

GREEN FINANCE AND DIGITALISATION, CURRENT TOOLS IN THE WORLD'S ECONOMIES

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The European Investment Plan for European Green Transactions - The new EU growth strategy to promote the transition to a climate-neutral economy by 2050, is taking shape by launching the European Investment Plan for Green Transactions (Sustainable Europe Investment Plan).

Green financing involves raising funds to address climate and environmental issues (green financing). Sustainable financing is an evolution of green financing, as it takes into account environmental, social and governance (ESG) issues and risks, with a view to increasing long-term investment in sustainable economic activities and projects [27].

The main objective of this work starts from the fact that in the period 2021-2030, at least 1 trillion euros will be mobilized, sustainable investments by increasing the resources dedicated to climate actions within the EU budget and by using additional public and private funding.

The paper aims to identify and design green financing as a sustainable instrument (FinGreenTech) that meets the requirements of the climate strategy and as a fulcrum in the strategy for fiscal restructuring in the European Union, as well as to determine derivative indicators based on primary indicators in population financing, as the cornerstones of global green finance sustainability.

Keywords: *financial instruments, sustainable development, green finance*

JEL classification: *G23, Q01, Q56*

1. Introduction

The European Union (EU), is a supporter and leader in the fight against climate change at the international level, is expected to further intensify its actions in this field during its institutional cycle 2019-2024. On 11 December 2019, in her first weeks in office, European Commission President Ursula Von der Leyen launched the European Green Deal as the new EU growth strategy to promote and facilitate the transition to a green, competitive and inclusive economy. Such a major economic transition requires huge financial investments, including to ensure that the process benefits all parts of society and to support the citizens and regions most exposed to the costs of decarbonization. Based on the current target of reducing greenhouse gas (GHG) emissions by 40% by 2030 compared to 1990 levels, the European Commission has estimated that additional investments of € 260 billion per year will be needed year to meet this target. Given that the environmental agreement intends to increase the intermediate target of reducing GHG emissions by at least 50% by 2030, the resulting financial needs will be even greater. For this reason, a measure planned under the Environment Agreement is an investment plan to mobilize public and private funding towards the objectives of a fair transition to a green economy.

On 14 January 2020, the European Commission published a communication detailing the European Investment Plan for Green Transactions, also known as the Sustainable Europe Investment Plan. The investment plan, which complements other initiatives expected under the European Green Agreement[62,63], aims to make available and use the funding needed for the transition to 2030, seeking to put sustainability at the heart of both public and private sector investment and spending the private one. In the period 2021-2030, the European Commission will mobilize at least € 1 trillion in sustainable investment by increasing resources for climate action under the EU budget and by using additional public and private funding[49]. Part of the global resources will be specifically designed to support the regions most exposed to the challenges of the transition [27,29]. Moreover, in the context of these challenges, financial innovations will have new valences, including in the field of financial technologies.

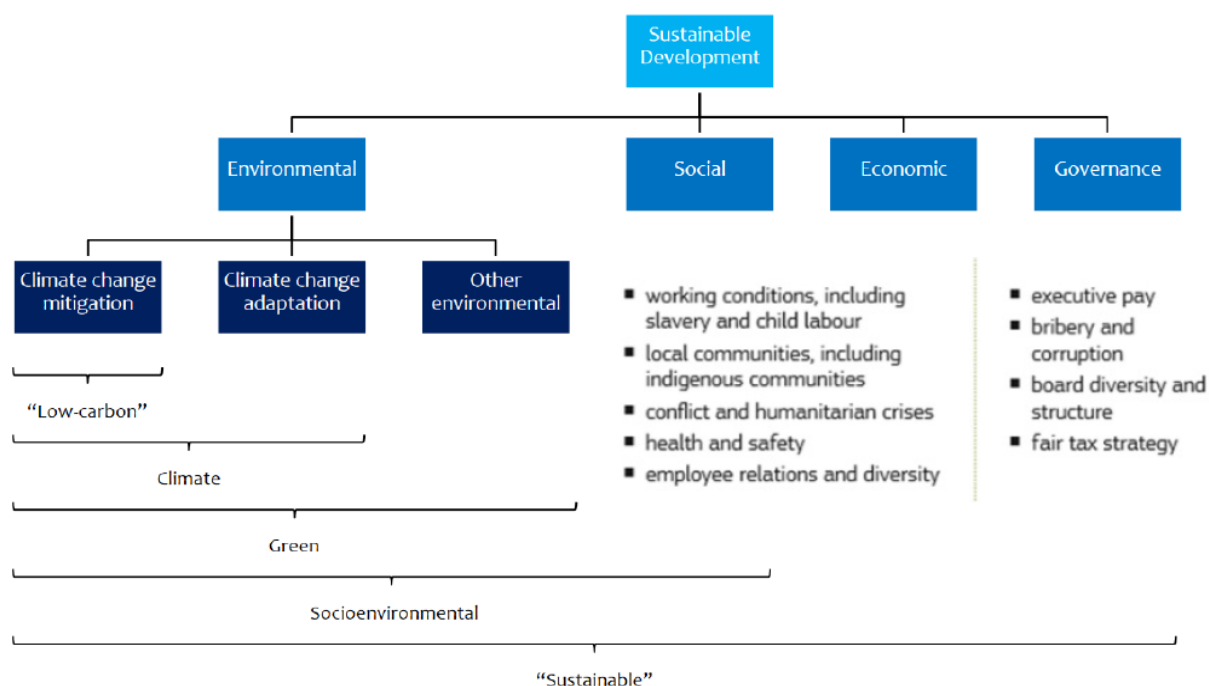
Based on international agreements, and national resilience and recovery plans, we believe that each state's commitments must be expressed as clearly as possible, especially in the context of a sustainable green economy and green financing instruments that support a green economy. The European Environment Agency (EEA), in its 2020 State of the Environment Report, recommended "expanding investment and

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reorienting the financial sector to support sustainable projects and businesses”[28].

The Covid-19 pandemic has accelerated the process of aligning coordinated actions to finance a more sustainable global economy. According to the OECD, it is estimated that € 6.35 trillion a year will be needed globally to achieve the goals of the Paris Agreement by 2030, while the European Commission estimates that only in climate and energy areas will an annual investment be needed. an additional EUR 240 billion to meet the climate energy targets by 2030 [33]. The global financial system is prepared with models and tools, and can help meet these needs through climate finance, green finance and sustainable financing. Financial institutions in the context of climate change, provide funds to adapt the business. as well as climate change mitigation, green financing has a wider scope, as it covers other environmental objectives (eg biodiversity protection / restoration), while sustainable financing extends its scope to environmental, social and governance factors. (ESG) [56, 62]. Therefore, green financing should be seen as a subgroup of sustainable financing; or, alternatively, sustainable financing can be considered as an evolution of green financing (Figure 1).

Figure 1 – Simplified definitions of the key terms used in this paper

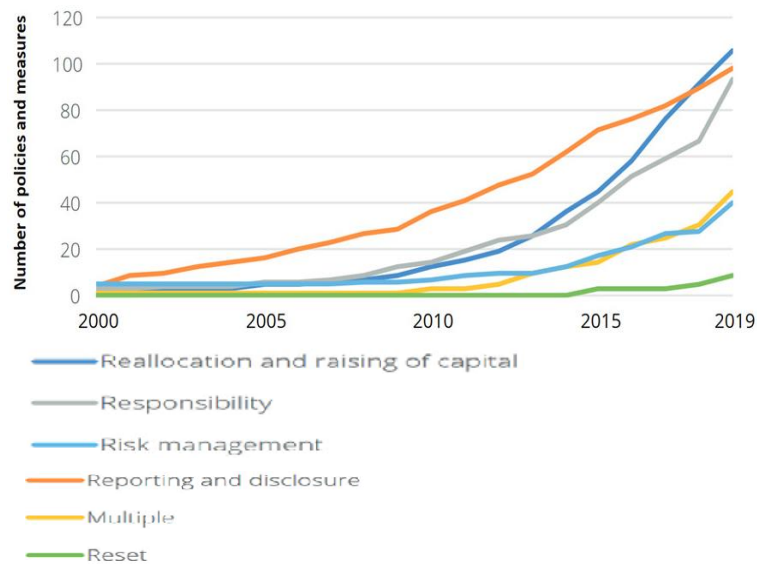


Source: *Green and sustainable finance, EPRS / European Parliamentary Research Service, February 2021, Elaboration on Definitions and Concepts: Background Note, UNEP Inquiry, 2016 [60].*

The concept of "Green Financing" is becoming more and more common, being the abbreviation for "green financial system" and which comes in the context of current innovative instruments, green financing procedures and supplementation with regulations that support the green financial system and which is in place. the context of current climate and environmental change, in the creation of financial risk management tools and, moreover, in investment decision-making at local and institutional level. The financial system increasingly treats climate and environmental risks as financial risks, not just reputational [65].

In 2020, the Basel Committee on Banking Supervision (BCBS, the main global regulatory standard for the prudential regulation of banks) set up a working group on climate-related financial risks (TCFR) [21]. The TFCR is currently conducting research to understand how climate risk is transmitted and the development of methodologies for measuring and assessing these risks. Moreover, many experts point out that the need to incorporate climate-related financial risks into the existing Basel (BCBS set of standards) will be considered and that surveillance practices will be identified to mitigate such risks. sustainable finance, EPRS [65].

Figure 2 – Evolution of green finance policy and regulatory measures



Source: UNEP Inquiry 2020

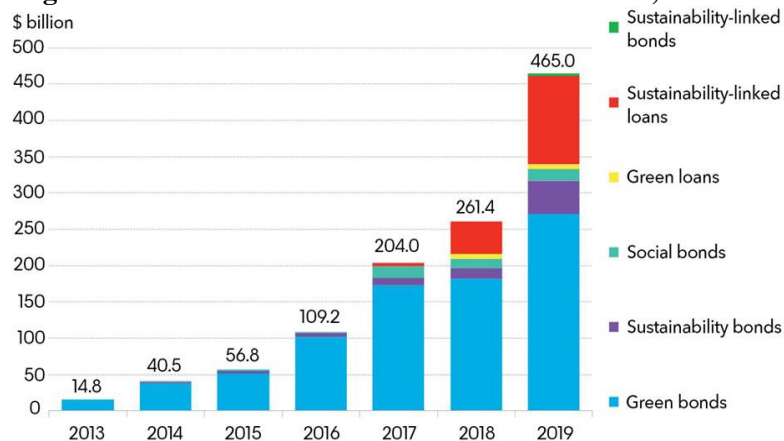
Ecological financing

"Green financing" means "green economy financing" or "green transition financing" [26] and is in line with the "objective of increasing the level of financial flows to green investments". Article 2.1.c of the Paris Agreement highlights the role of finance in the green transition and its importance for climate action "increasing funding flows in line with a path to low greenhouse gas emissions and climate change-resistant development" [65].

The OECD report Investing in Climate[56], Investing in Growth estimates that global annual infrastructure investments require an average of US \$ 6.9 trillion in infrastructure to meet development and climate needs by 2030. At the same time, it is worth noting that some substantial part of these financial flows will have to come from the private sector. In their publication "Financing Climate Futures: Rethinking Infrastructure", the OECD, the World Bank and the United Nations Environment Program (UNEP) suggest that the financial system can facilitate the matching of these investment needs and the allocation of private capital by reorienting private capital flows to investment more sustainable[65].

Innovative and traditional financial instruments are those that support the growth of green financing (see figure below), and the instruments are available by types of issuers and by types of investors, and according to BloombergNEF the green instruments are: green bonds, green loans, bonds durability bonds and sustainability bonds, blue bonds and social bonds. Even if social bonds do not directly contribute to green financing, in some cases they may have a positive effect on the environment (e.g. investment in sustainable food systems) or may accompany green transformation projects (e.g. social bonds for a fair transition) [14].

Figure 3 – Global sustainable debt annual issuance, 2013-2019



Source: BloombergNEF, Bloomberg L.P., 2020

The graph clearly shows that between 2013 and 2019, green bonds maintained a very good position on the market and corresponding developments.

2. Literature review

Reports to governmental and non-governmental organizations and institutions, along with scientific work in the field, are empirical resources that support our scientific and applied considerations. For example the Global Financial Markets Association (GFMA) and Boston Consulting Group's (BCG) report "Climate Finance Markets and the Real Economy" [14, 18] provides a roadmap for how to accelerate the evolution of climate finance, and defines the role capital market participants can play to facilitate the transition to a low-carbon economy in line with their responsibilities to serve clients, investors, and the societies in which they operate [35]. Taken together, the recommendations included within this report enable the development of the climate finance market to grow to the \$ 3–5 trillion + of investment per year that this report estimates will be required to achieve the ambitions set out in the Paris Agreement [18]

In view of all existing regulations and regulations, to which we add international agreements on climate change elements, we appreciate that we are witnessing and participating in the creation of a new sustainable financial system. Moreover, the development of financial programs that directly support initiatives and innovations in the field, makes the economy collaborative and that could accelerate the transition to a low-carbon economy.

To bring climate risks and resilience into the heart of financial decision making, climate disclosure must be comprehensive, climate risk management must be transformed [15], and sustainable investing must go mainstream [16] On 18 October 2019, the EU and seven countries launched the International Platform on Sustainable Finance (IPSF) with the aim to exchange best practices in environmentally sustainable finance; to compare initiatives in this field, and to enhance international cooperation. Its members are public authorities from Argentina, Canada, Chile, China, India, Indonesia, Japan, Kenya, Morocco, New Zealand, Norway, Senegal, Singapore, Switzerland and the EU, representing 55% of the world's greenhouse gas emissions and half of the world's population and GDP[18]. Even though the IPSF is not a standard-setting body, its work is aimed at preparing the ground for the international standard setters to develop globally applicable sustainable finance standards [21].

The introduction of new global financing criteria and the creation of support financial instruments [19], oriented towards the sustainability of economies in the context of climate change, can also be considered as a starting point in the sustainability of global financial markets [23]". Moreover, the aims to assess the understanding of environmental, social and governance (ESG) considerations within the banking context and examines the current market practices in this area. To that extent this paper sets out the various definitions of ESG factors and also sets out how these then are converted into and treated as ESG risks [21].

For the issue of primary indicators of the population, and directly of the reference indicator, the wealth of the population has been, is and will remain a hotly debated topic at the level of national, European and global economic policies [28].

In the context of climate change and innovations in the field of green finance, we appreciate that studies, strategies and reports of European institutions[13], globally empowered institutions, as well as financial institutions, are not only a rich source of scientific documentation, but more chosen are the documents that open new scientific horizons for the sustainability of finances at local, regional, national, European and global levels. Among them we mention the following: European Political Strategy Center, Financing Sustainability: Triggering Investments for a Clean Economy, 8 June 2017 [29], Finance for tomorrow, From the European action plan to the renewed sustainable finance strategy, 12 May 2020, Finance Watch, Making finance serve nature, May 2019, International Network of Financial Centers for Sustainability and UNEP Inquiry[40], Implications of the Covid-19 pandemic for global sustainable finance, April 2020, International Platform on Sustainable Finance, Annual report of the International Platform on Sustainable Finance (IPSF), 16 October 2020 [41], Lagarde C., Climate change and central banking, speech, 25 January 2021 [44], Network for Greening the Financial System, A call for action. Climate change as a source of financial risk, April 2019[50], OECD, ESG Investing: Practices, Progress and Challenges, 25 September 2020 [51], Panetta F., Sustainable finance: transforming finance to finance the transformation, speech, 25 January 2021[52], Schnabel I. , When markets fail - the need for collective action in tackling climate change, speech, 28 September 2020, Spinaci S., Sustainable finance - EU taxonomy: A framework to facilitate sustainable investment, Legislative briefing, EPRS, European Parliament, July 2020 [57], Task Force on Climate-related Financial Disclosures, 2020 Status report, 29

October 2020, and UN PRI [59], Taking stock: Sustainable finance policy engagement and policy influence, September 2019 [25], The European Center for Policy Strategy, in one of its works and which supports sustainable financing [29], presents not only from a conceptual point of view the financing of sustainability, but especially from an application point of view, which leads us to say that these concepts of green financing are not only publicized in recent years, but we can say that they have reached a maturity of applicability at the institutional level [42];.

It is noteworthy that there is a close correlation between climate change, green finance and the standard of living of the population, which is why some of the existing scientific resources globally are to be appreciated[45].

The paper [46] presents mechanisms and models for supporting the poor population, especially in the context of European support in the 2021-2027 programming period [2,3,4] analyze the economic considerations on which to base the economic growth forecast, presenting considerations on the theory of economic growth, the system of indicators used, economic growth modeling or the trend based on which economic growth can be analyzed .

It is clear that the effects of financial integration on transaction costs and risk-sharing at the regional level and at the level of global financial markets [8] have provided a broad understanding of the benefits of integration and financial sustainability [10].

Over the last decade, the community has developed a number of standards internationally to promote sustainable functioning financial systems, and many countries have taken steps to harmonize national and international standards, including on sustainable financing in the context of climate change [43]. In addition, cross-border financial links have been promoted through formal trade and investment agreements. Such agreements often give greater impetus to regional integration than to global integration [48], in part because there are difficulties in reaching agreements between a large number of countries. The European Union is the best-known example of a collective effort to achieve an integrated regional market "[16].

Whether we address sustainable finance issues globally, or locally, the individual is the epicenter of society. Therefore the well-being of the individual is directly correlated with the sustainability of finances.

Fleurbaey [32] examines the different approaches to measuring individual well-being and social well-being, which have been considered for building alternatives to GDP. Voigt and Moncada-Paternò-Castello [61] examine the emphasis on business, and in particular on its rapid growth, in terms of the Europe 2020 policy strategy.

Aisen and Veiga [1] conduct a study in 169 countries and show that higher degrees of political instability are associated with lower GDP growth rates per capita. Anghelache [6, 9] analyzes and interprets the data for the entire interval from 1990 to the present regarding the economic and social situation of Romania. Anghel, Anghelache and Niță [2, 8] analyze, at the level of the European Union and in each country, the correlation between the Gross Domestic Product per capita, imports, exports and the degree of coverage of imports by exports, while achieving the ranking of Member States mention [24].

Anghelache, Partachi and Anghel [4,5,7] analyze the economic considerations on which to base the forecast of sustainable economic growth, presenting considerations on the theory of sustainable finance, the system of indicators used, modeling economic growth or the trend on which to analyze economic growth related to the instrument financially sustainable at local and global level.

3. Research methodology

The methodology of the paper has as direct tools the collection of data and information from the specialized literature and from the existing global practice in public and private higher education institutions, but especially the scientific articles published on specialized research networks (Research Gate, Academia.edu, RePec, and others networks), articles published in various journals, relevant books in the field of reference, legislation, analysis and studies, official documents of the various institutions for quality assurance of higher education institutions, other relevant sources. Moreover, in the methodology, we will analyze the documents using the comparative, analytical, descriptive method, without participatory and participatory observation and the use of a set of information sources, data collection in established databases.

The paper will also be based on annual reports, publications, consolidated statistics provided by the World Bank, World Economic Forum, European Commission, OECD, data that need to be processed in order to provide an overview and analysis of the most important changes that have place globally - considered representative for understanding the phenomena studied. To substantiate the model of education through digitization and internationalization, we have used observation and examination tools, research

methods based on the basic principles of scientific research, and we have also created procedures based on factual analysis, following significant practical experience, and intense documentation in national and international literature.

One of the basic objectives of the study is given the perspective of establishing the basic pillars of the concentrated table of financial indicators of the population of a nation (as an example in our study we took Romania, following the data we have to argue both primary indicators, but more chosen on the basis of which relevant relative indicators have been calculated that characterize the financial condition of the population, and which directly influence the potential and performance of the national economy, respectively the sustainability of finances (including green) in the medium and long term.

Indicator The rate of financing the income of the population

Symbol: Rfz;

Degree of synthesis: derived indicator;

Data source: Financial Accounts - National Bank of Romania and National Accounts - National Institute of Statistics;

Calculation formula:
$$Rfz = \frac{CTP + DTP}{VDB} \times 100$$

Explanations of the previous notation:

- CTP = financial saving, the total financial receivables of the population, regardless of nature, instrument and institution.
- DTP = total financial debts of the population, regardless of nature (banking or non-banking), instrument and institution, recorded at the end of the year.
- VDB = the balance of the income account and measures the part of the created value that the population has for final consumption and gross economy (from which it achieves financial savings).

Economic significance: the indicator highlights the level of financing of the primary incomes of the population, as debtor and creditor, on the financial-banking markets, which depends generically on its available income, and which contains elements for buying financial instruments for saving and guaranteeing loans. employees.

Utility in economic analysis: allows the overall and structural analysis of the level of financing of the population, the degree of employment and the ability to repay and purchase financial assets, providing information for detailed analysis, through specific indicators, of the financial situation of the population.

How to use in the paper: the indicator can be correlated with other generic indicators of saving and financial indebtedness of the population, but also with indicators specific to the financial status of the population; the indicator makes the connection between the economic and the financial indicators of the evaluation of the households, as an economic agent; at the same time, the indicator can be integrated in the network of indicators for assessing the financial status of the population, which highlights their interconnections and co-determinations in the perspective of a complex synthetic evaluation indicator with a direct impact on the sustainability of a nation's finances.

Indicator: Banking rate of population income

Symbol: Rbv;

Degree of synthesis: derived indicator;

Data source: Financial Accounts - National Bank of Romania and National Accounts - National Institute of Statistics;

Calculation formula:

$$Rbv = \frac{CRP + DEP}{VDB}$$

Explanations of the previous notation:

- CRP = total bank loans received by the population, but also loans on other banking instruments, regardless of maturity and risks.
- DEP = total bank deposits and other bank savings instruments of the population, regardless of maturity, risks or income generated.

Economic significance: the indicator highlights the degree of involvement of the population in bank flows, these contributing, through loans and deposits, to the formation of the gross disposable income of the population. The usefulness of the indicator lies in its ability to express the potential of the banking system to influence the size of the disposable income of the population.

Utility in economic analysis: allows the analysis of the population's participation in bank flows, as well as the influence, in absolute size, of the banking system on the adjustment of the population's income.

How to use it in the paper: the indicator can be correlated with other indicators of the population's participation in the financial flows of the economy, with the indicators of the physical investments of the population, with the indicators of the evaluation of the population's well-being; at the same time, the indicator can be integrated in the network of indicators for evaluating the financial status of the population, which highlights their interconnections and co-determinations in the perspective of a complex synthetic evaluation indicator.

Indicator *Financial multiplier of wealth*

Symbol: Mfa;

Degree of synthesis: derived indicator;

Data source: Financial Accounts - National Bank of Romania and National Accounts - National Institute of Statistics;

Calculation formula:

$$Mfa = \frac{FBP}{VDB} \times 100$$

Explanations of the previous notation:

FBP = Gross fixed capital formation of the population: represents the value of durable goods intended for purposes other than consumer, utilitarian, with a certain value, acquired by the population, usually through investments, to be used for a period longer than a year

VDB = Gross disposable income of the population: the balance of the income account and measures the part of the created value that the population has for final consumption and gross economy (from which it achieves financial savings).

Economic significance: the ratio between two primary flow indicators, this indicator expresses the population's capacity for investment saving, development of corporate wealth and potential multiplication of future incomes.

Utility in economic analysis: the indicator is useful for analyzing the economic and financial situation of the population, correlating with the dual income-expenditure analysis, with the analysis of indebtedness and financing of the population, as well as with the analysis of aspects related to financial policies and protecting the interests of the population.

How to use the paper: the indicator can be useful to know the share of investment expenditures of the population in total expenditures, external financing needs, banking or markets, to optimize the ratio between income and financial expenditures, to model the financial behavior of the population; at the same time, the indicator can be integrated in the network of indicators for evaluating the financial status of the population, which highlights their interconnections and co-determinations in the perspective of a complex synthetic evaluation indicator.

Primary indicators and derivatives can be used in determining the economic situation of the population of a nation, but especially in determining the state of affairs in terms of population wealth through methods of measuring poverty using a statistical function that combines the poverty threshold determined by indicators for measuring the well-being of the household [5,7,9], poverty incidence - calculated as a percentage of the population that cannot afford to buy the basic basket of goods, with the calculation formula:

$$H = \frac{q}{n}$$

where: H (headcount index), n- represents the total population, q- poor population

- *depth of poverty* - estimates of the resources needed to bring the poor to the poverty line $PG = 1/n \sum_{i=1}^q \left(\frac{z-y_i}{z} \right)$

where: y-represents the income or expenses of the household, the established poverty line.

Severity of poverty - calculates inequalities between poor people and the distance between poor people and the established poverty line

$$P2 = 1/n \sum_{i=1}^q \left(\frac{z - yi}{z} \right)^2$$

Starting from these methods combined with the statistical function of measuring poverty, its impact on economic growth and sustainability and poverty reduction can be determined [38,39].

In order to estimate the impact of primary indicators (including remittances) on economic growth and poverty reduction, the relationships can be analyzed:

$$Y_{it} = \beta_1 R_{i,t} + \beta_2 X_{i,t} + \alpha_i + u_{i,t} \quad (1)$$

$$P_{it} = \int (R_{it}, Y_{it}, I_{it}, O_{it}, \pi_{it}) \quad (2)$$

where: the country represents and the time period,

Y_{it} logarithm of GDP per capita;

R_{it} represents the rate of remittances in GDP

Matrix $X_{i,t}$ is a set of control variables that have been found in the literature with an influence on economic growth and financial development: Inflation π_{it} , measured as an annual percentage change in the consumer price index, opening (O_{it}) for international trade, differing as a ratio between the sum of exports and imports of goods in total production. Other flows in GDP, measured as the ratio of capital inflows to GDP (including aid, and others);

P_{it} poverty measured as a logarithm;

I_{it} investment measured as natural logarithm of gross capital formation (percentage of GDP)

$$P_{it} = \int (R_{it}, Y_{it}, I_{it}, O_{it}, \pi_{it})$$

The impact of remittances on poverty reduction can be estimated using expenditure as an indicator,

by estimating the function: $\log u_i = \alpha + \sum \beta_i X_{ij} + \varepsilon_i$

where:

ε_i - is the error term, which is assumed to be independent of a normal distribution;

u_i - represents per capita expenditure, and

X_{ij} - is a vector of explanatory variables, which contains information about remittances of the migrant population and economic shocks, which can be measured by food and non-food prices.

We propose to develop these models in the future, starting from the calculation of primary indicators and derivatives, and calculating models that highlight the wealth of the population and the impact of remittances on poverty, especially since at national level alone we have over 4 million population in diaspora and around 5 million people at risk of poverty and who can be included through methods and models of social and financial inclusion and who directly contribute to the sustainability of the wealth of each individual and the nation as a whole.

The theoretical-methodological conclusions refer to the direct involvement of macroeconomic efficiency in the principles [34] and criteria of sustainable finance development aiming at:

-sustainable development of finance for all of us, as a requirement for reducing economic and social inequities and inter-country convergence;

-the principle of prevention, as a factor of saving resources and increasing economic efficiency, including financial resources;

-the principle "the polluter pays in full the damages (negative externalities)", generated to third parties, on different time horizons;

-the principle of public-private partnership;

- intersectoral, interregional and interstate cooperation;

-the principle of "critical mass" of the investment;

-the principle of subsidizing positive externalities in the production of goods and services of a public and private nature;

-the principle of involvement of all members of society and financial participation or otherwise in the cause of sustainable development;

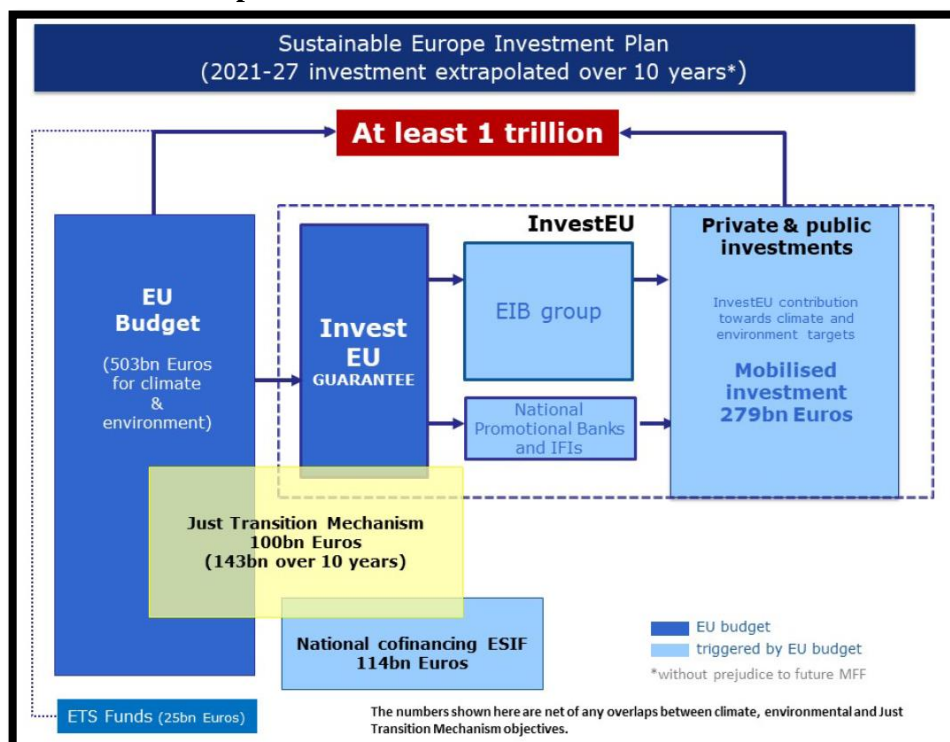
- decoupling economic growth from the consumption of environmental factors;

- the principle of the circular economy, on the entire development of the production and consumption processes;
- the principle of “win-win” cooperation, from the strategic games, amended with the requirement of equivalence (equality) of efficiency for each participant in the cooperation, in the sense of achieving benefits, advantages or profit, proportional to the efforts made;
- the principle of social responsibility and business ethics. The above-mentioned principles have a number of theoretical-methodological and practical arguments and developments that require further study, especially as they usually interfere with and create a number of synergistic effects and inverse connections, which involve taking into account the time factor as an economic value [36,37], based on specific discount rates, as well as the transition from linear to non-linear models, based on multi, intra and interdisciplinary approaches, paying more attention to risk and uncertainty management, vulnerabilities, on the one hand, but also to increasing resilience to different categories of external and internal shocks, on the other hand.

4. Results and Discussion

The mobilization of financial resources worth 1 trillion euros over ten years is the component of the Investment Plan that has so far attracted the attention of the majority. According to official documents, about half of the amount would come directly from the EU budget, while other public and private sources would provide the rest, mainly through leverage. *The European Investment Bank (EIB)* should be a key partner in mobilizing additional funding, as it is expected to trigger investments of up to around € 250 billion (i.e. a quarter of the total) in line with the EU mandates under the plan. investment. Given that the EIB has announced its target of supporting € 1 trillion in climate action and investment in environmental sustainability over the next decade, it should be noted that the two targets only partially overlap. Therefore, it can be deduced that taken together, *the European Investment Plan for Green Transactions* and the EIB's target should have the potential to provide around € 1.75 trillion in climate-related finance[17]. The overall level of investment for the European Green Plan Investment Plan requires further clarification on its time horizon, which covers the decade 2021-2030, in line with the fact that the current EU climate targets are for 2030. However, the next *Multiannual Financial Framework (MFF)* is intended to cover a period of seven years, from 2021 to 2027. Therefore, the European Commission has calculated the total amount on the assumption that the next MFF, scheduled to start in 2028, it will maintain at least the same level of ambition as its predecessor for climate finance for the last three years of the decade[18].

Figure 4. Funding elements amounting to at least EUR 1 trillion in the period 2021-2030 under the European Investment Plan for Green Transactions

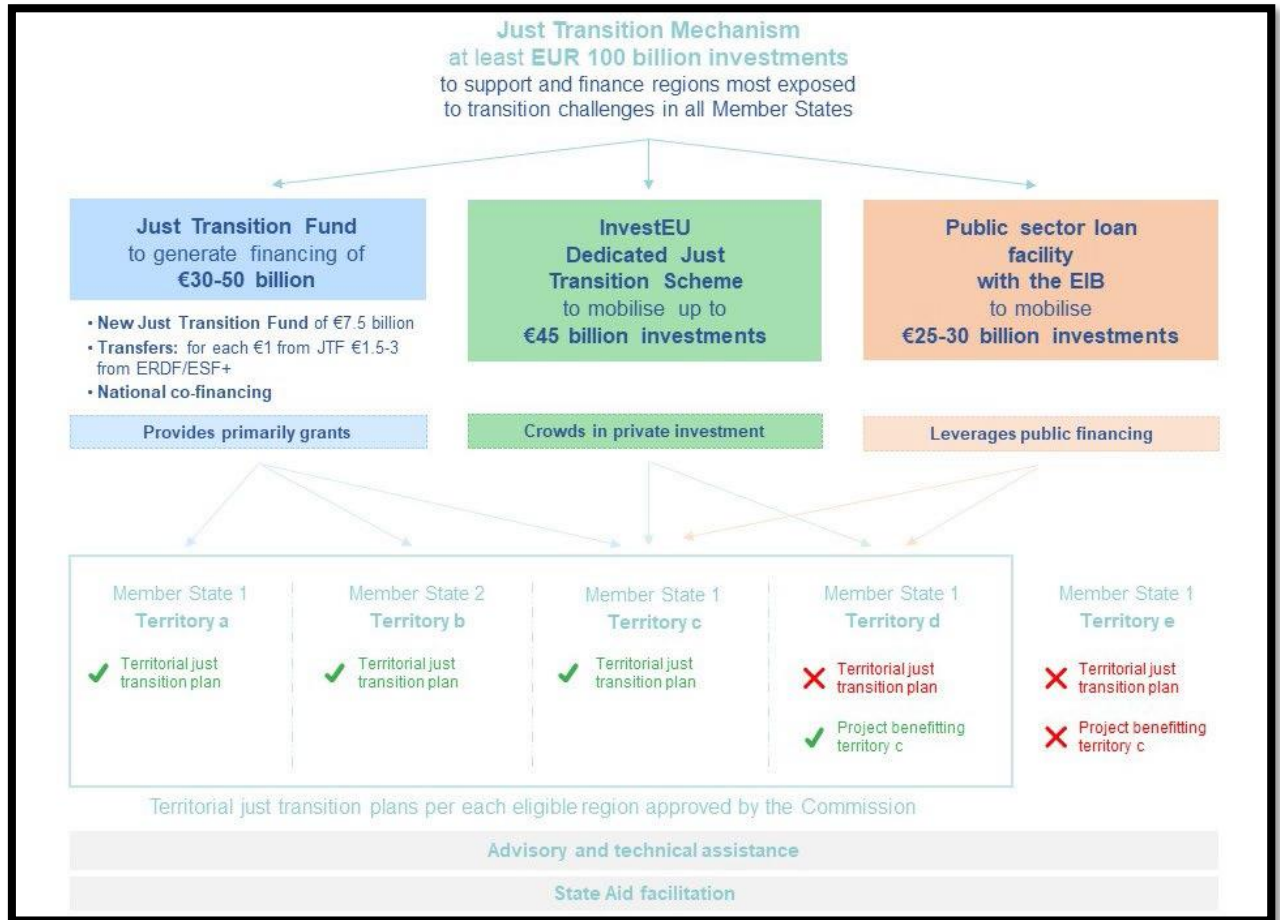


Source: European Commission, 2020

The above figure shows the details of the total figure component of at least EUR 1 trillion. Furthermore, *the European Commission presents* this figure as clear of possible overlaps, taking into account the fact that different sources of funding and/or instruments may interact and contribute to a particular joint project or operation. In descending order of magnitude, five broad categories of climate finance sources would support a wide range of projects and contribute to the *European Green Plan Investment Plan*, as follows: EU budget (EUR 503 billion). The European Commission has proposed that at least 25% of post-2020 MFF resources be allocated to climate-related spending, by incorporating climate considerations into numerous *EU budget funds and programs*. Instruments that should make a significant contribution to this goal include *Common Agricultural Policy (CAP) funds; European Regional Development Fund (ERDF); Cohesion Fund; the Horizon Europe Framework Program for Research and Innovation; LIFE program; and the Connecting Europe Facility (CEF)*. This approach is based on the experience with climate integration in the current MFF, below which the climate target amounts to 20% of total resources 2014-2020 [23]. EIB Group and other investment partners in the context of InvestEU (EUR 279 billion). The proposal for the MFF 2021-2027 includes the creation of the InvestEU program to streamline in a single investment scheme the operations currently carried out under the European Fund for Strategic Investments (EFSI) and various financial instruments supported by the EU budget. Furthermore, InvestEU would be the key tool to exploit the capacity of the EU budget to benefit from additional public and private funding for investments in the Union's internal policies, as well as its targeting of the dominant segment of business beneficiaries, namely SMEs.

The Commission has proposed a 30% climate target for InvestEU operations[24]. The Commission intends to develop financial products aimed at ecological, climate, and social sustainability within InvestEU. CFM has a focus on the regions and communities most exposed to the challenges of transition, this mechanism would be structured on three pillars (see figure below): a fair transition fund, endowed with 7.5 billion euros new by 2027, and a specialized fair transition scheme within InvestEU; as well as a new public sector loan facility, with the EIB, to benefit from additional public funding. Particular attention is paid to territories with high employment in fossil fuel production or GHG-intensive industries. Under cohesion policy, EU Member States will identify eligible regions and the envisaged transition process by 2030, in the fair territorial transition, plans to be approved by the European Commission. Member States and regions will benefit from technical and advisory support from the Commission through a fair transition platform. As regards the overall financial system, the EU taxonomy will play a major role in the measures designed to put sustainable finance at its center. The Commission will also explore how the EU taxonomy, originally designed for the private sector, could be used by the public sector beyond the scope of *InvestEU* to promote synergies. In addition, a renewed strategy for sustainable financing is envisaged, including the creation of a *European Green Bond Standard* as a tool for increasing public and private finance for sustainable investment [23,24].

Figure 5. Just transition mechanism in the period 2021-2027 [20]



Source: European Commission, 2020

The European Commission supports sustainability, which is always duly taken into account when it comes to investment decisions, both in the public and private sectors. A mix of initiatives is envisaged to create the right conditions to achieve this goal, through legislative proposals and incentives.

As regards the overall financial system, the *EU taxonomy* will play a major role in the measures designed to put sustainable finance at its center. The Commission will adopt delegated acts for the implementation of this unified classification system, recently approved by the European Parliament and the Council, which will help to determine activities that can be considered sustainable. The Commission will also explore how the EU taxonomy, originally designed for the private sector, could be used by the public sector beyond the scope of InvestEU (see above) to promote synergies [29]. Also, a renewed strategy for sustainable financing is envisaged, including the creation of a *European Green Bond Standard* as a tool for increasing public and private finance for sustainable investment. In the field of state aid, the Commission intends to review the relevant rules by 2021 to reflect the objectives of the European Green Agreement and, in the meantime, to apply the current framework with more flexibility in areas that are crucial for decarbonisation efforts. Besides, the Commission will develop a "Sustainable Procurement Screening" tool to provide tailored support to public investors in implementing their projects[27].

In May 2018, the European Commission presented its proposal for the new MFF which should cover the period 2021-2027, calling for an agreement to be reached before the 2019 European elections to avoid delays in the implementation of related instruments. Among other things, the Commission has proposed raising the climate integration target from 20% of total resources to 25%. In the context of the *European Green Agreement*, climate integration in the EU budget should be further intensified, with proportionate resources to facilitate a fair transition to a carbon-neutral economy. The call for further change to the climate transition included a call for a new and strengthened methodology for climate integration, with strong performance indicators and provisions to prevent any financial support for climate-damaging measures[27].

The emergence of Covid-19, declared a pandemic by the World Health Organization (WHO) in March 2020, caused significant uncertainty, triggering the announcement of economic incentive packages

to mitigate the social and economic impact of the public health crisis. An article published by the Peterson Institute for International Economics (PIIE) highlights the central role that public and private investment under the European Green Agreement must play in any recovery strategy[27].

Drawing attention to the falling price of oil, the author recommends that the EU and its Member States keep fossil fuel prices for consumers at pre-crisis levels, through higher taxes, as a crucial measure for their decarbonization efforts. The goal would be twofold: on the one hand, the public sector would have additional revenue to combat the pandemic and its consequences; on the other hand, the move would prevent the price of oil from falling. However, the Commission said it would continue its intensive work on climate issues. As previously planned, the Commission has launched a public consultation on the upward revision of the GHG reduction target for 2030, which aims to gradually increase the path to climate neutrality in 2050. Furthermore, the *European Environment Agency (EEA)* intends to assess the impact of the pandemic on production and consumption patterns once the crisis passes. The *Multiannual Financial Framework 2021-2027* [24] is directly linked to the attitude of the Member States to be directly involved in the adoption of measures so that from 2021, small and medium-sized enterprises can use the financing instruments so necessary for their sustainability.

New tools that should be developed in the financial markets, in line with sustainable development, the development of the collaborative economy.

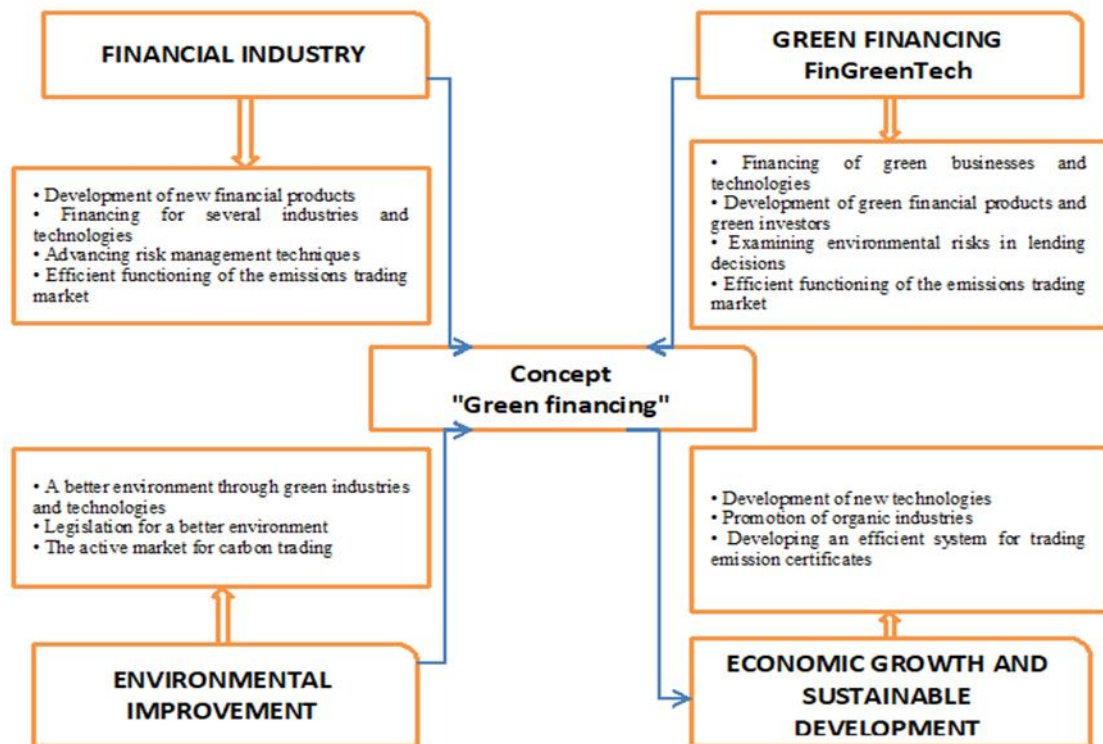
In our opinion, we believe that financial markets should develop techniques, methods, tools that are in line with the concrete conditions in which the global economy operates or will have to operate, especially in the current context of the *collaborative economy*.

Compared to the above and by the new green development policy, we propose the concept of green funding Fin GreeTech, a concept that we promoted in the research project in 2018.

“Green financing” concept FinGreenTech

Financial activities - which increase the financial industry, improve the environment and promote economic growth by carrying out activities with ecological impact.

Figure 6. “Green Financing” Concept FinGreenTech



Source: own concept, coordinated research project “Current trends of the national financial market in the context of the global financial market, CCFM, 2018

Green economic growth means:

- a paradigm of economic growth that simultaneously seeks to grow and improve the environment;
- stimulating growth and job creation through research and development in the field of clean energy and green technologies;
- conservation and efficient use of energy and resources;
- mitigating climate change and environmental degradation.

Green technology

Green technology is the technology that supports ecological growth by conserving energy and resources in various social and economic activities, with a direct impact on improving the environment. This is the technology to reduce greenhouse gas emissions that minimize pollutant emissions with greenhouse gas emissions, energy efficiency technology, clean energy production technology, resource recycling, and green technology (including relevant convergence technology).

The need to develop the new concept of Green Financing - FinGreenTech

Green industries based on green technology are promising growth sectors, and under the Paris Agreement, governments are required to fully implement green financial policies. Moreover, economists have launched the new concept of "ecological transition" as a continuation of the concept of sustainability.

Following this project to identify financial market trends, a challenge in the field of scientific research is to achieve an economic model using the concept of FinGreenTech, and as research topics for the case of Romania, we mention the following:

- development of technical infrastructure, creation of the vector of "green" indices, development of the "Index of green companies" to promote green investments;
- the creation of a funding mechanism and a system for providing information on green technologies;
- creating green financial education "packages" for the human resources involved in the green financing process;
- the development of new financial products that integrate environmental factors into existing products and that take environmental technologies and risks into account in lending decisions;
- the development of new financial instruments that combine banking, insurance, and banking investment features.
- In order to create economic models for sustainable financing, we appreciate that we need to start in a first step in calculating derivative indicators based on primary indicators specific to population finances such as: Population income financing rate (Rfz), Population income banking rate (Rbv) and the Financial Multiplier of Wealth (Mfa), and at a future stage of research in creating a population-specific sustainable financing model.

Indicator: Population income financing rate (Rfz)

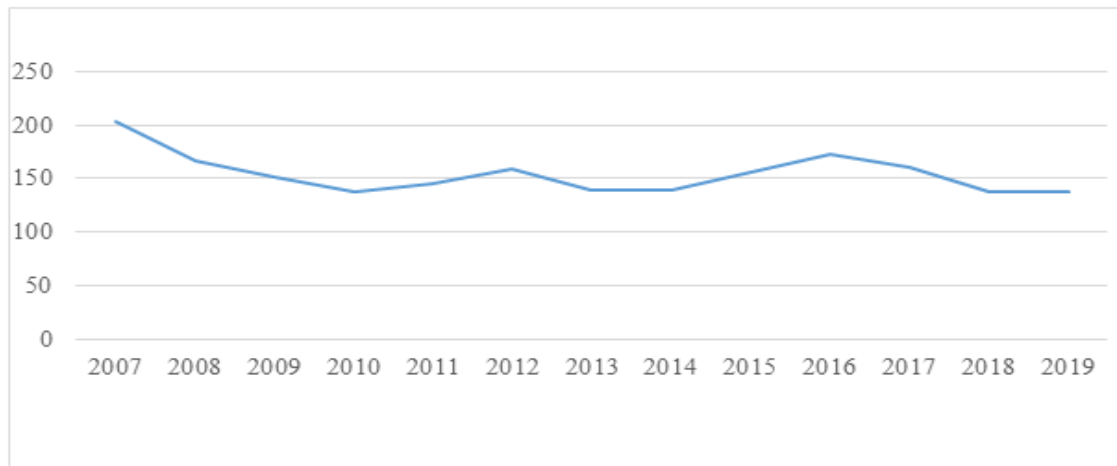
The calculation formula is as follows:
$$Rfz = \frac{CTP + DTP}{VDB} \times 100$$

Table 1. The evolution of the financing rate of the population income in the period 2007 - 2019

| Indicator | Perioada | | | | | | | | | | | | |
|---------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| CTP s million lei | 410503 | 413698 | 334345 | 290620 | 313666 | 370742 | 461740 | 493591 | 516051 | 563012 | 584969 | 624747 | 680974 |
| DTP s million lei | 101479 | 137544 | 137835 | 151112 | 158433 | 163460 | 165072 | 161484 | 151870 | 189838 | 205594 | 219986 | 233185 |
| CTP+DTP million lei | 511982 | 551242 | 472180 | 441732 | 472099 | 534202 | 626812 | 655075 | 667921 | 752850 | 790563 | 844733 | 914159 |
| VDB million lei | 251208 | 330147 | 313038 | 321980 | 324227 | 336621 | 448548 | 470408 | 426795 | 434358 | 492590 | 611554 | 667122 |
| Rfz % | 203,81 | 166,97 | 150,84 | 137,19 | 145,61 | 158,70 | 139,74 | 139,26 | 156,50 | 173,32 | 160,49 | 138,12 | 137,03 |

Source: databases of the National Bank of Romania (from the National Financial Accounts 2007 - 2019 and the monthly bulletins from 2007 to 2020) and the National Institute of Statistics (Statistical Yearbook of Romania, editions 2007 - 2020, Monthly statistical bulletin from December, 2007 - 2019)

Figure 6. Evolution of the population income financing rate



Source: databases of the National Bank of Romania (from the National Financial Accounts 2007 - 2019 and the monthly bulletins from 2007 to 2020) and the National Institute of Statistics (Statistical Yearbook of Romania, editions 2007 - 2020, Monthly statistical bulletin from December, 2007 - 2019)

The indicator highlights, for the analyzed period, the decrease of the degree of involvement of the population incomes on the banking and financial markets, the minimum point being reached in 2019, when the rate decreased to 137.03%, at approximately the same level registered in 2010, respectively to 137, 19%, the trend reflecting the effects of the financial crisis. In the period 2014 - 2018 there is a significant recovery, the level reached in 2016 being 173.32%, but lower than in 2007, when the value was 203.81%, but decreasing in 2017 compared to 2018 with 12.83 pp which could be a negative signal for the banking and financial markets in terms of household income.

Correlated with the evolution of the indicator Income banking rate (Rbv), the evolution of the Rfz indicator highlights the evolution of the population income involvement in banking and financial flows, the degree of employment of the population in activities on banking and financial markets, allowing knowledge of the state and evolution of financial behavior. for the forecasting and design of this indicator, as well as for the elaboration of monetary policies.

Indicator: Population income banking rate (Rbv)

The calculation formula is as follows:

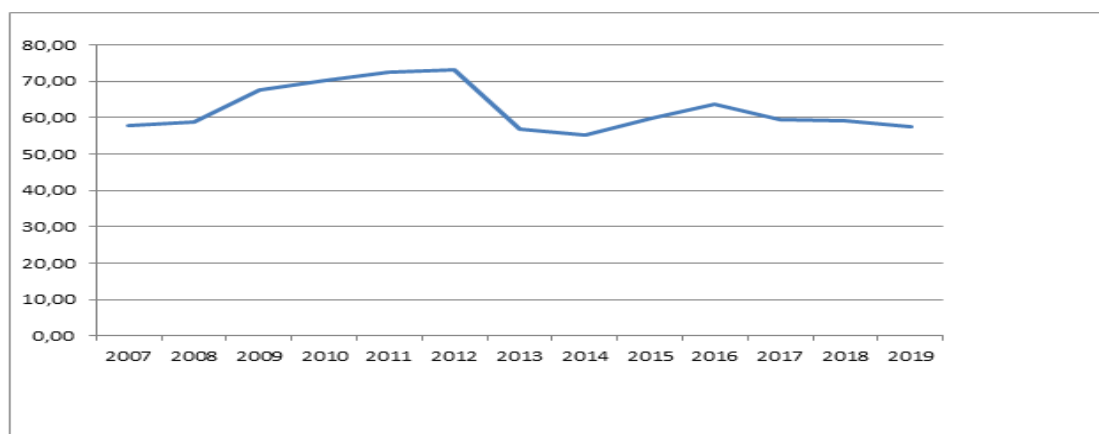
$$Rbv = \frac{CRP + DEP}{VDB} \times 100$$

Table 2. The evolution of the banking rate of the population income in the period 2007 - 2019

| Indicator | Perioade | | | | | | | | | | | | |
|---------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| CRP s million lei | 80460 | 113589 | 116452 | 120195 | 121578 | 122628 | 122130 | 120513 | 107953 | 113037 | 114283 | 119436 | 160000 |
| DEP s million lei | 64990 | 80518 | 94930 | 105388 | 113068 | 123595 | 132287 | 139559 | 146780 | 163462 | 178660 | 241686 | 222399 |
| CRP+DEP million lei | 145450 | 194107 | 211382 | 225583 | 234646 | 246223 | 254417 | 260072 | 254733 | 276499 | 292943 | 361122 | 382399 |
| VDB million lei | 251208 | 330147 | 313038 | 321980 | 324227 | 336621 | 448548 | 470408 | 426795 | 434358 | 492590 | 611554 | 667122 |
| Rbv % | 57,90 | 58,79 | 67,53 | 70,06 | 72,37 | 73,15 | 56,72 | 55,29 | 59,69 | 63,66 | 59,47 | 63,58 | 57,32 |

Source: databases of the National Bank of Romania (from the National Financial Accounts 2007 - 2019 and the monthly bulletins from 2007 to 2020) and the National Institute of Statistics (Statistical Yearbook of Romania, editions 2007 - 2019, Monthly Statistical Bulletin from December, 2007 - 2020), Report on financial stability, 2020, NBR, Bucharest

Figure 8. Evolution of the income banking rate of the population in the period 2007 - 2019



Source: databases of the National Bank of Romania (from the National Financial Accounts 2007 - 2019 and the monthly bulletins from 2007 to 2020) and the National Institute of Statistics (Statistical Yearbook of Romania, editions 2007 - 2019, Monthly Statistical Bulletin from December, 2007 - 2020), Report on financial stability, 2020, NBR, Bucharest.

The evolution of this indicator reflects the increase of the degree of involvement of the population in the banking flows, of banking of the population incomes and the increase of the potential of the banking system to influence the disposable incomes of the population.

The two components of bank flows to and from the population, loans and deposits, fluctuated in value during the period, the growth of loans (almost doubled in 2019 compared to 2007), being lower than that of deposits (3.42 times more). in 2019 compared to the base year), so that if the loan / deposit ratio was 1.23 in 2007, it was 0.72 in 2019, which means that the population tends to be absolutely indebted to the banking system.

It will be seen further that the evolution of this indicator can be correlated with the evolution of the physical investments of the population, with the evolution of the welfare indicators.

Indicator: Financial wealth multiplier (Mfa)

The calculation formula is as follows:

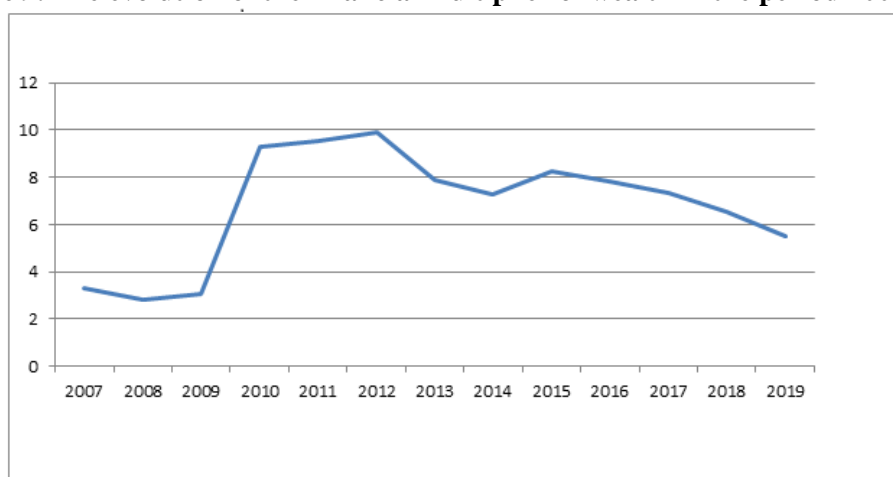
$$Mfa = \frac{FBP}{VDB} \times 100$$

Table 3. The evolution of the financial multiplier of the population's wealth in the period 2007 – 2019

| Indicator | Perioada | | | | | | | | | | | | |
|-------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| FBP mil.lei | 8284 | 9284 | 9625 | 29886 | 30836 | 33345 | 35348 | 34333 | 35206 | 34044 | 36053 | 37098 | 36913 |
| VDB mil.lei | 251208 | 330147 | 313038 | 321980 | 324227 | 336621 | 448548 | 470408 | 426795 | 434358 | 492590 | 611554 | 667122 |
| Mfa % | 3,30 | 2,81 | 3,07 | 9,28 | 9,51 | 9,91 | 7,88 | 7,30 | 8,25 | 7,84 | 7,32 | 6,53 | 5,53 |

Source: databases of the National Bank of Romania (from the National Financial Accounts 2007 - 2019 and the monthly bulletins from 2007 to 2020) and the National Institute of Statistics (Statistical Yearbook of Romania, editions 2007 - 2019, Monthly Statistical Bulletin from December, 2007 - 2020), Report on financial stability, 2020, NBR, Bucharest[64]

Figure 9. The evolution of the financial multiplier of wealth in the period 2007 - 2019



Source: databases of the National Bank of Romania (from the National Financial Accounts 2007 - 2019 and the monthly bulletins from 2007 to 2020) and the National Institute of Statistics (Statistical Yearbook of Romania, editions 2007 - 2019, Monthly Statistical Bulletin from December, 2007 - 2020), Report on financial stability, 2020, NBR, Bucharest

Highlighting, in relative terms, the multiplicative capacity of the real wealth of the population by disposable incomes, capacity expressed by gross fixed capital formation, the evolution of this indicator over the analyzed period reveals a certain concavity of the past trend (for the period 2009-2019). -is in 2012. It should be noted that in 2019, the financial multiplier of the population's wealth was 2.23 pp higher compared to the base year, respectively 2007.

The evolution of the level of this indicator can be correlated with the evolution of the Structural Coefficient of the total investment of the population and of the Coefficient of inclination to save the population, the gross formation of the fixed capital of the population representing a component of the gross economy.

5. Conclusions and recommendations

Reducing the impact of the COVID-19 crisis on Romania, as well as in the Member States, required a rapid, focused and coordinated response from all Member States, including in the field of green financing. It is unanimously accepted in the literature that targeted state support is urgently needed to cope with the disruptive economic effects of the epidemic and the limitation of climate change[30]. However, in our view, state support must be clearly defined and limited in terms of what is needed to address the acute economic crisis caused by the COVID-19 pandemic on the one hand, and the other of climate change[31]. Also, to turn state aid into an effective tool for supporting the real economy across the EU, it is mandatory to impose sufficient behavioral rules for beneficiaries to prevent the abuse of state support, such as, for example, the expansion of the company. or aggressive market strategies achieved with the help of a state guarantee.

In the current period, more and more companies, regardless of size, field of activity or market, feel the negative effects of the *global economic and financial crisis and make appreciable efforts to ensure the sustainability of their businesses*. The evolution of the economic environment has shown that the promotion of companies' strategies and objectives, as essential steps in ensuring sustainability, in increasingly obvious competitive conditions, is not possible without adequate information on the domestic and international economic and financial situation, without consideration and comparative analysis of different techniques and scenarios possible to follow. In the current economic and social context, excessively complex and dynamic, which decisively influences the good functioning of companies, the research carried out brings into discussion one of their most pressing problems, namely the exogenous financing of their businesses. Following the research undertaken, the main conclusions and proposals are summarized as follows:

- a. the stage of development and the complexity of the financial structure at European level (*European Green Agreement, respectively the Multiannual Financial Framework*) decisively influence the action variables of financial management, the terms of their specific problems, as well as the nature of the solutions offered;

b. each type of financial environment delimits the space targeted by the financial management of the company, determining its objectives, issues and means of action. Moreover, as can be seen from the analysis at European level, each financing measure (including in *The New Green Deal*) is taken according to the political objectives set by that state;

c) capital, to be able to “orient” the financing policy towards the cheapest sources of capital (state intervention by issuing state guarantees, including promoting the launch of green bonds), which should contribute to maximizing the company’s market value; and to satisfy as much as possible the interests of the parties involved in its activity; In adopting financing decisions for companies at government level through financing programs with state financial instruments (guarantees, loans, bonds, etc.), companies must have rigorous criteria that allow them to choose and combine these resources, and the cost of financing is the main criterion in choosing the financing resources [34]; for Romanian companies, even in conditions of economic crisis, exogenous financing through bank loans is the main solution to cover the need for financing both the current activity and their development projects[12];

e. In order to improve the financing of companies through bank products specific to *FinGreenTech lending / microfinance / financing*, a number of measures are proposed, such as: eliminating the formal nature of preliminary discussions and advising company representatives on the specifics of lending, including for the correct and complete preparation of the necessary documentation; reducing the time of verification and analysis of the documents requested by the bank, and in case of non-acceptance of the credit application to be presented the reasons and indicators that led to this decision[11], respectively the digitization of these verification / evaluation services; companies to be provided with the necessary conditions to be able to effectively negotiate credit conditions with banks (credit volume, credit period, interest rate, grace period, etc.); the repayment schedule should be drawn up according to the cash flow made by the company, and the monthly repayment term should be not a fixed date, but a repayment period (for example between 25-30 of the month); the size of the guarantees should be determined according to the activity carried out and the nature of the loan (for example, in the case of investments in property, plant and equipment, guarantees may consist, on the one hand, of existing assets acquired); adapting the size and evolution of interest rates and commissions to the level and real trend of the market; An example of measures that directly contribute to improving the financing of companies has been taken by the Member State of Ireland;

f. following the analysis of the situation and dynamics of transactions at European level, we believe that in the period 2020-2030 companies will have improved funding through government intervention, but especially through innovative financial instruments (mediating the innovative financing concept *FinGreeTech*) which is in line with the principles of green financing and which are found in the *Multiannual Financial Framework 2021-2027*.

The conclusion that emerges from the analysis of interventions through financial instruments in the economies of European states, the decisions of the European Commission on the Temporary Framework and the Multiannual Financial Framework 2021-2027, as well as the concrete measures taken by Member States, we consider that in addition to decisions by the Romanian authorities so far and to be continued (possibly supplemented, especially the guarantees for SMEs as other states have done), the package of measures could be supplemented with the following proposal, respectively: for the business environment the establishment of a government and business units Green Financing ”(following the measures taken by the European Commission, the creation at national level of The New Green National Deal) in collaboration with relevant business organizations and labor market organizations to address sectoral economic hardship. Among the main objectives should be the MicroFinance Fund with a potential loan threshold of € 50,000 and intended to finance small family businesses, especially in areas with special conditions (such as mountain areas) [22];

FinGreenTech financial innovations are real tools to support the economic environment, especially in the current context of the new real economy model that is emerging, namely the collaborative economy model, and in the context of the European Green Agreement (2020-2050).

Another element of personal scientific contribution to the literature is given by the definition and calculation of financial derivative indicators of the population (exemplified in our case at the level of the Romanian population) but which can be calculated at the level of the popup of any state. we develop an economic model of financial sustainability based on derived indicators and the standard of living of the population of a state.

There are also limitations to our study due to the fact that the current challenges of the pandemic crisis are acyclic with a direct impact on population financing, and impact indicators will be reflected in

primary and derivative indicators on population finances in 2021, which is why we intend to continue calculation of primary and derivative indicators, as well as as mentioned above the economic model of financial sustainability of the population in the context of supporting greentech financial instruments.

In "The History of the World from the Big Bang to the Present," by Cynthia Stokes Brown, questions are mentioned to which scientists, implicitly new investigators, have yet to find an answer:

"Will they generate current policies, a viable future or a collapse?"

Do new technologies have the power to influence the long-term trends of global systems so that they grow or collapse?

Is the free market able to distribute resources to ensure a viable future?

The market seems to allocate the riches of the rich and accentuate the poverty of the poor. What is changing this component of the global system, without which it seems impossible to stabilize population growth?

Can people in industrialized societies learn to live in harmony with nature?"

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