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THE IMPACT OF EUROPEAN FUNDS ON ROMANIA'S ECONOMIC DEVELOPMENT. A BIBLIOMETRIC AND EMPIRICAL ANALYSIS

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Abstract:

European funds are one of the keys to boosting the business environment in Romania, a key through which jobs can be generated.

The objective of the European Union, through European subsidies, is to reduce the existing economic disparities between European regions, the emphasis being placed on economic harmonization that can generate a correct ratio, from a quantitative and qualitative point of view, in the production of goods and services.

The paper aims to analyze the impact of European funds on economic development in Romania, using a mixed methodology that includes a bibliometric analysis and an empirical evaluation of macroeconomic data for the period 2007-2024. The bibliometric analysis has highlighted a growing academic interest and a quality scientific production about European funds, thus constituting a foundation of the present study.

The philosophical considerations in the construction of the work, aimed, from an epistemological point of view, also the quantitative approach, by collecting and processing data from the websites of the National Institute of Statistics, the Ministry of Finance and the Ministry of European Structural and Investment Funds, followed by the empirical analysis of the indicators, the research focusing on an analysis of data series with a focus on the indicators: GDP, EU financial flows, public debt.

This paper aimed to highlight the impact of these financial instruments on regional development in Romania. The data analysis indicated a significant concentration in the Bucharest-Ilfov region, both in terms of attracting European funds, significant foreign direct investments, and in terms of contribution to the national GDP.

The results of the research have practical applicability in substantiating strategic policies for economically underdeveloped regions, in the context of strengthening their economic positions.

Key words: bibliometric analysis, qualitative absorption; quantitative absorption; real economy; European funds; tag.

JEL classification: O18, O22, C89

INTRODUCTION

The construction of the European Union has involved, in different periods of time, the implementation of the objectives of competitiveness, knowledge, inclusion, sustainability, digitalization, green energy, all these objectives presenting a fundamental goal, that the European Union should remain, as a continent, a reference on the world map.

The work is presented as an overview of specialized literature, making an analysis of the opinions of economists and informed researchers, an analysis of data series, which subsequently led to the outlining of general considerations and conclusions.

This paper aims to make an x-ray of the current state of knowledge in the field of economic development, in the context of non-reimbursable European subsidies. The literature review includes reference volumes and relevant scientific articles, complemented by a process of collecting and processing data from significant institutional web sources in Romania and the European Union.

The topics addressed in the publications, as well as the data collected from the websites of the National Institute of Statistics, the Ministry of Finance and the Ministry of Investments and European Projects, highlight the existence of economic gaps between regions. At the same time, they reflect the role of European funds in reducing these gaps, while offering analytical perspectives, suggestions, and opinions on the efficiency of using these resources in supporting balanced economic development.

LITERATURE REVIEW

The non-reimbursable funds represent the financial lever for the institutional development, as well as the business environment, in Romania. Romania, through these European funds, can develop and reposition itself on the EU economic map, but it is essential that the focus persists on the sustainability of the personal business environment.

Economic development and the absorption of European funds are problems of reflection of many economists from all over the community, the fundamental question around which these questions of reflection hover, being the one related to the existence of these economic gaps between regions, but also to their deepening over time.

The economic future will be dominated by regions with companies that own AI infrastructure. Authors Valeriu Ioan-Franc and Ioan I. Gaf-Deac (2024) assess for our country the fact that in the next 15-20 years, the expected economic growth may be recorded at the expense of activities originating from small and medium-sized enterprises, dominated by AI.

European funds are vital elements in the economic development of a region, generating productivity and competitiveness (key indicators of economic development). Contemporary economists are concerned with this goal of economic development, but it is also correlated with certain dysfunctions in society. Thus, demographic trends can be observed, most of the new population belongs to developing regions and the ageing population is subject to developed regions.

Specialized literature captures the impact of European funds also through the prism of several economic indicators. Thus, Andrei-Alexandru Morosan, et al. (2015), monitors economic indicators, such as labor and labor productivity, in the paper "Structural Funds and the efficiency of direct support instruments for the business environment", having the opinion that EU funds have a visible effect on employment, but without effect on labor productivity.

The authors also present the aspect of the attraction of European funds. There are many problems in the desire of many businesspeople who wanted to attract free funds but did not take responsibility for their efforts.

In the paper "The absorption of European funds and the Romanian mirage of sustainable development", a research conducted on a sample of 165 businesses, the conclusion was that European funds did not have a real contribution to the sustainable development of the North-East region (Morosan, 2014).

Positive aspects related to the absorption process are highlighted by the authors Corina Cace, et al. (2011), emphasize the procedural part, within the European absorption, through which measures are adopted to streamline the absorption of funds, to improve and accelerate the use of EU funds, increasing the amount of funding available to beneficiaries, reducing the co-financing pressure.

Ionel Bostan, et al. (2022), completes the literature, evaluating a sample of businesses, in terms of certain indicators, concluding that EU funds have a positive impact on economic development, but a conditional one, in which the conditioned factors are the efficiency of the institutional absorption system.

Romania, through economic performance, is classified as a "developing" country. The question: "Will Romania become a country that offers living conditions, similar to those in Western Europe?" is a fundamental one for Romanian economists. Coman A.N. and Coman P. (2010), report the following aspect: Ireland has the story of a successful evolution since joining the European Union, which has withdrawn its future in the hierarchy of developed countries. The mere signing of Ireland's accession treaty in Brussels could not guarantee a spectacular economic rise without efforts at national, regional, and local level.

Cristian-Valentin Hapenciuc, et al. (2014), conduct an analysis of European funds and literature, and their opinion is a trenchant one, namely that the literature presents simple quantitative approaches that process macroeconomic indicators. Also here, the researchers present a positive aspect of the SAPARD program, which has strengthened a system of institutions and working procedures, but the final economic results are variable and difficult to measure, being inductive in nature. An absorption of European funds, even if it is difficult to measure the socio-economic effect (at the macroeconomic level), presents a starting point in economic development (at the microeconomic level).

The literature presents a connection between the educated, qualified workforce and economic development, implicitly the absorption of European funds. Luminița-Claudia Corbu, et al. (2020), emphasize a vital aspect, from the point of view of economic development, that of the inability to provide basic education is capable of seriously jeopardizing a country's efforts to reduce poverty.

The author Alexandru Puiu Costache (2012), regarding the absorption of European funds, presents the following opinion: "In fact, inflows of the nature of capital transfers from the EU, as well as foreign direct investments aim to strengthen the economy of a country. The role of foreign direct investments has been and is of particular importance, at the macroeconomic level, as they actively contribute to covering the current account deficit and balancing the external balance of payments".

Another opinion on foreign direct investments is that of the author Corina Ciumac (2014), who concludes that, in the context of the expansion of the globalization phenomenon and, as a consequence, of the removal of political, economic and technological barriers, the ability of a country to participate in the world activity is an important indicator of its performance and competitiveness. All seven countries analyzed (Great Britain, France, Germany, Belgium, Spain, the Netherlands, Sweden), in the research, are net investors, because they present investments abroad that exceed the investments that come from abroad.

The countries of Western Europe, the countries that have the highest economic growth, are the ones that invest in other European states, and not only. They are an example to follow and reflect, precisely, a strong economic model, that of development and expansion.

RESEARCH METHODOLOGY

The research methodology involved, in a first stage, a bibliometric analysis, using the cluster method and citation analysis, the result generating the identification of the research conducted about economic efficiency. The bibliometric analysis was carried out with the help of the VOS viewer software, which imported data from the Web Of Science database, for long periods of time, making interactive maps, which can be easily explored and which helped to understand the relationships between publications, authors and research fields.

The cluster method was used to identify similar groups of documents, authors or concepts, keywords or citations, and citation analysis analyzed the influence relationships between articles, authors, and journals, assessing the impact and connections of the research.

The results of the bibliometric analysis led to a macro image of the research field addressed in this paper, the Web of Science database containing relevant articles and publications in the field.

The philosophical considerations in the construction of the work were aimed, from an epistemological point of view, *at the quantitative approach*, by collecting and processing data from the websites of the National Institute of Statistics, the Ministry of Finance and the Ministry of European Structural and Investment Funds, followed by the empirical analysis of the indicators, the research focusing on an analysis of a series of data with a focus on the indicators: GDP, EU financial flows, public debt. At the same time, observation and examination were used as classic research tools.

The research question, around which the construction of this analysis was made, is the following: *"Do non-reimbursable European funds generate an impact on microeconomic and macroeconomic development?"*

RESULTS AND DISCUSSIONS

BIBLIOMETRIC ANALYSIS

The bibliometric analysis followed both the performance of the sectors of economic activity and the absorption of regional European funds. Between the two themes there being a strong link between the absorption of European funds and the performances obtained in the economic sector.

In the first stage, we queried the Web of Science database, by the keyword "performance in economic activity" linked by the Boolean operator AND to the keyword: "European funds". As a result of the applied filters, a number of 330 published scientific documents were obtained, the first publication on this subject being in 1993.

Figure 1 shows the increase in interest in this topic, starting with 2016, reaching the maximum number of publications in 2019 and 2023, respectively, namely 34 documents.

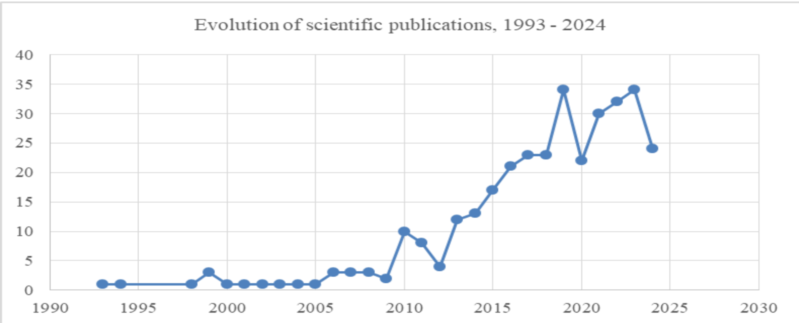

Figure no. 1. Evolution of scientific publications, between 1993 and 2024, on the topic of performance in economic activity influenced by the absorption of European funds.
Source: authors' elaboration, according to the Web of Science database

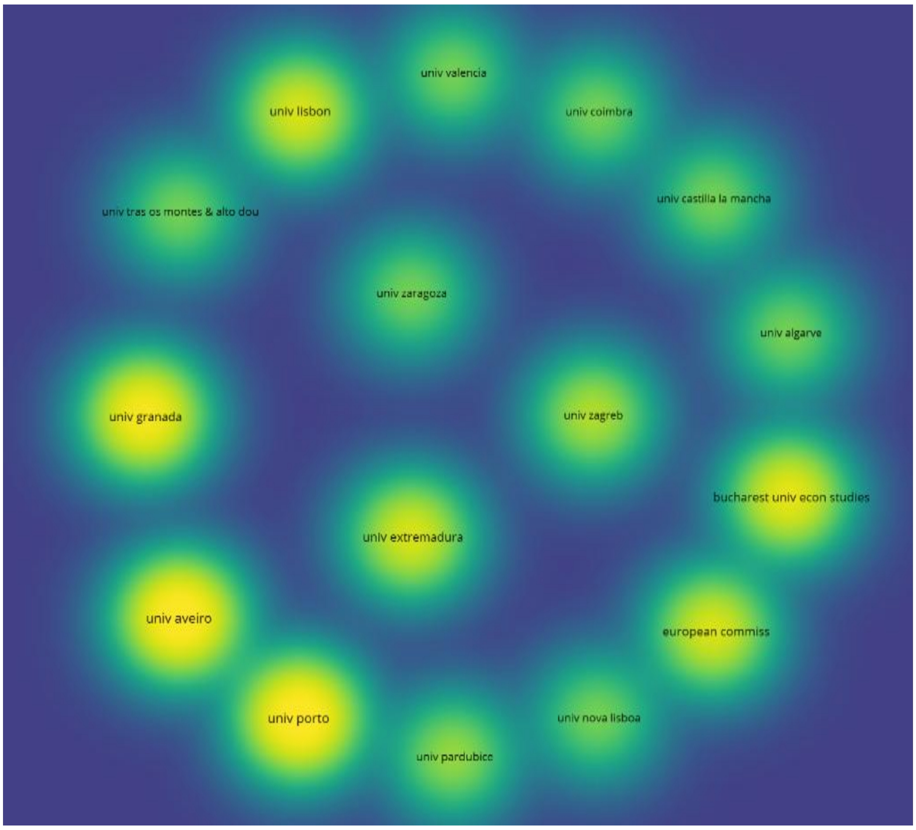

Figure no. 2. Bibliometric density map, regarding the number of citations by universities, with the theme: performance in economic activity under the influence of European funds
Source: authors' elaboration of the VOS viewer software

Next, for bibliometric analysis, we imported the database from Web of Science, according to the applied filters, into the VOS viewer software. As a method, we selected the analysis according to the number of citations, the unit of analysis selected being: organizations. The minimum number of documents selected per organization was 4 publications.

Out of 672 organizations, 17 organizations resulted, according to figure no. 2, the most cited universities, as well as those that show a high interest in the topic addressed are academic institutions such as: University of Granada in Spain, University of Aveiro and Porto in Portugal, but most citations are presented by the European Commission: 324 citations.

The colored areas indicate areas of high intensity, which represents a greater relevance of the respective institution, and the darker areas are the less relevant areas in the analyzed network.

Universities such as: University of Lisbon, University of Porto, University of Aveiro and University of Coimbra, are universities in Portugal, grouped together, indicating stronger collaborations, being from the same country.

Another group is that of universities in Spain: The University of Granada, Zaragoza, and Castilla la Mancha, with collaborations at national or regional level.

Most publications, about the influence of European funds on the performance of the economic sector, are identified at the University of Porto and Aveiro, each of them having 13 publications, between 1993 and 2024. The University of Economic Studies of Bucharest ranks third, according to the number of published scientific papers, having nine studies conducted on this topic with 80 related citations (Figure no.3).

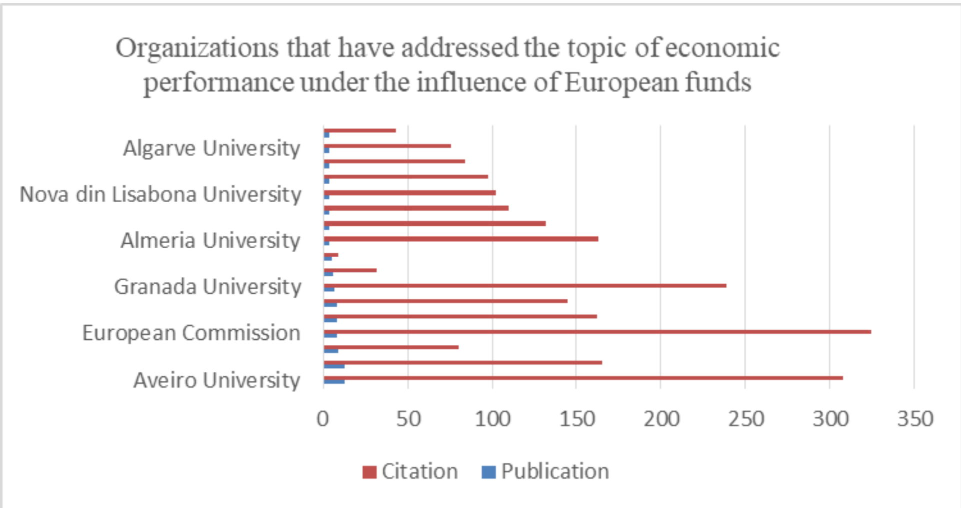

Figure no. 3. Number of citations and publications of organizations that have addressed the topic of performance in economic activity influenced by the absorption of European funds.
Source: authors' elaboration, according to the Web of Science database

Another method used in the bibliometric analysis of the same database of 330 scientific documents published about economic performance, influenced by the absorption of European funds, is the "bibliographic coupling" analysis, selecting countries as the unit of analysis. The bibliometric map, in Figure 4, highlights 5 clusters, formed according to the countries that have common sources cited in the research conducted. The most interconnected countries are Portugal, Spain, and Germany, with researchers from these countries having a wide range of common sources with many other countries as well. Countries such as China, Croatia and South Africa are less integrated into the main cluster, having niche sources.

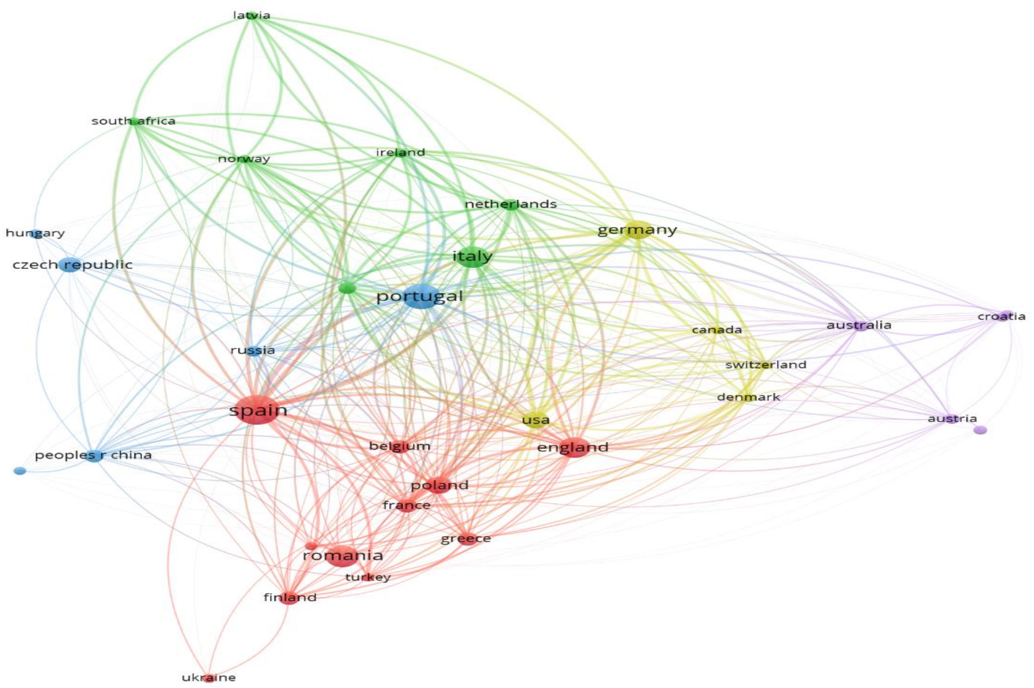

Figure no. 4. Bibliometric map, on the links created between countries, depending on the bibliography.

Source: authors' elaboration of the VOS viewer software

In Romania, the number of publications on the selected topic is 37 documents, being on a par with Italy, but also presenting the third place in the global ranking, after Spain and Portugal. This aspect shows us the increased interest of Romanian researchers in the theme of economic performance, influenced by the absorption of European funds. The first 8 articles, the most cited, can be found in table 1, with citations between 74 and 6.

Table no.1. Publications in Romania, about economic performance, under the influence of European funds, according to the number of citations

Cart. No.	Scientific Paper/ Authors/ Scientific Journal	Publication date	Citations	
			Average/year	Total number
1	**Impact of R&D and Innovation on high** - tech exports/ Sandu, S and Ciocanel, B/ International Conference on Emerging Markets Queries in Finance and Business	2014	6,73	74
2	**Innovation and knowledge creation: perspectives on the SMEs sector**/ Purcarea, I; Espinosa, MDB and Apetrei, A/ Management Decision	2013	3,5	42
3	**The impact of regional innovative clusters on competitiveness**/ Fundeanu, DD and Badele, CS/ 12th International Symposium in Management (SIM)	2014	3	33
4	**Simulation-based e-learning framework for entrepreneurship education and training**/ Bodea, CN; Mogos, RI; (...); Shepherd, NG/ Economic Amphitheater	2015	1,4	14
5	**Financial sustainability of social enterprise in Central and Eastern Europe**/ Staicu, D/ 12th International Conference on Business Excellence (ICBE)	2018	1,86	13
6	**quality of the teaching process and its factors of influence from the perspective of future business specialists**/ Drule, AM; Popa, IE; (...); Chis, A/ Economic Amphitheater	2014	0,82	9
7	**User Satisfaction Regarding Healthcare Education Services Financed Through THE EUROPEAN SOCIAL FUND**/ Radu, AC; Orzan, MC; (...); Stoica, I/ Economic Computation and Economic Cybernetics Studies and Research	2017	1	8

Source: authors' elaboration, according to the Web of Science database

Relevant is the article "Impact of R&D and Innovation on high - tech export", by the authors Sandu and Ciocanel (2014), an article generated by bibliometric analysis, an article ranked on the number 1 position (74 citations), according to the table Publications in Romania, on the subject of economic performance, under the influence of European funds, depending on the number of citations.

The article emphasizes the fact that Romania is a country that adopts existing technologies, it is important that policies are always in tune with the predisposition towards modern technologies that present productivity and competitiveness, at a global level. The priority aspect is also presented, that it is not only necessary to import, but also to export technology, as follows: "The Romanian (high-tech) export policy and the R&D and innovation policy should be correlated in order to maximize the effects in both policy areas" (Sandu, Ciocanel, 2014). The authors of the article also state that there is an increase in the average level of EU spending on research and development activity, with a target of 3% of GDP.

Considering that the most relevant articles are published between 2013 and 2018, and the average number of citations per year is approximately 3.9, we believe that the approach to the topic of economic performance, influenced by the absorption of European funds, is a useful one, being able to add to the specialized literature updated information and being able to capture aspects that were not addressed in previous scientific documents.

EMPIRICAL ANALYSIS

The 16 years of European existence have brought Romania European subsidies worth about 65 billion euros, somewhere around 4 billion euros/year. Given that the average annual value of Romania's GDP during this period was approximately 300 billion euros, we can say that annual European subsidies accounted for 1.5% of GDP (table no. 2).

Table no.2. Net financial balance as of March 31, 2024

Balance of flows (million euro)	2007-2022 Execution at 31.12.2023	Estimates 2024	2024 Execution at 31.03.2024	2007-2024 Execution at 31.03.2024
I. Amounts received from the EU budget (a+b+c)	92,105.91	15,186.74	3,362.31	95,468.22
II. Amounts paid to the EU budget	29,589.28	3,238.30	738.21	30,327.49
III. Flow Balance = I - II	62,516.63	11,948.44	2,624.10	65,140.72

Source: authors' elaboration, according to www.mfinante.gov.ro

Romania's GDP shows an upward trend in the period 2007-2021, European subsidies also show an upward trend, but paradoxically Romania's public debt is increasing, and European reports rank our country on the bottom positions, in terms of poverty indicators. The report on government public debt, conducted by the General Directorate of Treasury and Public Debt, within the Ministry of Finance, presents the following situation: "Government public debt, as of December 31, 2023, accounted for 49.5% of GDP".

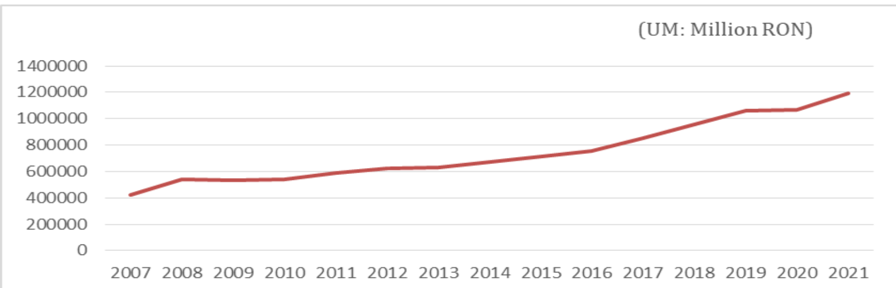

Figure no. 5. Value of GDP at national level, 2023
Source: authors' elaboration, according to INS

The 2023 annual report of the National Bank of Romania shows that the turnover of FDI companies in Romania remained constant, but there was an increase in the number of employees by 2.9% (NBR Report, 2023). The increase in this indicator reflects an added value for Romania, and foreign direct investments are an important vector of economic development that requires rigorous management by decision-makers.

According to the NBR report (2023), the FDI balance reached the level of 118231 million euros at the end of 2023, with a net flow of FDI of 6748 million euros. FDI outlines an economic dimension complementary to European funds and requires equivalent strategic attention from the authorities, thus contributing significantly to the sustainable development and competitiveness of the national economy.

Another important aspect to quantify from the NBR report is that of geographical distribution, namely the fact that the Bucharest-Ilfov Region attracts a lot of foreign investment, at the end of 2023, the FDI related to this region representing 64% of the total indicator.

Although Romania has an upward trend in the absorption of European funds, the public debt increases annually (figure no. 6).

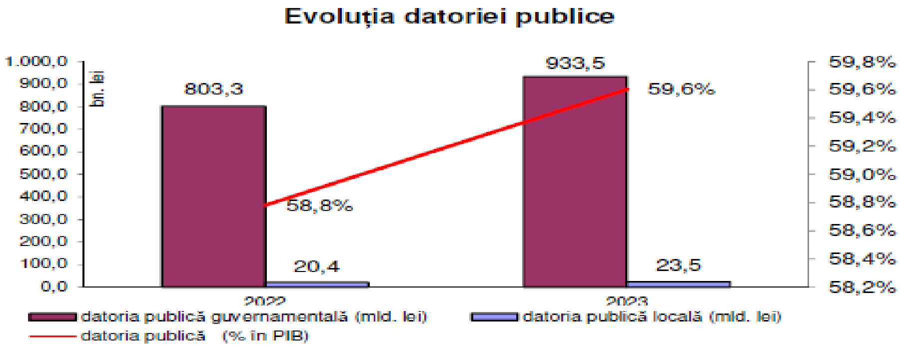

Figure no. 6. Evolution of public debt, Public Debt Report, as of December 31, 2023
Source: https://sgg.gov.ro/1/wp-content/uploads/2024/07/RAPORT.pdf

The Bucharest-Ilfov region has the most foreign investments, but this region also has the highest contracted value of European projects. For the period 2021-2027, a statistical report on October 31, 2024, of the Ministry of Investments and European Projects, shows that the Bucharest-Ilfov region holds a percentage of 20% of the total contracted value at national level.

The Ministry of European Investments and Projects (2024) provides us with the Map of funding for the fiscal year 2021-2027, funding by counties and beneficiary organizations according to table no. 3.

Table no. 3. Funding map, as of October 31, 2024

County	Absorption value (lei)	County	Absorption value (lei)
BUCHAREST	14754208207	ARAD	1117692422
DOLJ	6329177300	ALBA	1071387243
IASI	6059855410	SATU MARE	1063017132
CLUJ	5100860646	BISTRIȚA NASAUD	1032439757
CONSTANTA	3992235104	HUNEDOARA	1030004814
BACAU	3572398768	VALCEA	983163917
DAMBOVIȚA	3344115624	MURES	899327256
MARAMUREA	3295682026	ARGES	891057697
BIHOR	2540205670	PRAHOVA	869659981
CARAS SEVERIN	2366676093	MEHEDINTI	844723675
TIMIS	2366676093	SALAJ	826015402
ILFOV	2352470458	VRANCEA	801370216
BUZAU	2247810774	TELEORMAN	713252904
GORJ	2220385989	CALARASI	565987841

County	Absorption value (lei)	County	Absorption value (lei)
BRAILA	2108782230	HARGHITA	546438656
GALATI	1937648716	GIURGIU	544813673
BRASOV	1874722244	IALOMITA	503000227
SUCEAVA	1836939470	BOTOSANI	489718702
OLT	1704075899	VASLUI	292791674
SIBIU	1504593015	NEAMT	242071943
TULCEA	1301294165	COVASNA	224549075

Source: author's elaboration, according to https://mfe.gov.ro/

A look from another economic angle presents Romania's GDP/capita in 2023, by regions with a value of 84168 lei (INS, 2024). In fact, the Bucharest-Ilfov Region presents the figure of 332241 million lei in the GDP indicator. It is noted that the share of the Bucharest-Ilfov Region in the national GDP (1189089 million lei) is approximately 28% (the data are available in Tempo Online, by regions, only until 2021).

The case study, conducted by Bostan et al. (2022), aimed to analyze the impact of non-reimbursable European funds on the economic performance of small and medium-sized enterprises (SMEs), using a sample of 578 SMEs benefiting from eupropene funds, compared to a control group of 653 companies that did not benefit from financing, between 2005 and 2018. The result of the study highlighted statistically significant differences between the two groups in terms of revenue and profitability in the short term.

Authors emphasizes that the positive effects of the non-reimbursable funds could be extended in the long term, depending on several factors: the quality of the projects submitted, the administrative efficiency of the authorities managing the funding, as well as the strategic behavior of the beneficiaries in accessing and implementing the funds.

CONCLUSIONS

The differences between regional economies can improve, in other words, we reiterate that economic disparities between regions will always exist, but it is important not to deepen. Economic improvement will only exist if the poorly developed regions, which have low economic indicators compared to the EU average, create long-term investments that create jobs and superior products/services.

The Bucharest-Ilfov region is the strongest region in Romania, with indicators such as: FDI 63% (end of 2023), GDP 28% (data available in 2021) and with a budget value for European funds of 20% (October 2024).

Thus, we conclude that the already established economic centers manage to build the highest GDP, to attract the largest FDI, as well as to attract the most European funds. However, there must be a long-term vision at the national level, through which the economic areas in Romania, which are less economically developed, benefit from this experience of those who, due to the historical conjuncture or due to the organization, have managed to become a reference.

Such an economic revitalization of the regions requires an essential foundation, consisting of a monitoring system at the territorial level, more precisely, at the level of the administrative-territorial units. Monitoring should be at the microeconomic level, including indicators such as number of active companies, turnover, salaries, profit made, number of employees and European funds attracted.

Currently there is monitoring, but if it is conducted in another form, in parallel, an economic map of an administrative-territorial unit could be created that is easily accessible to users. Now, the databases, being complex, integrate in an aggregate way all the beneficiaries of European funds, thus requiring the development of an economic-geographical IT architecture, which allows a detailed and operative analysis of the economic performance at the local level.

The non-reimbursable European funds have a favorable impact on the microeconomic environment in Romania, significantly influencing the economic dynamics at the macroeconomic level.

In conclusion, the regions that efficiently capitalize on these financial resources and adopt a strategic approach in the development of sustainable economic circles will experience a consolidation of their economic position.

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