Interdisciplinary approaches to the new paradigm of the global financial and monetary architecture after the Covid 19 pandemic crisis in correlation with the social problems in the EU countries

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Abstract

Research background: How will the world change after the pandemic? What will be the trends of the global economy after the pandemic in the conditions of digital transformations and the impact of other cutting-edge technologies that will change both the global paradigms of the world economy and the global financial and monetary architecture? It is a problem both globally and in each country.
Purpose of the article: In this article we aim to examine the processes of transformation of the financial architecture worldwide in the current conditions of financial-monetary globalization, but also of the revolutionary transformations of digitalization and cybersecurity of national, regional, and global financial systems.
Research method: We start from the historical approach of the world financial and monetary phenomenon in correlation with the social evolutions. Another method of research is longitudinal: the study of the world financial and monetary phenomenon in time in the context of building the new paradigm of development at the global level with the transition of building paradigms at the national level. In this context, the statistical method and the method of collecting statistical information are also necessary.
Findings & Value added: In the conditions when many countries face various serious problems of social, demographic, mass population migration, imbalances in labor markets, declining quality of life, the new international financial-monetary paradigms, but also regional and national ones demand to be correlated by promoting current policies and building economic, financial-monetary and social systems that correspond to solving these socio-economic problem.

Keywords: i*nterdisciplinary approaches; new paradigm; global financial and monetary architecture; pandemic crisis; social problems in the EU*

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1 Introduction

The problem of transformations of the international financial and monetary architecture discussed for many years in a row. Given the revolutionary transformations that are, taking place in the global economy primarily related to the impact of the digital revolution on the global economy, but also of other technologies related to the development of the circular economy, the development of nanotechnologies and biotechnologies. Globalization, appreciated by both academia and governments as a positive process, although it particularly confronts less developed countries (Profiroiu et al., 2020). Increasing the volume of trade, industrialization of developing countries, improving the standard of living in most underdeveloped countries. The devastating socio-economic impact of the COVID-19 pandemic will be, felt acutely in the coming years, practically all over the world (Burlacu et al., 2021). The reliable and sustainable recovery of the world economy, according to UN experts, is possible only if investments ensured in the economic, social and climatic stability of the planet corresponding to the current difficult situation (Burlacu et al., 2021). This stated in a new report prepared by UN economists. Since the last session of the "United Nations Conference on Trade and Development" four years ago, cracks and ruptures have deepened the global economy, threatening the achievement of sustainable development goals (Bran et al., 2018). These lines of error include growing inequalities, fueling public dissatisfaction with globalization, deepening the digital divide and unequal vulnerability to climate change (Bran et al., 2019). They also include the growing disconnect between investment in the real economy and abundant financial markets, which have failed to fully fund the "2030 Agenda for Sustainable Development", but have led to increased debt burdens and increased illicit financial flows (Jianu et al., 2019).

The frequency of crises in recent years has drawn attention to the weaknesses of the international financial system and rekindled interest in its reform. The Asian crisis, followed by the collapse of the Russian Federation, with some effects on Wall Street, created a widespread perception that the existing system was already inadequate and radically needed reform. From here and there were many discussions about a Bretton Woods for the new millennium. Talking about the restructuring of Bretton Woods institutions for the new millennium has given rise to a more objective of more effective cooperation between the International Monetary Fund and the World Bank to increase effectiveness in crisis prevention and management. The challenges facing today's international financial system is quite different from the past and due to these differences, a new financial architecture needed. In this order of ideas, we propose in this article to approach the respective problem with a certain spectrum of ideas and proposals that would support the construction of a new paradigm for the new global financial-monetary architecture.

2 Formulation of the study problem and analysis

2.1. Note the pandemic crisis

According to the IMF Report of April 2021, the COVID-19 pandemic led to a severe global recession, with a differential impact in different countries (Balu et al., 2021). A key issue is the extent of the persistent damage that can result from this crisis (Radulescu et al., 2021). The projected medium-term production losses due to the pandemic are substantial, and production for the world in 2024 expected to be about 3% lower than the anticipated pre-pandemic. The losses expected to be lower than after the global financial crisis, assuming

that the pandemic controlled globally by the end of 2022. The International Monetary Fund (IMF) estimates the cumulative damage caused by the economic crisis due to the pandemic could reach 28 trillion dollars by 2025. The current situation with the world pandemic and preliminary statistics for the first months of 2021 show that the world may face a new financial crisis. For 2021, the expectations are particularly tough for the global economy (Sarbu et al., 2021). According to the International Institute of Finance, public debt in all countries of the world reaches a record level; global debt has increased by more than 15 trillion dollars since 2019 and reached a record of 277 trillion dollars (365 percent of global GDP) at the end of 2020. Debt in all sectors of the economy, from households to government and corporate bonds, has risen sharply. The latest IMF report predicts that global public debt could rise to 99.5% of GDP in 2021. The total debt of G20 countries expected to increase to 109% in 2021, while the debt of developed countries will increase to almost 125% of GDP. According to IMF forecasts, the global financial deficit in 2021 will amount to 8.5%, the financial deficit of the G20 and advanced economies - 9.4% and 8.8%, respectively.

According to the ILO Report, The share of workers living in countries restricted by the Covid-19 pandemic remains at 93% of the world's employees in countries with a certain form of work, closure measures in effect at the beginning of January 2021. Specific and sectoral measures have gradually become the norm of life in the passage of the pandemic and still affected by 77 percent of workers in early 2021. New annual estimates confirm that labor markets around the world disrupted in 2020 unprecedented historically. Losses on working hours in 2020 were about four times higher than during the global financial crisis of 2009. This development confirms how the situation has evolved over the past year 2020. Estimates of working hours, losses in the third quarter 2020 were down 7.2 percent from 12.1 percent in the 6-th edition of the ILO Monitor. In the fourth half, working hours fell by 4.6 percent, equivalent to 130 million full-time jobs. As of 1 January 2020, there were 447.3 million people living in the EU, 23 million were non-EU citizens (5.1% of the total EU population). The most important reason to come to the EU for people with a valid residence permit at the end of 2019 was family reasons. Employment of immigrants in 2020, 8.7 million non-EU citizens were employed in the EU labor market, out of 188.9 million people aged between 20 and 64, representing 4.6% of the total. The EU employment rate for the working age population is higher for EU citizens (73.3%) than for non-EU citizens (57.4%) in 2020. Over-represented sectors In 2020, non-EU citizens have been over-represented in certain specific economic sectors.

Over-represented sectors In 2020, non-EU citizens were over-represented in certain specific economic sectors, such as: Table 1.

Table 1. In terms of occupations, non-EU citizens were over - represented:

	Overall employment of non - EU citizens	Overall employment of EU citizens
Accommodation and food service activities	11.40%	3,8 %
Administrative and support activities	7,1 %	3,7 %
Domestic work	6,5 %	0,7 %
Construction	8,6 %	6,4 %
Cleaners and helpers	11,9 %	3,1 %
Personal service workers	9,0 %	4,2 %
Personal care workers	5,1 %	2,9 %
Building workers	5,8%	3,6 %

Laborers in mining, construction, manufacturing and transport	5,6 %	2,4 %
Food preparation assistants	2.70%	0,5 %
Agricultural and fishery labourers	2.60%	0,6 %

Source: ILO

2.2. Study method

Both the practical experience in the field of economic sciences and in the financial-monetary micro financial, macro financial and world-financial field is in the development of new mechanisms, methodologies, tools and search for new theories and models. This problem is not a new one for specialists in the field. In this sense, the interdisciplinary approach in the field of finance well known and may not always be supported by practitioners. Last, but not least, the approaches of physics in the last 30 years have appeared in the field of econophysics, bioeconomics and socio-physics. In this article, is this aspect of paradigm that we propose to study and to propose in the construction of the new paradigm.

2.2.1 Bibliographic study of the problems of the global financial and monetary architecture and the interdisciplinary approach of the subject

Allen and Walther (2021) in this paper examines the links between financial stability and the architecture of financial systems. The authors reviewed the existing literature and provided an organizational framework for the analysis of three empirically important aspects of the financial architecture: the growth of non-bank financial intermediaries, the regulatory response to these structural changes, and the emergence of complex interbank networks. (Schinckus, 2010) argues: " At a time when finance has been concerned with the expansion of new information technologies and the media, or has made astonishing progress in recent decades, both in practice and in theory". In the Report of the Secretary-General of the International Financial System and Development of the United Nations, 28 July 2020 presented in accordance with General Assembly resolution 74/202 provides an overview of the global economic and financial impact of the coronavirus pandemic (COVID-19) and the response from the international financial system.

Emergency policies (IMF, April 2021) have helped to improve financial conditions and support the economy, helping to limit risks to financial stability. However, measures taken during the pandemic can have unintended consequences, such as asset overvaluation and increased financial vulnerabilities.

Karim et al. (2021) in that study examines "the impact of financial inclusion on economic growth using a sample of 60 countries from 2010 to 2017." The authors built a new financial inclusion index (IFI) for each country to determine the level of financial inclusion over time. (Mohsin et al., 2020) examines climate change mitigation requires substantial efforts towards the transition of energy systems to reduce CO2 emissions. This paper develops a low-carbon financing index, which can help attract foreign direct and private investment in the low-carbon energy sector.

Zhang et al. (2019) address: bibliometric analysis is used to study the literature of ecological finance; Critical information is disclosed to establish the conceptual framework; the limited attention in the main flow funding journals indicates future opportunities. Bach and Solomon (2008) in this paper seeks to add to a growing body of empirical research on state transformation due to the processes of economic globalization, especially the assertion of state policy on areas where control initially seems to be "eroded". In opinion of Meng

(2021) the rapid development of the e-commerce industry has also given rise to the rapid development of internet financing. One of the combinations of internet financing and e-commerce is supply chain financing in the e-commerce industry. Within the technological process of supply chain management, the e-commerce industry involves the organizational unit. (Yang et al., 2019) claim: " The integration of supply chain financing and Internet technology has opened a new model of how financial services operate in the network economy era - B2B e-commerce platform Supply chain financial model with the internet, which provides an effective way to solve the difficulties of financing SMEs". Reconciling all areas of international economic law (IEL), in opinion of Choukroune and Nedumpara (2021) creating cross-disciplinary contacts in a conceptual and practical way, this work stands out as the first modern and comprehensive handbook of international economic law.

2.2.2 The interdisciplinary approach

An interdisciplinary approach of the kind we propose must bring together researchers whose research is based on the natural and social sciences and the humanities and who have experience in the widest possible basis of methods, including formal modeling, experimental research, statistical analysis, case studies, etc..

The current crisis stands out as it affects the heart of the global financial system. The main cause has been a widespread underestimation of risk in the global financial system, especially in the most advanced economies.

In the opinion of the authors (Sheraz et al., 2015): "The application of entropy in the financial field can be seen as the extension of information and probability theory". In this article, the authors applied the concept of entropy to the underlying financial markets in order to make a comparison with volatile markets.

The author (Lee, 2014) in this paper propose: "the study of network entropy as a tool for measuring the diversity of extreme connection financial networks". The author is of the opinion: "The calculation of the entropy of the network depends on the centrality of the eigenvector and the Shannon entropy". In this paper, two important moments related to policies identified. Also author (Lee and Park (2019) In this paper: "measures the diversity of highly connected financial networks that use network entropy, and the results of this policy emerge from this research." Regarding the time variation of the network entropy, the international diversification of the global financial network built on the external debts of international banks decreased during the financial crisis of 2007-2008.

A special contribution to the interdisciplinary approach to the development of economic science and finance both the microfinance phenomenon and the world financial phenomenon bring the author Bran in several works (Bran, 2003), (Bran, 2004), (Bran and Costica, 2004).

3 Results and Discussion

Talking about restructuring the Bretton Woods institutions for the new millennium has given rise to a more modest goal of strengthening cooperation between the International Monetary Fund and the World Bank to increase its effectiveness in crisis prevention and management. The challenges facing today's international financial system is quite different from the past and this is precisely because of these differences, a new financial architecture needed.

(Wade, 2007) The international financial system lacks bodies that set standards and set rules at the national level. Rather than implementing institutional reforms that could help prevent further instability in the decade since the Asian crisis, the West has sought to build a comprehensive regime of global economic standardization, surveillance and correction.

The authors' results (Charles A.E. etc. 2009) reflected: "that the agent directly affected by the change in regulation is starting to behave more cautiously, as well as agents whose access

to finance depends on the agent affected; therefore, stricter regulation in the corporate market increases reimbursement rates on All credit markets, on the interbank market, are implicitly reduced only on the interbank and deposit markets, and in the deposit market it only manages to increase the repayment rates on that market. in any of the credit markets, the agent directly affected by the policy is the most complicated in the short term. "

In the Report of the Secretary-General of the International Financial System and Development of the United Nations, July 28, 2020 presented according to the resolution of the General Assembly 74/202.

Global economic conditions, financial markets and capital flows**.** The global health crisis caused by the COVID-19 pandemic has rapidly escalated into a severe global economic crisis. The global economic downturn has had a major impact on labor markets around the world. As of June 2020, 93% of the world's workers live in countries with some form of job closure. The International Labor Organization estimates that global working hours fell by 14% in the second quarter of 2020 (compared to the last quarter of 2019).

The need to move to a new paradigm of the value of the international financial and monetary system

The future contribution of these systems to the international processes of obtaining and managing value at the international level. Creating models that represent a theoretical system with which the properties and transformations of a new system can be studied indirectly, more complex.

The physical support of value - of the international financial and monetary system explained by the functioning of systems involved in maintaining value, an important element for the economic theory of value. The phenomenal leap proposed by Professor Paul Bran is the introduction of the mechanism for obtaining and managing value - the systems of the natural environment and society. (Bran, P., 2003, p.92) *Conceptual changes.* The system of economic activity, which is becoming more and more complex, involves its internal and external elements, being-driven by the information contained in the Eco field that surrounds each type of economic system.

The Eco field concept applied in the functioning of the international financial and monetary system. It is an original proposal to introduce the concept of ecological field, force field. (Bran, 2003, p. 102) The reform of the Eco camp implies a radical transformation of the political, social and behavioral structures for all members of society and, first of all, for leadership at all levels. The form of existence of matter called the "force field" is the organizer of the material phenomena around which formed.

These forces may have a positive impact on the economic activity of economic agents as result of well thought out and efficient macro-government or they may have less positive, discouraging and, in some cases, destructive effects. Economic power and the international financial-monetary dimension of domestic, regional and international companies.

The future contribution of these systems to the international processes of obtaining and managing value at the international level. Creating models that represent a theoretical system with which the properties and transformations of a new system can be studied indirectly, more complex. Therefore, the disciplinary matrix will include ordered elements of different types. Secondly, this concept reflects the discipline of the group that accepts the respective matrix and cultivates it (Bran, 2003, p.49)

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external elements, being, driven by the information contained in the Eco field that surrounds each type of economic system.

Considering the opinions of the authors (Stosic, 2016). Among the econophysical instruments, entropy is an important concept for quantifying turbulence and uncertainty in dynamical systems. In particular, the concept of entropy has been widely used in finance to quantify the diversity and regularity of price movements in a variety of markets. In physics, financial markets described as complex dynamic systems governed by many interacting elements. Physicists have put considerable effort into answering such questions by looking for a collection of "universal laws" that can effectively describe financial markets and their dynamics.

Klioutchnikov et al. (2017), argue that the application of chaos theory in the field of finance (especially global finance) opens up additional opportunities for understanding, evaluating and seeing the development prospects of financial markets. Attempts to assess the prospects of the financial market from the perspective of chaos theory extend the boundaries of its application and stimulate the development of new tools and methods of mathematical analysis.

4 Conclusions

In order to restructure the current global financial and monetary system in the current situation of the global economy, we need a new paradigm for the development of the global economy, but in parallel, we must build that foundation of the new paradigm of global finance.

The need to move to a new paradigm of the value of the international financial and monetary system. The future contribution of those systems to the economic processes of obtaining and managing value internationally.

Given the high needs for external financing, emerging market economies face significant challenges, especially if the steady rise in US rates leads to a reassessment of risk and tightening financial conditions.

It is to be appreciated the concept of economophysics in the field of finance theory, which may have its applicability both at the microfinance level and at the macrofinancial and world financial level, but which must be used in certain concrete phenomena comparable to the phenomena in physics. In this order of ideas, the physical support of the value - of the international financial and monetary system finds its practical applicability on this segment.

Statistical physics offers new ideas and powerful methods to study such problems. Its application in the financial fields has led to the creation of an interdisciplinary field known formally as econophysics.

With the support of chaos theory, one can try to capture the structure of unpredictability and display it in a variety of patterns. Chaos theory is a revolutionary approach to understanding and predicting the behavior of financial markets. The beginning of its application coincides with the transition of finance to the use of big data.

References

1. Franklin, A. & Ansgar, W. (2021). Financial Architecture and Financial Stability. *Annual Review of Financial Economics, 13*(1), 129–151.
2. Bach, J., & Solomon, M. S. (2008, June 27). *Labors of Globalization: Emergent State Responses*. De Gruyter. https://www.degruyter.com/document/doi/10.2202/1940-0004.1025/html

3. Balu, F. O., Radulescu, C. V., Bodislav, D. A., Gole, I., Buzoianu, O. C. A., Burlacu, S., & Balu, P. E. (2021). Cost Modeling and Computation in the Healthcare Industry. Case Study on a Swiss Medical Care Organization. *Economic Computation & Economic Cybernetics Studies & Research*, *55*(1), 73–88.
4. Bran, P. (2003). Economica valorii. ASE Bucuresti
5. Burlacu, S., Diaconu, A., Balu, E. P., & Gole, I. (2021). The Economic and Social Effects of Unemployment in Romania. *Revista de Management Comparat International*, *22*(1), 21–27.
6. Burlacu, S., Patarlageanu, S. R., Diaconu, A., & Ciobanu, G. (2021). *E-government in the era of globalization and the health crisis caused by the covid-19 pandemic, between standards and innovation*. Les Ulis: EDP Sciences.
7. Choukroune, L., Nedumpara J. J. (2021). International Monetary Law: Text, Cases and Materials. Cambridge University Press (CUP).
8. ILO Intrnational Labour Organisation (2021, January 25). *ILO Monitor: COVID – 19 and the world of work.* https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS_767028/lang--en/index.htm
9. International Monetary Fund. (2021, April). Global Financial Stability Report. https://www.imf.org/en/Publications/GFSR/Issues/2021/04/06/global-financial-stability-report-april-2021
10. International Monetary Fund (2021, April). *World economic outlook*. https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021
11. Klioutchnikov, I., Sigova, M., & Beizerov, N. (2017). Chaos Theory in Finance. *Procedia Computer Science, 119*, 368–375.
12. Lee, D., & Park, H., (2019) Measuring Global Financial Linkages: A Network Entropy Approach. *Sustainability, 11*(17), Article 4691.
13. Lee D. (2014, October 10). *Entropy of Global Financial Linkages. Bank of Korea WP 2014-30*. SSRN. http://dx.doi.org/10.2139/ssrn.2580650
14. Meng J. (2021). Analysis on the Financial Risk Control of the Supply Chain in the E-Commerce Industry. In: Wang T., Patnaik S., Ip A.W., Tavana M. (Eds.) *Advances in Decision Science and Management. ICDSM 2021. Advances in Intelligent Systems and Computing, 1391*. Springer, Singapore.
15. Mohsin, M., Taghizadeh-Hesary, F., Panthamit, N., Anwar, S., Abbas, Q., & Vinh Vo, X. (2020). Developing Low Carbon Finance Index: Evidence From Developed and Developing Economies. *Finance Research Letters, 43*, Article 101520.
16. Profiroiu, M. C., Radulescu, C. V., Burlacu, S., & Guţu, C. (2020). Changes and trends in the development of the world economy. *Competitivitatea şi inovarea în economia cunoaşterii* (pp. 324–330). Editura ASEM.
17. Radulescu, C.V., Ladaru, G. R., Burlacu, S., Constantin, F, Ioanăș C., & Petre, I. L. (2021). Impact of the COVID-19 Pandemic on the Romanian Labor Market. *Sustainability 2021*, 13, Article 271.
18. Sarbu, R., Alpopi, C., Burlacu, S., & Diaconu, S. (2021). Sustainable urban development in the context of globalization and the health crisis caused by the covid-19 pandemic. *SHS Web of Conferences, 92, 01043.*
19. Schinckus, C. (2010). Semiotics of Financial Marketplace. *Journal of Interdisciplinary Economics, 22*(4), 317–333.

20. Sheraz, M., Dedu, S., & Preda, V. (2015). Entropy Measures for Assessing Volatile Markets. *Procedia Economics and Finance, 22*, 655–662.
21. Stosic, D., (2016). *Applications of entropy on financial markets*. https://repositorio.ufpe.br/bitstream/123456789/17360/1/Darko%20Stosic%20-%20dissertacao%20de%20mestrado.pdf
22. United Nations (2020, July 28). Report of the Secretary-General of the International Financial System and Development of the United Nations. https://www.un.org/development/desa/financing/document/report-secretary-general-international-financial-system-and-development-a73280-31-july
23. Yang, Z., Xie,L., & Shen, Q., (2019). Research on Financial Financing Mode of SME Supply Chain based on B2B E-commerce Platform. *Proceedings of the 2018 International Symposium on Social Science and Management Innovation (SSMI 2018)*. Atlantis Press.
24. Zhang D., Zhang, Z., & Managi,S. (2019). A bibliometric analysis on green finance: Current status, development, and future directions. *Finance Research Letters*, 29, 425–430.
25. Zulkefly, A. K., Nizam, R., Law, S. H, Hassan, M. K. (2021). Does Financial Inclusiveness Affect Economic Growth? New Evidence Using a Dynamic Panel Threshold Regression, *Finance Research Le*tters, Article 102364.