
Bulgaria	0.71	0.78	0.85	1.24	1.34	1.53	1.60	1.70
Czechoslovakia	…	…	1.24	2.28	2.92	2.02	2.45	3.04
Poland	…	…	1.14	1.59	2.08	1.54	1.48	2.40
Hungary	…	…	1.43	2.16	2.11	1.62	1.87	2.36
Romania	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Note: the country boundaries are those from the respective years; the frontier between Wesstarn Europe and Eastern Europe, defined by Bairoch, correspond to the „Iron Curtain" (Bairoch, 1976, p. 317).

Source: authors calculations, based on GDP data, in 1990 dollars, PPP, from: Paul Bairoch, *European Gross National Product 1800-1975*, in: Journal of European Economic History, No. 5, 1976.

It is worth mentioning that during 125 years, on the whole period, these gaps have increased significantly, especially if the size in absolute terms is taken into account. Comparing with Germany, France, Italy, the Netherlands, while in 1850, the gaps in disfavor of Romania were situated between 1.5 and 2.1, similar to those revealed by Broadberry and Klein, in 1938 these increased to 1.6-3.7, after which a slight decrease was recorded up to 1973, a similar trend with the one resulted from the figures presented in the Table 4. As regards the comparison with the countries of Eastern Europe, if in 1925, the GNP *per capita* in Romania was higher than that of Bulgaria and Poland, and lower compared to Czechoslovakia and Hungary, in 1973, gaps in disfavor of our country, between 1.3 and 1.8 were recorded relatively to all these states.

[66] P. Bairoch, *European Gross National Product 1800-1975*, în: Journal of European Economic History, No. 5, 1976.

4.2 The UN and the World Bank International Comparison Programme.

Since the second half of the twentieth century, concerted actions focusing on drawing sets of synthetic macroeconomic indicators (national income, gross domestic product, gross national product etc.) utilized for substantiating the development strategies and economic and social policies were initiated.

These indicators were calculated both at the national level, in most countries, by official statistics or individual researchers and international level by official and / or private economic, financial or research institutions.

Thus, data series of macroeconomic indicators on short and medium term have been produced, which, continued until today, have become long-term series.

The calculation methodologies, in addition to those generated by economic and social systems - National Accounts and material production system- were also varied, suffering revisions and updates, the most important being previously presented and discussed.

One of the most notable event that have focused the efforts, mainly from the US, and have contributed to building a system of National Accounts according to standards that allow international comparisons was the organization, under NBER (National Bureau of Economic Research) aegis, of a series of conferences on researches regarding the income and wealth, held in Princeton in the 50s.

At the edition of October 1954, John W. Kendrick, editor of the Conference volume, noted some progress towards international comparability of national economic accounts, highlighting the importance of developing uniform standards regarding the size and structure of national macroeconomic aggregates, so as to eliminate the risk of knowledge counterfeiting in this domain[67].

An imperative of the various systems and methods for global indicators calculation was their compatibility in order to allow the comparisons between different countries. Mainly, the global institutions which looked for comparisons based on a single common monetary unit of the synthetic indicators, have initially adopted, as factor conversion, the average annual exchange rate and / or adjusted by the price index.

In the 60s and 70s, several prominent researchers have developed a new method for international comparisons, based on purchasing power parity of currencies, which, since then, is constantly refined, updated and generalized[68].

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[67] J. W. Kendrick (editor) *Problems in the International Comparison of Economic Accounts*, The Conference on Research in Income and Wealth, CWER, Princeton University Press, 1957, pp. 3-6.

[68] See the works of R.C. Geary, *A Note on the Comparison of Exchange Rates and Purchasing Power Between Countries* (1958); D. Paige, G. Bombach, *A Comparison of National Output and Productivity*, OEEC, Paris (1959); H. Salam, A. Khamis, *A New System of Index Numbers for National and International Purposes* (1972); B. Irving, Z. Kravis, A.W.

In the landscape of the global scale comparisons, an International Comparison Programme (ICP) was set up and implemented, based on purchasing power parities of national currencies with the international dollar.

Systematic worldwide researches, under the aegis of the United Nations and the World Bank support, date back to 1968 when the ICP project started. The first report was published in 1975 and included, based on a multilateral comparisons methodology, the calculations of GDP at purchasing power parity for ten countries and the years 1967 and 1970.

This first pilot phase was followed by others, increasing gradually the number of participating countries or regional groups of countries, in parallel with continuous improvements in calculation methodology, including through the involvement of national statistical offices and Eurostat, both as inter-regional technical assistants and comparable data providers.

Currently, the ICP includes 199 countries, providing comparable data regarding GDP and its components on the expenditure side, by the conversion at the purchasing power parity (PPP) estimated based on surveys that collect data on prices and costs considering the full range of final products and services recorded for GDP calculation, including consumer goods and services, government services and capital goods[69].

It is worth mentioning that PPP represents both spatial deflators and currency converters, each nation's GDP being thus expressed in comparable prices and converted into a single currency (international dollar). By dividing the result to the population number, the real wellbeing of the citizens may be reflected, considering also the limitations previously mentioned.

The aggregation systems into international prices used by the ICP are extremely complex, implying a series of iterative processes and methods, among these the Geary-Khamis, EKS and therewith additive or associated systems.

4.3 Romania's position in the global rankings of GDP *per capita* at PPP

The overall picture of the evolution of GDP *per capita* in comparable prices has registered significant changes at global scale during the 35 years of our analysis, noting that 1980 is the first available year of data series from the IMF World Economic Outlook Database.

As show the data presented in Table 6, the Romania's GDP *per capita* (at PPP), increased by almost four times during the period 1980-2015.

Kenessey, H.R. Summers, *A System of International Comparisons of Gross Product and Purchasing Power* (1975) etc.

[69] United Nations, *Report of the World Bank on the interim activities of the International Comparison Programme*, Statistical Commission, Forty-seventh session, CN.3/2016/10, 8-11 March, 2016.

Table 6

The evolution of GDP *per capita* at PPP during 1980 – 2015

- current international dollars -

Year / Country	1980	1989	1990	2000	2005	2008	2009	2010	2015
Austria	11,166	18,812	20,201	30,754	36,644	42,421	40,989	42,145	47,031
Belgium	10,977	18,706	19,966	29,714	35,659	40,206	39,134	40,278	43,800
Bulgaria	4,652	9,200	8,743	7,631	11,676	15,388	14,811	15,208	18,326
Croatia	…	…	…	12,444	17,694	21,476	20,073	20,034	21,169
Cyprus	6,297	13,990	15,262	24,422	30,641	35,062	33,669	33,703	30,769
Czech Republic	…	…	…	16,524	22,677	27,947	26,584	27,431	30,895
Denmark	11,528	20,238	21,272	32,715	38,699	42,874	40,736	41,726	45,451
Estonia	…	…	…	11,756	19,221	23,746	20,442	21,245	27,994
Finland	9,653	18,129	18,808	27,352	34,420	40,395	37,161	38,569	40,838
France	10,763	18,524	19,661	28,514	33,571	37,313	36,297	37,284	41,018
Germany	11,222	19,179	20,631	29,529	34,003	39,920	38,072	40,080	46,895
Greece	8,998	13,357	13,760	20,064	26,818	31,253	30,084	28,810	26,773
Hungary	6,288	10,881	10,937	14,152	19,778	22,613	21,321	21,789	25,895
Ireland	7,593	13,137	14,689	32,982	43,057	46,149	43,074	43,275	51,118
Italy	10,551	18,929	20,016	28,614	33,128	36,123	34,200	35,097	35,811
Latvia	…	…	…	8,797	15,664	20,584	18,037	18,087	24,540
Lithuania	…	…	…	9,790	16,399	22,507	19,534	20,521	28,210
Luxemburg	15,348	33,563	36,243	63,611	78,089	89,992	84,288	88,063	93,173
Netherlands	11,715	19,658	21,091	33,051	38,436	45,447	44,055	44,839	48,317
Poland	4,724	6,847	6,529	11,559	15,065	19,259	19,906	20,956	26,210
Portugal	5,991	11,380	12,752	20,460	23,508	26,315	25,700	26,496	27,624
Slovakia	…	…	…	12,346	17,727	24,092	22,933	24,278	29,209
Slovenia	…	…	…	17,975	23,973	29,999	27,567	28,043	30,508
Spain	7,944	14,336	15,412	24,239	29,665	33,220	32,008	32,269	34,899
Sweden	10,844	18,878	19,631	29,256	36,735	41,704	39,482	42,021	47,228
United Kingdom	8,707	16,466	17,118	25,853	32,807	36,574	35,039	35,872	40,676
ROMANIA	**4,797**	**7,531**	**7,362**	**8,046**	**12,358**	**16,771**	**15,728**	**15,821**	**20,526**
China	302	899	954	2,846	4,937	7,399	8,103	9,012	13,801
India	566	1,103	1,177	2,041	2,938	3,788	4,084	4,495	6,265
Japan	8,539	17,517	19,110	25,519	30,197	33,429	31,825	33,713	38,215
South Korea	2,183	6,667	7,518	16,452	22,741	27,522	27,795	29,824	36,601
Norway	14,973	26,562	27,967	46,488	56,578	62,489	61,230	61,520	67,445
USA	12,575	22,879	23,913	36,432	44,218	48,302	46,909	48,309	56,421

Source: World Economic Outlook Database, International Monetary Fund.

Under these circumstances, as compared to other countries, which recorded similar GDP growth rates, the relative gap, of 2-3 times in the disfavor of Romania, has been maintained (Table 7).

Table 7

The evolution of GDP *per capita* (PPP) gaps during 1980 – 2015

Romania = 1.00

Year / Country	1980	1989	1990	2000	2005	2008	2009	2010	2015
Austria	2.33	2.50	2.74	3.82	2.97	2.53	2.61	2.66	2.29
Belgium	2.29	2.48	2.71	3.69	2.89	2.40	2.49	2.55	2.13
Bulgaria	0.97	1.22	1.19	0.95	0.94	0.92	0.94	0.96	0.89
Croatia	n/a	n/a	n/a	1.55	1.43	1.28	1.28	1.27	1.03
Cyprus	1.31	1.86	2.07	3.04	2.48	2.09	2.14	2.13	1.50
Czech Republic	n/a	n/a	n/a	2.05	1.84	1.67	1.69	1.73	1.51
Denmark	2.40	2.69	2.89	4.07	3.13	2.56	2.59	2.64	2.21
Estonia	n/a	n/a	n/a	1.46	1.56	1.42	1.30	1.34	1.36
Finland	2.01	2.41	2.55	3.40	2.79	2.41	2.36	2.44	1.99
France	2.24	2.46	2.67	3.54	2.72	2.22	2.31	2.36	2.00
Germany	2.34	2.55	2.80	3.67	2.75	2.38	2.42	2.53	2.28
Greece	1.88	1.77	1.87	2.49	2.17	1.86	1.91	1.82	1.30
Hungary	1.31	1.44	1.49	1.76	1.60	1.35	1.36	1.38	1.26
Ireland	1.58	1.74	2.00	4.10	3.48	2.75	2.74	2.74	2.49
Italy	2.20	2.51	2.72	3.56	2.68	2.15	2.17	2.22	1.74
Latvia	n/a	n/a	n/a	1.09	1.27	1.23	1.15	1.14	1.20
Lithuania	n/a	n/a	n/a	1.22	1.33	1.34	1.24	1.30	1.37
Luxemburg	3.20	4.46	4.92	7.91	6.32	5.37	5.36	5.57	4.54
Netherlands	2.44	2.61	2.86	4.11	3.11	2.71	2.80	2.83	2.35
Poland	0.98	0.91	0.89	1.44	1.22	1.15	1.27	1.32	1.28
Portugal	1.25	1.51	1.73	2.54	1.90	1.57	1.63	1.67	1.35
Slovakia	n/a	n/a	n/a	1.53	1.43	1.44	1.46	1.53	1.42
Slovenia	n/a	n/a	n/a	2.23	1.94	1.79	1.75	1.77	1.49
Spain	1.66	1.90	2.09	3.01	2.40	1.98	2.04	2.04	1.70
Sweden	2.26	2.51	2.67	3.64	2.97	2.49	2.51	2.66	2.30
United Kingdom	1.82	2.19	2.33	3.21	2.65	2.18	2.23	2.27	1.98
ROMANIA	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
China	0.06	0.12	0.13	0.35	0.40	0.44	0.52	0.57	0.67
India	0.12	0.15	0.16	0.25	0.24	0.23	0.26	0.28	0.31
Japan	1.78	2.33	2.60	3.17	2.44	1.99	2.02	2.13	1.86
South Korea	0.46	0.89	1.02	2.04	1.84	1.64	1.77	1.89	1.78
Norway	3.12	3.53	3.80	5.78	4.58	3.73	3.89	3.89	3.29
USA	2.62	3.04	3.25	4.53	3.58	2.88	2.98	3.05	2.75

Source: based on Table 6 data

Comparing with countries from Eastern Europe, it became obvious that, while in relation to the Czech Republic, Slovakia, Hungary and Slovenia, the relative GDP gaps of Romania registered a slight decrease, as concerns the comparison with Poland, the situation has reversed, i.e. from a parity registered in 1980, to an unfavorable report of 1:1.3 in 2015.

As compared to many advanced countries (Germany, Netherlands, Norway, Finland and Austria) relative gaps for more than 2:1 in disfavor of Romania have remained. In relation to other advanced countries (US, Japan, South Korea, United Kingdom, Sweden and Ireland) these gaps have increased just over 3:1. Only compared to some advanced countries (Italy, France and Denmark) Romania has slightly reduced the relative GDP gaps during the reference period.

However, it should be stressed that except Bulgaria, the differences in absolute terms concerning the GDP *per capita* recorded an increase in Romania compared to all EU countries. Comparing with some advanced countries (Germany, Austria, Sweden and Netherlands) the gaps of 6,000 - 7,000 dollars existing in 1980 rose to about 26,000-28,000 dollars in 2015.

In this context, it has to be highlighted the remarkable evolution of several countries during the last 35 years, such as China, which recorded an increase by about 45 times of its GDP *per capita* at PPP, South Korea, with an increase by about 17 times and India, with an increase by about 11 times, which allowed these countries to achieve a significant reduction in their development gaps compared to advanced countries.

At European level, the International Comparison Programme, including on prices and purchasing power parity, is run under the coordination of UNECE, OECD and Eurostat.

It is important to note that the estimated data on GDP at PPP under this program focuses only on OECD countries and a number of 6 non-member countries (China, Colombia, India, Indonesia, Russian Federation and South African Republic).

5. Eurostat indicators for the EU cross country comparisons

5.1 The GDP conversion at Purchasing Power Standard (PPS) and the Actual Individual Consumption.

According to the methodology used by the UN and the World Bank, the consistency of GDP at PPP conversion depends on the quality of data collection on prices, some imperfections or distortions can occur due to spatial and temporal differences in terms of the consumer basket, namely its representativeness in relation to market realities, so diverse and rapidly changing.

Based on these considerations, at European Union level, Eurostat uses, as analytical tool for international comparisons, the estimates of GDP at purchasing power standard (PPS), which basically is an artificial coin that can be interpreted as an exchange rate of euro compared to PPP.

It is appreciated that the conversion at purchasing power standard takes into account, in a more appropriate manner, the price differences between the EU Member States and the currency fluctuations[70].

However, it is worth mentioning that, in the case of regional comparisons within the EU, at NUTS 2 level, the utilization of the same conversion rates at PPS as the national level ones cannot provide an accurate picture concerning the real regional disparities and the divergence deepening, already seized in the last period, given the significant price differences between different areas and regions of the EU, including in Romania's territory case.

At the level of the EU Member States, the GDP expressed in PPS is of particular importance, being used to assess the level of real convergence, both for highlighting the progress of the economy and as a criterion for accession to the Eurozone.

On a larger scale, from this point of view, it should be stressed that, unlike institutional and nominal convergence, which are evaluated according to some indicators became classics, assessing the real convergence, which has a decisive role in the architecture and dynamics of the process across the entire Europe Union, relies almost exclusively on the indicator GDP at PPS and the related gaps compared to the EU average.

Depending on the case, possible qualitative considerations concerning the economic governance, functionality of the institutional framework, the health of the banking sector and other considerations can be added.

As concerns the GDP expressed in PPS, the data presented in Table 8, show that Romania has made significant progress in reducing the relative gap compared to the EU28 average, respectively, from 26.3% in 2000 to 34% in 2004 and to 57% in 2015, by registering a double pace of GDP *per capita* growth rate comparing with the EU28 average and gaining 31 percentage points in 15 years, of which 23 percentage points only in the last decade.

It is also worth noting that, according to GDP in PPS as percent of EU average, in some countries, a process of convergence has been recorded, either ascending (especially the countries of Central and Eastern Europe and the Baltic's) or descending (Belgium, Italy, Spain, Netherlands, Finland, Sweden and United Kingdom).

However, other countries witnessed a divergence process by distancing from the EU28 average and gaps increases, either positively (the case of Germany being the most significant) or negatively (Greece and Cyprus, the most affected by the financial crisis).

[70] F. Magnien, *The Measure of GDP per capita in Puchasing Power Standard (PPS)*, OECD Meeting of National Accounts Experts, Paris, 8-11 October, 2002.

Table 8

The evolution of GDP *per capita* at PPS in Romania compared to other EU28 Member Countries during 2004-2015

- % of EU28 average -

Year/ / Country	2004	2007	2008	2011	2015
EU28 average	**100**	**100**	**100**	**100**	**100**
Belgium	120	115	114	119	117
Bulgaria	35	42	45	45	46
Czech Republic	79	83	81	83	85
Denmark	125	121	123	125	124
Germany	117	117	118	124	125
Estonia	55	68	68	69	74
Ireland	144	146	132	132	145
Greece	96	92	94	77	71
Spain	100	103	101	94	92
France	109	107	106	108	106
Croatia	57	61	63	59	58
Italy	108	105	105	102	95
Cyprus	97	100	105	96	81
Latvia	47	60	60	56	64
Lithuania	50	60	63	65	74
Luxemburg	246	259	255	263	271
Hungary	62	61	63	65	68
Malta	80	78	80	84	89
Netherlands	133	137	139	134	129
Austria	127	123	124	127	127
Poland	49	53	54	64	69
Portugal	76	79	79	78	77
ROMANIA	**34**	**41**	**48**	**51**	**57**
Slovenia	85	87	89	82	83
Slovakia	56	67	71	73	77
Finland	117	117	120	116	108
Sweden	129	127	126	126	123
United Kingdom	125	117	114	106	110

Source: Eurostat

Referring to Romania, we should mention that, despite progress in the catching up with the advanced EU countries due to the closeness of GDP *per capita* at PPS relative to the EU average in percentage terms, remain significant gaps in absolute terms. Over the last 15 years these gaps have been reduced by only about 1,600 euros i.e. from about 14,000 euro in 2000 to about 12,400 euro in 2015.

In Figure 2 is revealed, suggestively, the evolution of absolute gaps, somewhat unfavorable to Romania.

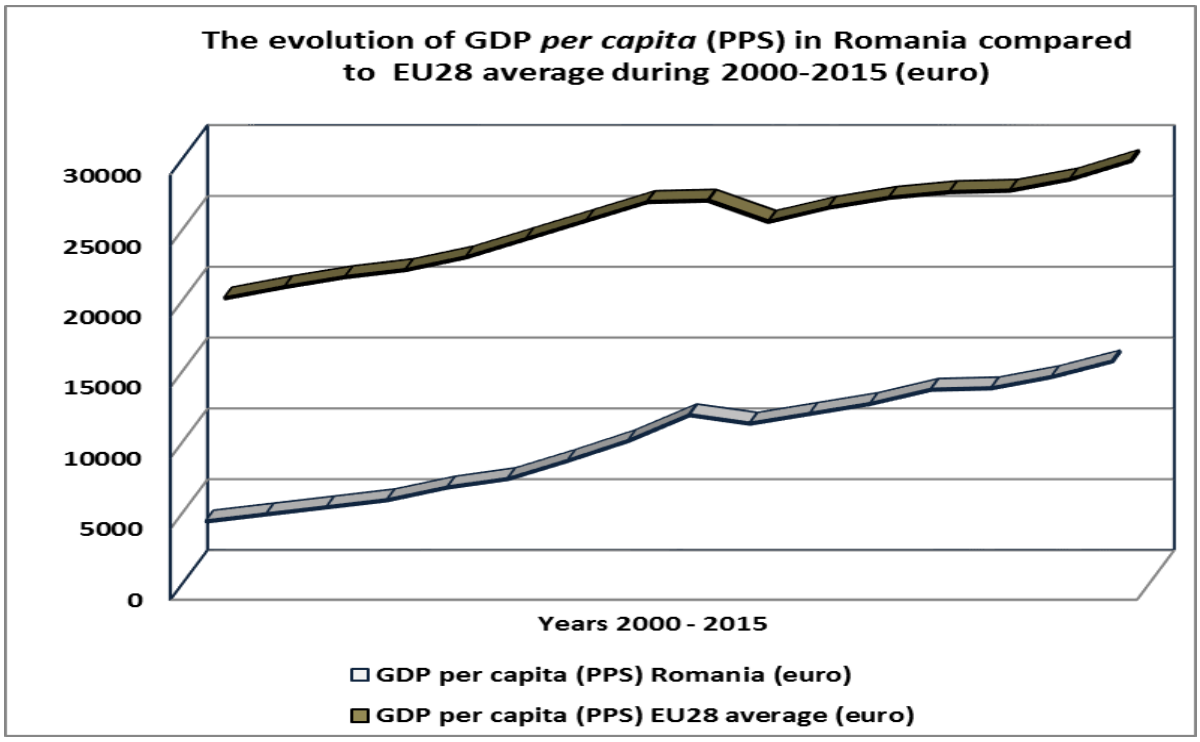

Figure 2

Source: based on Eurostat data.

In order to improve the international comparisons, at the UN and the World Bank levels, starting from 2014, the Actual Individual Consumption (AIC) is calculated, as a more appropriate indicator reflecting the level of citizen's wellbeing.

According to an agreed methodology, to which Eurostat and OECD has contributed, this indicator is calculated based on goods and services effectively entered in household consumption, whether they were paid by households, government or non-profit organizations[71].

From this point of view, one can say that the calculation of AIC is likely to improve the comparability in the cross-country analyzes, removing the differences in the systems of organization and funding of important services such as education or health, i.e. direct payments incurred by households for providing these services.

In Table 9 is presented the evolution of GDP and Actual Individual Consumption *per capita* at PPS in Romania compared to other EU28 Member States, during 2012-2015.

[71] The World Bank, *Purchasing Power Parities and Real Expenditures of World Economies. Summary of Results and Findings of the 2011 International Comparison Program*, WB, Washington, 2014.

Table 9

The evolution of GDP and AIC *per capita* at PPS in Romania compared to other EU28 Member Countries, during 2012-2015

- % of EU28 average -

Year/ / Country	GDP *per capita* (PPS)				Actual Individual Consumption *per capita*			
	2012	2013	2014	2015	2012	2013	2014	2015
EU28 average	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Belgium	120	120	118	117	112	114	113	112
Bulgaria	46	46	47	46	50	50	51	51
Czech Republic	82	83	84	85	72	75	76	76
Denmark	126	126	125	124	115	116	114	114
Germany	124	124	126	125	123	124	124	124
Estonia	74	75	76	74	65	67	68	69
Ireland	131	131	134	145	96	95	96	95
Greece	74	74	73	71	84	84	83	81
Spain	92	91	91	92	88	87	87	88
France	107	108	107	106	110	113	111	111
Croatia	60	59	59	58	59	59	59	58
Italy	101	98	96	95	102	99	98	97
Cyprus	91	84	82	81	95	90	90	90
Latvia	60	62	64	64	60	64	65	66
Lithuania	70	73	75	74	74	79	81	82
Luxemburg	258	264	266	271	141	141	141	137
Hungary	65	66	68	68	62	62	62	62
Malta	84	86	86	89	80	79	79	81
Netherlands	132	132	131	129	115	114	112	111
Austria	131	131	129	127	121	123	122	119
Poland	66	67	68	69	73	73	74	74
Portugal	77	77	78	77	82	82	83	83
ROMANIA	**54**	**54**	**55**	**57**	**55**	**54**	**55**	**58**
Slovenia	81	80	82	83	78	75	75	74
Slovakia	74	76	77	77	73	75	75	74
Finland	115	113	110	108	115	114	114	113
Sweden	127	124	123	123	114	111	111	111
United Kingdom	107	108	109	110	115	114	115	116

Source: Eurostat

The data show that, in many EU advanced countries (Germany, Netherlands, Austria, Denmark, Sweden, Belgium), even if there are no significant differences between the relative positions of both indicators against the EU28 for the same countries, in general, the GDP *per capita* stands a few percentage points over the AIC *per capita*, except for Ireland, where this difference was about 50 percentage points in 2015.

In other advanced EU countries (France, United Kingdom and Finland), due also to higher levels of government spending on education and health, the GDP *per capita* is less by 5-6 percentage points than the AIC *per capita*, compared to the EU28 average.

Regarding the emerging countries of Central and Eastern Europe, all situated below the EU28 average for both indicators, it was found that in Czech Republic, Estonia and Slovenia, the GDP *per capita* stood for 5-10 percentage points higher than the AIC *per capita*, while in Bulgaria, Lithuania and Poland, for 5-8 percentage points lower. In the case of Croatia, both indicators stood at the same level (58%) compared to the EU28 average, as in the one of Slovakia, but at a significantly higher level (77%).

Referring to Romania, we found that the relative position of GDP *per capita* and AIC *per capita* relative to the EU28 average is similar, i.e. between 54% and 55% in 2012-2014, registering a slight increase in 2015, for both indicators, up to 57% and 58% respectively, our country remaining on the penultimate position in the European hierarchy in this regard, ahead only of Bulgaria.

In this context we should mention that, for analytical purposes, including international comparisons, a distinction between the Gross Domestic Product (GDP) and Gross National Product (GNP) is made, according to territorial (or geographical location) criterion and respectively national (or ownership location) criterion.

If GDP is an indicator of the market value of all goods and services produced within the borders of a state, the GNP reflects the market value of goods and services produced by labor and property supplied by the citizens (residents) of a country.

So, GNP measures the incomes generated both internally and externally, being calculated by subtracting or adding to the GDP, the result of the balance between incomes earned by residents in other countries and incomes earned by nonresidents in the domestic economy. It is worth mentioning that GNP takes into account only the productive activities, irrespective of gains / losses from changes in value of fixed and / or financial assets.

The international financial institutions, mainly for operational purposes, have gradually replaced the GNP with Gross National Income (GNI), an identical concept, but different in the calculation methodology, being obtained based on data from the current account balance of payments, by amending the GDP with the factor incomes derived from the balance between primary

incomes received from "the rest the world" by resident units and primary incomes paid by resident to the nonresident units.

In general, the differences between these two indicators are not significant. In the US for example, the GNI is only about one percent higher than GDP. In the case of Romania, while GDP amounted to 160.4 billion euro in 2015, GNI stood for 157.3 billion euro i.e. by about 2 percent lower, due to the negative balance of residents-nonresidents primary incomes.

The World Bank, in order to guide its administrative and financial assistance policy, classifies the 187 member countries in four groups according to their development level, the main criterion being the indicator GNI *per capita* (expressed in dollars by converting the national currencies applying the WB Atlas method, adjusted to PPP) as follows:

- countries with advanced economies (high-incomes): more than 12,500 $
- developing countries with upper-middle income: $ 4,000 – 12,500
- developing countries with lower-middle incomes: $ 1,000 – 4,000
- less developed countries (low-incomes): below $ 1,000

These thresholds, updated annually with the adjustment for inflation, are used by the World Bank to determine its operational lending policy i.e. for establishing the lending terms and eligibility for classifying different countries in one of the 3 types / modalities of funds allocation. For example, the less developed countries receive a preferential treatment IDA (International Development Association), through interest-free loans granted, in particular, to support programs in the fight against poverty on the medium and long run.

At the EU level, according to the principles of solidarity and ability to pay and of financing based on own resources, the main revenue source of the EU budget (accounting for more than ¾) comes from the Member States contribution, which is calculated as a percentage of Gross National Income (*GNI-based own resource*), representing approximately 0.7% on average at EU28 overall.

The cohesion policy of the European Union provides the allocation of important funds aimed to promote sustainable development and reduce economic and social disparities, including the supporting of infrastructure projects, which are granted to those countries with a level of GNI *per capita* below 90% of the EU average.

In this context it should be also mentioned that the eligibility of the regions (NUTS 2) for the allocation of funds from the Community budget is determined according to GDP *per capita* in PPS, respectively for the regions where this indicator recorded a level below 75% of the EU average. For example, for the financial period 2014-2020, Romania's structural and investment funds allocated from the EU budget amount to about 22 billion euro, of which about 7 billion euro from the Cohesion Fund, about 10 billion euro from the European Regional Development Fund and about 5 billion euro from the European Social Fund.

5.2 Romania and the real convergence with the EU countries.

Following the financial and economic crisis of 2008-2009, in order to monitor the financial stability of the European Union and to prevent excessive external imbalances, generated including by high levels of current account deficits and / or an unsustainable degree of external indebtedness, the European Commission introduced in 2011 a mechanism for the supervision, alert and resolution of macroeconomic imbalances (MIP - Macroeconomic Imbalance Procedure) which, indirectly, monitors also the progress towards real convergence of the Member States [72].

This mechanism is based on a risk dashboard (MIP Scoreboard) that includes a set of 14 core indicators, each of them associated with alert (reference) thresholds and 34 auxiliary indicators.

Every year, the European Commission publishes a report (Alert Mechanism Report) identifying the Member States requiring a more detailed analysis in order to identify imbalances, assessing their nature and severity, being provided corrective actions if they are appreciated as excessive[73].

Currently, Romania complies with all basic indicators monitored by the MIP Scoreboard, except for the Net International Investment Position (NIIP), which exceeds the threshold (-50.2% of GDP at end-2015 in Romania, compared to the MIP alert threshold of -35%), mentioning that a clear downward trend is registered in recent years, comparing with the peak of -70.4% of GDP in 2012[74].

Looking to the coming decades, according to estimates by scenarios developed under the aegis of the Romanian Academy, the convergence of Romania with the Member States of the European Union is expected to accelerate so that, under the circumstances of achieving sustained growth rates, the GDP *per capita* (at PPS) would be around the EU average by the year 2035[75].

Increasing the integration with the EU countries would require joining the Eurozone. The year 2019 established by the Romanian Government, in 2014, as target year for joining the EMU has proven unrealistic, both as convergence degree in terms of GDP *per capita* (at PPS) and the preparedness, from

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[72] European Commission, *Scoreboard for the Surveillance of Macroeconomic Imbalances*, European Economy Occasional Papers No 92, EC-DGECFIN, Brussels, 2012.

[73] European Commission, *Alert Mechanism Report 2016*, COM (2015) 691, EC, Brussels, November 26, 2015.

[74] G. Georgescu, *Prospects of Romania's international investment position and financial stability risks*, MPRA Paper 69501, January, 2016.

[75] Academician Vlad Ionel-Valentin (coordinator) *Strategia de dezvoltare a Romaniei în urmatorii 20 de ani* (The Strategy of Romania's development during the next two decades), Vol. I, Editura Academiei, Bucharest, 2015, p. 271.

economic and institutional point of view, especially if one considers that this approach requires the completion of preliminary phases (the accession to the Banking Union, two years earlier entry into the Exchange Rate Mechanism ERM II), which had not even been initiated up to 2017.

In our opinion, more realistic would be, under a favorable internal and external environment, to develop a consistent roadmap on short, medium and long term, agreed by all political, social and civic stakeholders, accompanied by the implementation of coherent, economic, budgetary, monetary, social and environmental policies, coordinated with those of the European Union, including their support by absorbing the largest possible proportion of the EU allocated funds, as well as Romania's participation in Community investment programs.

Under these circumstances, the time horizon of Romania's accession to Economic and Monetary Union can be configured by the years 2023-2025, being expected that, by maintaining further within the parameters of institutional and nominal convergence criteria and significant progress in the real convergence, the forecast regarding indicators GDP and AIC *per capita* (at PPS) so that reaching about 75-80% of the EU average to be achieved in the anticipated timeframe, while reducing the development disparities both at the country and regional levels.