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**PUBLIC FINANCES IN THE SOCIAL INSURANCE REGULATION
SYSTEM IN ROMANIA**

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**SUMMARY
PhD thesis in economics**

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1. CONCEPTUAL RESEARCH MILESTONES

Topicality and importance of the research topic. Public finances are key to sustaining the Romanian social security system, which is under pressure from the current economic challenges and has been adjusted to EU standards through the adoption of the *acquis Communautaire*. These legislative adjustments have been essential for social protection, in particular pensions and unemployment, two sectors strongly influenced by demographic and economic changes in Romania.

In the current context, marked by global economic and financial challenges and the accelerated ageing of the population, the financing of social security is becoming increasingly difficult. Rising unemployment, falling birth rates and a shrinking number of active employees have put pressure on the social security budget and the need for viable financial solutions is pressing. Ensuring the solvency of this system and protecting the interests of the insured are major challenges for Romania in the context of its European integration.

The thesis entitled *Public finances in the social insurance regulation system in Romania* addresses the major challenges facing the system and analyzes in detail how public finances can support social security in the current context. The main aim of the study is to assess the impact of current legislation and to propose innovative solutions to ensure the sustainability of the pension system.

Through an in-depth analysis of national, European and international legislation, this book provides an up-to-date perspective on the challenges and opportunities of social insurance in Romania.

The research aims to assess the legal framework, sources of funding and the impact of economic policies on social security. The documentation was based on a rigorous analysis of the legislation and a critical synthesis of the literature, providing a solid basis for recommendations applicable at both national and European level.

Degree of study of the research topic. The topic of research has been widely discussed in specialized literature, given the essential role of public finance in the regulation of social insurance. The theoretical and practical contributions of renowned economists, such as William Henry Beveridge, recognized for the development of modern social protection systems, Robert Holzmann, an expert in pension reform, and Gøsta Esping-Andersen, known for his studies on the welfare state, have provided a solid foundation for understanding how modern states regulate and support social security systems. This research focuses on the role of state intervention and economic policies, particularly in the face of current demographic and economic challenges.

At the national level, economists such as Iulian Văcărel, a pioneer in the field of public finance in Romania, and Tatiana Moșteanu, recognized for her studies on the sustainability of pension systems, have contributed to clarifying the relationship between fiscal policies and the state's financial balance. The work of Cezar Basno and the research coordinated by Tiberiu Baron and Elena-Mihaela Biji have also provided important insights into how statistical methods and econometrics can support the analysis of economic phenomena in the area of public finance.

The bibliographical documentation included a wide range of sources, including fundamental and empirical studies, scientific journal articles, books, monographs, doctoral theses and statistical reports. This research allowed a comprehensive approach to the issue of social insurance financing, providing a solid basis for comparative analysis of different regulatory models.

In addition, the research included a detailed analysis of the legal regulations at national and European level, with a particular focus on the impact of European directives on Romanian

legislation. The assessment of the legal framework and sources of funding proved essential in order to draw pertinent conclusions and propose innovative solutions needed to ensure the sustainability of the Romanian social security system.

The aim of the paper is to identify the essential role of public finance in the regulation of the social security system, with a focus on the pension system. To achieve this goal, the research pursues the following **specific objectives**:

a) Analyze the contribution of public finances to the stability of the social security system, with a focus on old-age pensions, and identify the financial adjustment mechanisms that support the equilibrium of this system.

b) Examining the interdependence between financial regulations and the functioning of the social security system, both at national and European level, assessing the impact of European directives on Romanian legislation and the adaptation of the Romanian system to the requirements of the European Union.

c) Comparison of the social insurance financial systems in Romania and the Republic of Moldova, with a focus on the evolution of resource redistribution mechanisms and analysis of country-specific differences and challenges.

d) To compare the performance of social insurance systems in Romania, the Republic of Moldova and the EU-15 group of countries to identify the main differences, challenges and opportunities influencing the sustainability of these systems.

e) Propose solutions to improve the efficiency and transparency of the social security system, by integrating modern technologies, modernizing administrative processes and adapting to EU requirements, to ensure long-term sustainability.

f) To identify the key factors influencing the financial sustainability of social security systems, providing recommendations for structural reforms needed in the context of current economic and demographic challenges.

The research hypothesis is based on the premise that public finances in the regulation of social insurance are a key factor in sustaining and stabilizing the pension system, especially in the context of the current demographic and economic challenges. By optimizing the mechanisms for the collection, administration and distribution of financial resources and by adapting national and European legislation, the long-term sustainability of the social security system can be ensured.

Summary of research methodology and justification of research methods chosen. The research explores the influence of public finance on social insurance sustainability, using quantitative and qualitative approaches. The methods used are justified by the need for multidimensional analysis and include: documentary analysis (collecting data from legislation, financial reports and budget documents), comparative analysis (comparing social insurance systems in Romania, the Republic of Moldova and other European countries), statistical-economic analysis (collecting and interpreting statistical data on social expenditure and other relevant indicators), case study (in-depth analysis of the specific challenges of social insurance systems in Romania and the Republic of Moldova), statistical modeling and forecasting (forecasting the evolution of pensions and assessing the influence of economic factors), demographic impact analysis (assessing the effects of demographic changes on the viability of social security systems) and sociological questionnaire (collecting data on citizens' perception of the pension system through an online questionnaire). This methodological combination allowed for a detailed and balanced assessment, providing a solid basis for viable recommendations tailored to the specific context.

The novelty and scientific originality of this research lies in the analysis of the interdependence between public finance and social insurance, using innovative methods and comparisons between different insurance systems, offering practical solutions for the sustainability of pension systems and contributing significantly to the improvement of literature and practice in the field. Key aspects of novelty and originality include:

- ❖ *An integrated redefinition of the relationship between public finances and social security*, emphasizing the deep interdependence between them and how public finances influence the sustainability of social security systems.

- ❖ *In-depth analysis of the influence of public finances on social security systems* in Romania and the Republic of Moldova, with a clear demographic and economic impact on their sustainability.

- ❖ *The application of advanced statistical and mathematical methods*, such as modeling pensions by linear, parabolic and exponential functions, to propose concrete solutions for the dynamic adjustment of the pension system.

- ❖ *Elaboration of the Political, Economic, Social and Technological Analysis (PEST)* of the social security system in Romania.

- ❖ *Realization of the online sociological questionnaire* to collect data on citizens' perception of the pension system.

The results obtained that contribute to the solution of the problem of sustainability of the social security system, an important scientific issue addressed in this thesis, are:

- ✚ Formulate a dynamic adjustment strategy for the pension system, based on economic-demographic analysis, providing concrete solutions to ensure the long-term sustainability of the system.

- ✚ Developing a model for forecasting pensions based on statistical and macroeconomic data, facilitating more efficient management of financial resources for social insurance.

- ✚ Proposing measures to modernize and streamline the social security system, including solutions to increase transparency and reduce bureaucracy, based on empirical evidence and benchmarking.

- ✚ Contribute to understanding the demographic impact on the sustainability of pension systems by identifying the challenges posed by an ageing population and declining birth rates.

- ✚ Providing empirical data from the sociological questionnaire on public perceptions of pension reform, providing a solid basis for the necessary legislative adjustments.

The applied value of the thesis lies in proposing solutions for modernizing and making social security systems more efficient by integrating modern technologies. These solutions are useful both for academics, contributing to the development of economists' intuition, and for practitioners and government policy makers, supporting the formulation of necessary structural reforms.

2. CONTENT OF THE DOCTORAL THESIS

In line with the proposed research aim and tasks, a logical structure of the thesis was agreed upon, including introduction, three chapters, conclusions and recommendations, bibliography and appendices.

The introduction provides an overview of the research and emphasizes its importance in the context of current economic and demographic challenges. The proposals put forward in this

research can significantly contribute to the improvement of the social security systems in Romania and the Republic of Moldova and have international applicability.

Chapter 1 entitled *Theoretical foundations of public finance and state social insurance* provides a theoretical and conceptual analysis of public finance and state social insurance. This chapter is divided into several sections, starting with a general definition of public finance and continuing with a detailed description of its theory and functions, as well as an analysis of social insurance models.

The first sub-chapter, *Theoretical aspects of the role of public finances in the system of social security regulation*, presents the general concept of *public finances*, including how they are defined by different authors (Table 1).

Table 1. Treatment of the concept of public finance [elaborated by the author]

Author/source	Defining public finances	Key aspects
VĂCĂREL, I. ¹	"Public finances express economic relations of distribution of national income (gross domestic product)."	Redistribution of gross and net domestic product
MATEI, Gh. ²	"Public finance is concerned with analyzing the financial mechanisms and techniques by which public revenue is raised and public expenditure is incurred."	Stabilizer of the national economy
TALPOȘ, I. ³	"Public finance is that which is initiated and carried out by the State as a subject of public law endowed with financial sovereignty."	State representation and influence of economic and social processes.
POPESCU, L. ⁴	"Public finances express social relations of an economic nature, in monetary form, which arise in a specific process and for a specific purpose."	Allocate resources and mobilize them by setting up funds.
COSTAȘ, C.F. ⁵	"Public finances are used by public authorities to influence economic processes, to correct the economic cycle, to remove imbalances in order to keep the national economy on an upward trend favorable to the growth of the general income of society."	Management of financial instruments through state intervention in the economy in line with the established development strategy.

Based on these definitions, the evolution of conceptions of public finance is highlighted, a key distinction being between the classical theory, which advocates a minimal interventionist state, focusing on budget balance and limiting public spending, and the modern theory, which emphasizes the active role of the state in regulating economic processes and stimulating economic development through intervention and fiscal policy, as illustrated in Table 2.

¹ VĂCĂREL, I., BISTRICEANU, Gh. D., BERCEA, F. et al. *Finanțe publice*. Ediția a VI-a. București: Didactică și Pedagogică, 2007, p. 39. ISBN 973-30-30-2513-5.

² MATEI, Gh. *Finanțe publice*. Craiova: Universitaria, 1998, p. 28. ISBN 973-9271-43-X.

³ TALPOȘ, I. *Finanțele României*. Volumul I, Ediția a III-a. Timișoara: Sedona, 1997, p. 16. ISBN 972-96013-7-5.

⁴ POPESCU, L. *Fiscalitate*. Craiova: SITECH, 1999, p. 64. ISBN 973-9346-07-0.

⁵ COSTAȘ, C.F. *Drept financiar*, Ediția a III-a (revăzută și adăugită). București: Universul Juridic, 2021, p. 21. ISBN 978-606-39-0792-0.

**Table 2. Evolution of public finance in political-philosophical conceptions
[elaborated by the author]**

Criteria	Classical theory	Modern theory
Period	"Late 18th to early 20th century" ⁶	"The inter-war period after the First World War" ⁷
Character	"Political liberalism, legal liberalism - the <i>gendarme state</i> " ⁸	"Economic and sociological steering - the <i>welfare state</i> " ⁹
Role	"Limiting state intervention in private economic activity - non-interventionist state" ¹⁰	"Guiding/regulating the economy in line with government policy - interventionist state" ¹¹
Aim	"To restrict public spending to a minimum, so that the state's financial resources were able to provide only what was necessary for the maintenance and proper functioning of public institutions" ¹²	"Meeting the broad needs of society; active role of the state in influencing economic processes" ¹³
Guarantee	"Taxes, levies, borrowing and other revenue-raising shall be as neutral as possible" ¹⁴	"Taxes covered public spending" ¹⁵
Budget execution	"Maintaining a balance between budget revenue and expenditure was considered a fundamental requirement of good management" ¹⁶	"Intervention in the economy" ¹⁷ , of the state, by balancing public expenditure and revenue

A distinction is made between *classical* and *modern theories* of public finance, which are compared in terms of the role of the state in the economy. Classical theory promotes a minimally interventionist state, focused on maintaining a balanced budget and limiting interventions in the economy, emphasizing market responsibility to regulate economic processes. In contrast, modern theory advocates a state that is active in regulating the economy and ensuring social welfare through fiscal policies, public investment and redistributive mechanisms.

The core functions of public finances, such as allocating resources and controlling their use, are essential for the efficient management of financial resources and for maintaining economic equilibrium, helping to smooth cyclical fluctuations and support vulnerable sectors. Figure 1 clearly illustrates the interaction of these components and their contribution to the stability and sustainable development of the national economy, underlining the importance of a fiscal framework that is adaptable to contemporary economic needs.

⁶ LAZĂR, I. *Dreptul finanțelor publice. Volumul I: Drept bugetar*. Ediția a 2-a (revăzută și adăugită). București: Universul Juridic, 2016, p. 31-33. ISBN 978-606-673-849-1.

⁷ ȘAGUNA, D.D. *Drept financiar public*. Ediția a 6-a (revăzută). București: C.H. Beck, 2017, p. 15. ISBN 978-606-18-0651-5.

⁸ TALPOȘ, I. *Finanțele României*. Volumul I. Ediția a III-a. Timișoara: Sedona, 1997, p. 10. ISBN 972-96013-7-5.

⁹ ZAMFIR, E., ZAMFIR, C. (coord.) et al. *Politici sociale. România în context european*. București: Alternative, 1995, p. 23. ISBN 973-96996-4-2.

¹⁰ TALPOȘ, I. *Finanțele României*. Volumul I. Ediția a III-a. Timișoara: Sedona, 1997, p. 10. ISBN 972-96013-7-5.

¹¹ Ibidem.

¹² COSTAȘ, C.F. *Drept financiar*. Ediția a III-a (revăzută și adăugită). București: Universul Juridic, 2021, p. 19. ISBN 978-606-39-0792-0.

¹³ ȘAGUNA, D.D. *Drept financiar public*. Ediția a 6-a (revăzută). București: C.H. Beck, 2017, p. 15. ISBN 978-606-18-0651-5.

¹⁴ COSTAȘ, C.F., TOFAN, M. *Drept financiar*. București: Universul Juridic, 2023, p. 70. ISBN 978-606-39-1201-6.

¹⁵ TRĂILESCU, A., POPA, C-tin. D. *Dreptul finanțelor publice*. București: Universul Juridic, 2021, p. 7. ISBN 978-606-39-0906-1.

¹⁶ VĂCĂREL, I., BISTRICEANU, Gh. D., BERCEA, F. et al. *Finanțe publice*. Ediția a VI-a. București: Didactică și Pedagogică, 2007, p. 28-29. ISBN 978-973-973-30-1998-5.

¹⁷ Ibidem, p. 30.

In this context, adapting financial policies to the dynamics of the global economy becomes essential to ensure sustainable economic growth and a balance between social needs and available resources.

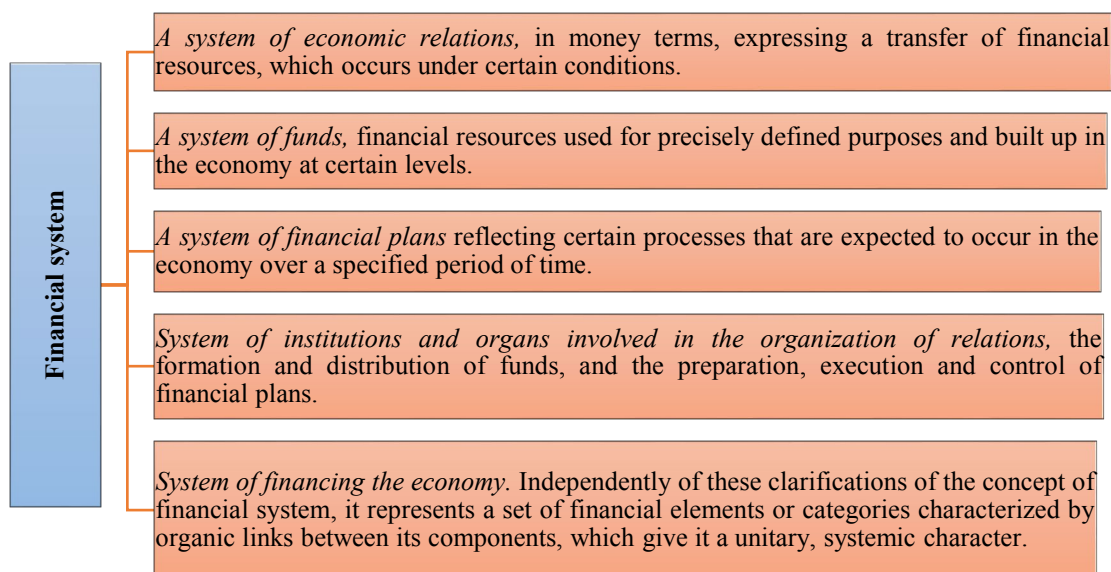


Figure 1. A country's financial system¹⁸

As governments adapt to economic and technological changes, the importance of finance, financial systems and mechanisms will increase significantly. Digitization and financial innovation will be key factors in their transformation, and governments will need to develop appropriate policies and regulations for efficient management of financial resources.

From this perspective, the author proposes his own definition of public finance: *Public finance is the set of processes by which the state collects, manages and redistributes financial resources to support social welfare, economic development and fiscal balance in a dynamic economic context influenced by global and local factors.* The proposed definition emphasizes the adaptability of public finances to economic, demographic and technological change, with an emphasis on the sustainability of public systems such as education, health and social protection. Considered more comprehensive than other definitions in the literature, it integrates modern concepts and reflects current challenges in Romania, emphasizing the active role of the state in maintaining the balance between the collection and redistribution of resources for long-term economic and social development.

Thus, the fundamental concepts of public finances emphasize the essential role of public finances in ensuring economic and social equilibrium by managing financial resources and supporting social security systems.

In conclusion, this integrated approach provides a comprehensive perspective on how public finances and social security systems need to adapt to new economic and social realities, ensuring long-term sustainability and responding to citizens' needs and global economic challenges. This adaptation involves not only the efficient management of financial resources, but also the continuous review of social protection mechanisms so that they remain relevant and effective in the face of demographic and economic change.

¹⁸ VĂCĂREL, I., BISTRICEANU, Gh. D., BERCEA, F. et al. *Finanțe publice*. Ediția a IV-a. București: Didactică și Pedagogică, 2003, p. 74. ISBN 973-30-30-2513-5.

In this way, a balance is struck between collecting social contributions and providing adequate benefits, as detailed in Table 3. In this section, the author has analyzed the concept of social insurance from the perspective of different authors and literature, highlighting the key aspects of the various definitions and contributions to the complex understanding of this field.

Table 3. Approach to the concept of social insurance in Romania
[elaborated by the author]

Author/source	Defining social security	Key points	Author's opinion
ZAMFIR, Elena, ZAMFIR, Cătălin, (coord.), MĂRGINEAN, Ioan and others. ¹⁹	"Social insurance is compensation for the loss of income suffered by people in employment after this period."	Compensation for lost income; protection of economically active people.	The definition clearly emphasizes the compensatory function of social security but does not fully cover intergenerational solidarity.
BISTRICEANU, Gheorghe D. ²⁰	"Social insurances constitute that part of the social-economic monetary relations with the help of which - in the process of distribution of the gross national product - the monetary funds necessary for the compulsory protection of employees and pensioners of national companies, autonomous regions, commercial companies, consumer and credit cooperative network are formed, distributed, managed and utilized, members of craft cooperatives and agricultural units, lawyers, farmers, craftsmen with their own workshops, private entrepreneurs, religious ministers, domestic staff working for private individuals, persons working in apartment blocks, persons temporarily or permanently unable to work, in old age and in other cases provided for by law."	Compulsory protection of employees and pensioners; ensuring economic security for different population groups.	This definition is very detailed and clearly describes the role of the state, but also includes redundant elements related to redistribution.
CRĂCIUNEANU, Viorel ²¹	"Social insurance is a special form of protection that society grants to its members, a means of support to counter the effects of economic and other risks (loss of income due to illness, reduced capacity to work in old age, etc.)."	Protect individuals against economic risks; ensure a minimum level of social protection.	This definition is general but essential to explain the social protection function in the face of major risks.
COSTAȘ, Cosmin Flavius ²²	"Social insurance can be defined as a means of realizing the protection of the working population against the consequences of the occurrence of a social risk (loss and/or reduction of income or increase in expenditure), by establishing funds from contributions of the interested parties and distributing these funds to the insured at the time of the occurrence of the risk."	Compulsory contributions; risk protection of assets; redistribution of funds for social risk protection.	This definition gives a complete picture of the mechanism of contributions and redistribution but does not explore intergenerational equity in detail.

¹⁹ ZAMFIR, E., ZAMFIR C. (coord.) et al. *Politici sociale. România în context european*, București: Alternative, 1995, p. 80. ISBN 973-96996-4-2.

²⁰ MATEI, Gh. *Finanțe publice*. Craiova: Universitaria, 1998, p. 28. ISBN 973-9271-43-X.

²¹ CRĂCIUNEANU, V. *Asigurări și protecție socială*. București: Universitară, 2013, p. 28. ISBN 978-606-591-816-0.

²² COSTAȘ, C.F. *Drept financiar*. Ediția a III-a (revăzută și adăugită). București: Universul Juridic, 2021, p. 21. ISBN 978-606-39-0792-0.

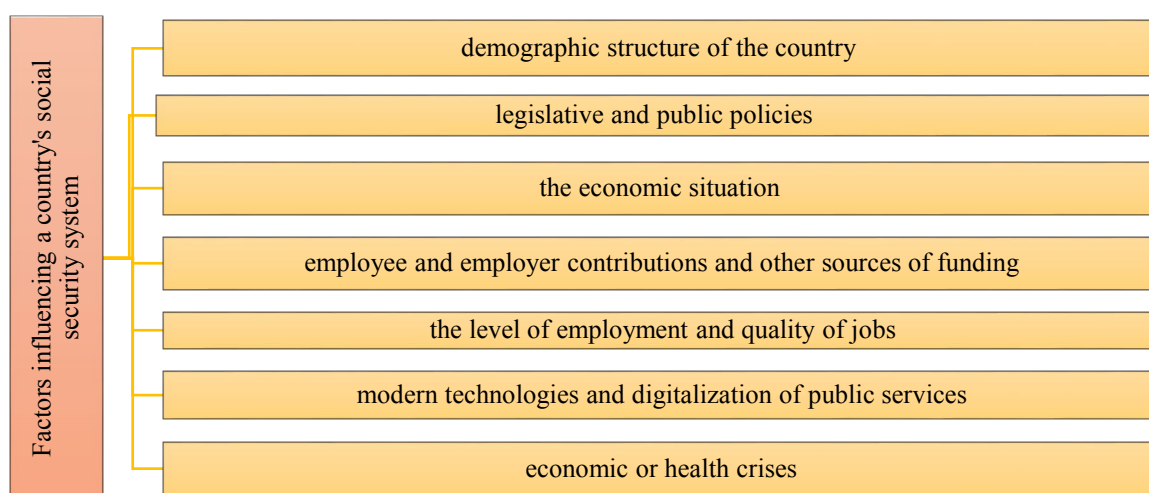
The author observes that all definitions share the principle of contributivity and protection against economic and social risks, emphasizing the crucial role of the state in managing funds and distributing benefits, as well as the importance of social solidarity between generations and social categories.

On the basis of the key points presented, the author proposed a definition according to which *social insurance is a mechanism of solidarity and collective protection, whereby the state, on the basis of compulsory contributions from active citizens, provides financial support and services to compensate for the risks related to loss of working capacity, old age, sickness or accidents, ensuring social stability and social equity in a dynamic and constantly changing socio-economic context.* This definition is distinguished by its emphasis on collective solidarity, social equity and adaptability to socio-economic change. In contrast to other definitions, which see social security only as a technical mechanism, it emphasizes the active role of the state and citizens in maintaining the balance between social protection and economic sustainability.

Fundamentally, social insurance in Romania plays a key role in reducing inequalities and protecting the population, and its sustainability depends on the application of the principles of contributivity and solidarity, efficient management of resources and appropriate state regulation.

The second subchapter, *Classical and contemporary models of social insurance systems and the influence of public finance on them*, examines the main social insurance models, focusing on the Bismarck model, based on contributions from employees and employers, and the Beveridge model, a universal state-funded system. Contemporary models, such as mixed and multi-pillar, combine public and private sources to diversify funding and reduce pressure on the public system.

Public finances, which are essential for the sustainability of social security systems, effectively manage the resources devoted to pensions and other social benefits, while the efficiency and sustainability of these systems are influenced by interlinked factors specific to the national and international context, as shown in Figure 2.



**Figure 2. Factors influencing a country's social security system
[elaborated by the author]**

Effective fiscal policies support the balance between public revenue and expenditure, ensuring the financing of social protection, including in times of crisis, while digitization and administrative modernization optimize the management of funds. Modernization of the welfare state, needed to respond to challenges such as ageing and technological change, depends on

sustainable financial management. European social models, diverse but united by the principles of equity and inclusion, demonstrate that adaptability to new economic and social realities is essential to maintain long-term economic competitiveness and social cohesion.

The third sub-chapter, *Comparative aspects of social security systems and the targeting of resources and expenditures for social protection in Romania and other European countries*, provides a comparison between the social security systems in Romania and other European countries such as the Czech Republic, Poland, Hungary and Bulgaria. In Table 4, we highlight the main sources of revenue, types of expenditure, problems and country-specific recommendations.

Table 4. Comparison of characterization criteria of social insurance systems in Romania, the Czech Republic, Poland, Hungary, Poland and Bulgaria in 2023
[elaborated by the author]

Criteria/ Country	Romania	Czech Republic	Poland	Hungary	Bulgaria
Sources of income					
State budget	Yes	Yes	Yes	Yes	Yes
Social security contributions	Yes	Yes	Yes	Yes	Yes
EU funds	Yes	Yes	Yes	Yes	Yes
Expenditure structure					
Pensions	Yes	Yes	Yes	Yes	Yes
Health insurance	Yes	Yes	Yes	Yes	Yes
Unemployment benefits	Yes	Yes	Yes	Yes	Yes
Other social benefits	Yes	Yes	Yes	Yes	Yes
Financial sustainability	Subsidy works, new reforms needed		Functional subsidy, Implement current reforms	Subsidy works, new reforms needed	
Social impact	Poverty reduction and social inclusion				
Challenges	Ageing population, sustainability of pensions, inefficient financing, difficulties in collecting tax revenues and social security contributions, call for continued reforms				
Recommendations	Increased subsidization, organizational changes, strengthening social inclusion, transparency, digitalization of services				

The author analyzes the evolution and financing of social insurance systems, highlighting differences in contribution structure, benefit coverage and financial sustainability. Challenges such as an ageing population and labor migration put pressure on these systems. It also highlights efforts to digitize and modernize social insurance administration, including pension reforms and measures to support vulnerable groups, to improve efficiency and respond to citizens' needs.

Chapter 1 highlights the crucial role of public finances in underpinning social security and emphasizes the need for continued reforms to maintain its long-term sustainability. It emphasizes the importance of coordinating economic, social and fiscal policies and adapting social security to demographic and economic challenges, such as ageing populations and economic fluctuations. This chapter provides a sound theoretical basis for understanding the interdependence between public finances and social security, which is essential for economic and social stability.

Chapter 2 entitled *Analysis of forms and methods of influence of public finance on social insurance regulation* deals in detail with the influence of public finance on social insurance regulation, focusing on the analysis of the social insurance financial system in Romania and the

Republic of Moldova. The chapter is structured in three sub-chapters that analyze key aspects of financing, redistribution of resources and challenges related to the sustainability of these systems.

The first sub-chapter, entitled *Analysis of the social insurance financial system and the mechanism of redistribution of resources in Romania and the Republic of Moldova*, examines in detail the evolution and functioning of the social protection financial systems in the two countries, highlighting how they have adapted to economic transition and major demographic changes.

Both social security systems have been reformed in response to economic and social challenges. In Romania, reforms have focused on adapting to the market economy and managing the ageing of the population by introducing measures such as a gradual increase in the retirement age and diversification of funding sources. In the Republic of Moldova, similar challenges have arisen due to economic instability and the transition from a planned to a market economy, which required fiscal adjustments and reorganization of the social protection system.

Funds from contributions from the working population support vulnerable groups such as pensioners, people with disabilities and low-income families. This system, based on proportional contributions, ensures long-term stability. In this context, the redistribution of resources plays a key role in ensuring social protection. This redistribution is based on three key principles: solidarity, fairness and financial sustainability, guaranteeing both proportional contributions and the long-term stability of the system.

In Romania, the public social insurance system is coordinated by the Ministry of Labor and Social Solidarity (MMSS), while in the Republic of Moldova, the National Social Insurance House (CNAS) is responsible for administering the funds. In both countries, the system is based on contributions from employers and employees, while non-contributory benefits, such as benefits for the disadvantaged, are financed from the state budget. These reforms have also sought to reduce pressures on the public budget by encouraging active labour market participation and optimizing the administrative costs of the system, thus contributing to better sustainability of social security funds.

The main problems of these systems are related to financial sustainability, which is determined by factors such as employment, unemployment, economic and demographic fluctuations and the level of social contributions. In Romania and the Republic of Moldova, there is constant pressure on the system due to an ageing population and rising pension expenditure.

The main problems of these social security systems are closely linked to financial sustainability, which depends on several economic and demographic factors. These factors include the level of employment, which influences the number of active contributors, the unemployment rate, which affects contributions to social security funds, and economic fluctuations that can reduce the revenue collected. The level of social security contributions, determined by government policy and the economic capacity of taxpayers, also plays a key role in ensuring the adequate financing of these systems.

In both Romania and the Republic of Moldova, these challenges are exacerbated by the ageing of the population, which contributes to higher pension expenditure and a shrinking contribution base. This puts constant pressure on public budgets, putting into question the long-term sustainability of social security systems.

According to Table 5, budget executions over the period 2021-2023 show a steady increase in revenue and expenditure in both countries, reflecting an effort to adapt to the new economic and social conditions. However, persistent budget deficits suggest the need to implement urgent

structural reforms to help balance public finances and ensure the long-term sustainability of social security systems.

Table 5. Rate of growth and evolution of state social insurance budget revenues and expenditures in Romania and the Republic of Moldova, 2021-2023
[elaborated by the author based on ²³²⁴]

Year	BASS revenues (mil. RON/MDL)	Absolute growth (mil. RON/MDL)	Growth rate (%)	Relative growth (%)	BASS expenditure (mil. RON/MDL)	Absolute growth (mil. RON/MDL)	Growth rate (%)	Relative growth (%)
Romania (revenue, expenditure and absolute growth are in RON)								
2021	90 696,0				90 657,9			
2022	98 403,5	7 707,5	108,50	8,50	99 275,6	8 617,7	109,51	9,51
2023	110 071,2	11 667,7	111,86	11,86	112 064,7	12 789,1	112,88	12,88
Republic of Moldova (revenue, expenditure and absolute growth are represented in MDL)								
2021	27 246,8				27 186,8			
2022	33 796,1	6 549,3	124,04	24,04	33 745,3	6 558,5	124,12	24,12
2023	38 604,4	4 808,3	114,23	14,23	38 524,7	4 779,4	114,16	14,16

Both systems face common challenges, such as an ageing population, labor migration and increasing pressure on pension budgets. It is imperative to implement structural reforms that ensure financial sustainability and safeguard long-term stability. Technology and the modernization of administration play a key role in making the redistribution of resources more efficient and in adapting social security systems to new economic and demographic realities.

The second sub-chapter, entitled *Social protection expenditure and its financing in Romania, the EU-15 group of countries and the Republic of Moldova*, comparatively analyzes the management and financing of social protection systems in Romania, the EU-15 group (of which Romania is part) and the Republic of Moldova. The aim is to identify similarities and differences in spending on social benefits, such as pensions, and their impact on savings. The study highlights the pressure on national budgets caused by economic and demographic challenges such as ageing populations. Both Romania and Moldova face major difficulties in maintaining the financial sustainability of social protection systems.

²³ Ministerul Finanțelor al României. *Execuțiile bugetare ale bugetului asigurărilor sociale de stat a României, anii 2021-2023*. [citată 22 iulie 2024]. Disponibil: <https://mfinante.gov.ro/domenii/bugetul-de-stat/informatii-executie-bugetara>

²⁴ Ministerul Finanțelor din Republica Moldova. *Rapoarte privind executarea bugetului asigurărilor sociale de stat, anii 2021-2023*. [citată 22 iulie 2024]. Disponibil: <https://mf.gov.md/ro/trezorerie/rapoarte-privind-executarea-bugetului/rapoarte-anuale>

Table 6. Trend in general government expenditure on social protection of the EU-15 Member States and the Republic of Moldova, 2020-2022, % of GDP
[elaborated by the author based on ^{25 26 27}]

Country name	General government expenditure on social protection (% of GDP)			
	Ani	2020	2021	2022
France		27,10	24,80	23,80
Denmark		22,50	20,80	18,90
Germany		21,80	20,90	20,40
Austria		22,80	22,00	20,60
Italy		25,10	22,80	21,90
Belgium		22,50	20,70	20,30
Finland		25,50	24,70	23,50
Slovenia		18,60	17,70	17,60
Poland		18,10	17,30	16,90
Czech Republic		14,30	13,60	13,70
Hungary		13,50	13,10	13,10
Bulgaria		13,10	13,00	13,30
Estonia		14,70	13,40	12,70
Greece		23,00	20,90	19,00
Romania		13,70	13,30	13,30
EU-15 (average)		19,75	18,60	17,93
Republic of Moldova		12,90	13,00	13,50

The analysis shows that the financing of social protection varies significantly between countries, influenced by the level of economic development, demographic structure and social policies. EU-15 countries allocate higher percentages of GDP to this sector, while Romania and the Republic of Moldova allocate lower percentages, reflecting economic constraints. However, the Republic of Moldova has seen an increase in allocations, signaling government efforts to improve social support.

The sub-chapter also addresses the problems of financial sustainability, accentuated by falling birth rates and an ageing population. While the EU-15 has adopted reforms to increase the retirement age, Romania and the Republic of Moldova are still dependent on social contributions and the state budget. The conclusion underlines the need for reforms to maintain the sustainability of social protection systems and to adapt social policies to new economic and demographic realities.

The third sub-chapter, entitled *The correlation and impact of macroeconomic indicators on the sustainability of the social security budget in Romania and the Republic of Moldova*, analyzes the correlation and impact of macroeconomic indicators on the sustainability of the social security budget in Romania and the Republic of Moldova. GDP, inflation rate and unemployment rate directly influence the budgetary balance and the stability of the social security system in both countries. In Romania, GDP growth has supported social contribution revenues, but inflation and

²⁵ Eurostat. *General government expenditure by function (COFOG)*. https://doi.org/10.2908/GOV_10A_EXP. [cited July 23, 2024]. Available: https://ec.europa.eu/eurostat/databrowser/view/gov_10a_exp/default/table?lang=en

²⁶ Ministerul Finanțelor al Republicii Moldova. *Bugetul Public Național (BPN) pentru anul 2021*. [citată 23 iulie 2024]. Disponibil: <https://mf.gov.md/sites/default/files/Bugetul%20cetatenilor%20pe%202021%20-%20003.02.21.pdf>

²⁷ Ministerul Finanțelor al Republicii Moldova. *Bugetul Public Național (BPN) pentru anul 2022*. [citată 23 iulie 2024]. Disponibil: <https://www.mf.gov.md/sites/default/files/Bugetul%20cetatenilor%20pe%202022%20n.pdf>

unemployment have put pressure on the budget. In the Republic of Moldova, the fragile economy, high inflation and unemployment have significantly affected social contributions, undermining the sustainability of the system. In conclusion, economic growth is essential to balance the budget and economic policies need to mitigate the impact of inflation and unemployment on the social security system.

The analysis of the social security system in Romania and the Republic of Moldova reveals major challenges affecting long-term sustainability. The main problems include an ageing population, high inflation and high unemployment, all of which have a negative impact on the financial balance of the system. Among the *challenges* identified are the increasing number of pensioners, which puts pressure on the social security system; inflation, which has reduced the purchasing power of pensioners and necessitates pension adjustments; high unemployment, especially among the elderly, which reduces social security contributions; and migration, together with a shrinking working population, which reduces the number of contributors and amplifies imbalances between contributions and benefits.

To ensure long-term stability, a comprehensive reform is needed, including measures to boost employment, increase wages and adjust pensions in line with inflation. In addition, policies that encourage older people to remain in the labor market are essential to prevent unemployment and support social contributions.

Chapter 2 examines the economic and demographic challenges of social security systems, such as ageing, inflation and labor market instability, highlighting structural vulnerabilities that affect sustainability. Reforms and technological modernization are essential and adjustments in contributions and benefits are necessary for financial equilibrium. The proposed solutions provide a solid framework for the development of effective policies capable of addressing these complex challenges.

Chapter 3, entitled *Methods for making the Romanian social security system more efficient in the context of EU alignment*, explores strategies for optimizing the Romanian social security system, with a focus on alignment with EU standards. Structured in three sections, the chapter addresses internal challenges and solutions for ensuring long-term sustainability, such as optimizing contribution collection, reducing bureaucracy and digitalizing processes. It stresses the importance of modernizing the system through appropriate economic and social policies and the implementation of advanced technologies. Comparative analyses with other European countries provide insights on good practices that can be adapted to enhance the sustainability of the Romanian system.

The first sub-chapter, *Strategies and solutions for the sustainability of the social security system in Romania*, analyzes the major challenges affecting the long-term viability of the system, including the ageing population, tax evasion, the informal economy and administrative inefficiency. Demographic ageing is putting pressure on pension funds and the author suggests measures such as adjusting the retirement age and incentives to work longer. Tax evasion and the informal economy are shrinking the taxpayer base, requiring strict measures and tax incentives to combat them. Administrative inefficiency is another obstacle, and the author recommends simplifying procedures, cutting red tape and increasing transparency for efficient use of resources.

The development of the Political, Economic, Social and Technological (PEST) analysis provides a detailed picture of the factors in these areas that influence the sustainability of the system.

Table 7. PEST analysis of the social security system in Romania
[elaborated by the author]

P (Political Factors)	E (Economic Factors)
<p>Government legislation and policies. The social security system in Romania is strongly influenced by various legal rules and regulations, both at national and European level, such as: the Public Finance Law no. 500/2002²⁸, Law no. 263/2010 on the unitary public pension system²⁹, Regulation (EC) no. 883/2004 on the coordination of social security systems³⁰. The Ministry of Labor and Social Solidarity plays a key role in overseeing and implementing government strategies.</p> <p>Role of the state. The government plays a central role in financing and administering the social security system and is involved in redistributing resources to ensure the financial sustainability of the system. It also intervenes through subsidies to cover non-contributory benefits for vulnerable citizens.</p> <p>Impact of political decisions. Changes in political leadership or government priorities can affect the level of financing of the social security system by increasing or decreasing contributions and benefits.</p>	<p>Financial sustainability. The sustainability of the system depends on economic factors such as employment rates, social contribution levels, GDP growth and pension expenditure. Labor migration and demographic fluctuations also play an important role in influencing financial stability.</p> <p>Revenue and expenditure growth. In Romania, revenues from the State Social Insurance Budget (BASS) increased by 11.85% in 2023 compared to 2022, reflecting an economic improvement, but high pension expenditure continues to put pressure on the system.</p> <p>Dependence on subsidies. The reduction in government subsidies as a percentage of total revenues indicates greater independence of the system, but also vulnerability to economic fluctuations.</p> <p>Impact of economic crises. In the context of economic crises, such as the COVID-19 pandemic, the system has been affected by a decrease in the number of contributors and an increase in claims for social benefits, including pensions and unemployment.</p>
S (Social Factors)	T (Technological Factors)
<p>Demographic changes. The ageing population poses a major challenge to the sustainability of the system, as the number of pensioners increases while the number of active contributors decreases. The economic dependency ratio has declined slightly from 1.00 pensioners per employee in 2021 to 0.93 in 2023, but the ageing population remains a significant problem.</p> <p>Rising demand for social protection. Due to demographic and economic developments, the number of recipients of pensions and other forms of social assistance is increasing, which affects social spending. Social policies are also essential to support the most vulnerable, such as people with disabilities or low-income families.</p> <p>The influence of migration. Labor migration plays an important role, especially as many young people leave the country, reducing the active taxpayer base.</p>	<p>Modernization and digitalization. Technology is playing an increasingly important role in making the social insurance system more efficient by implementing digital solutions to administer contributions and payments and reduce administrative costs. The use of digital systems (Big Data, Blockchain technology) contributes to better resource management and can help prevent fraud.</p> <p>Technological impact on access to services. Technological modernization can improve citizens' access to information and services, improving their interaction with social security institutions. Implementing technology can reduce bureaucracy and bring transparency in the management of funds. Technology contributes significantly to streamlining social insurance by automating processes, using big data analytics to better allocate resources, improving cybersecurity to protect personal data, and introducing Blockchain technology, which can help improve transparency, security and efficiency.</p>

Factors such as legislation, economic fluctuations, demographic changes and technological modernization are key. Digitalization of administrative processes helps reduce costs and increase

²⁸ Legea României Nr. 500 din 11 iulie 2002 privind finanțele publice. În: Monitorul Oficial al României nr. 597 din 13 august 2002, cu modificări și completări. [citât 15 iulie 2024]. Disponibil: <https://legislatie.just.ro/Public/DetaliiDocumentAfis/37954>

²⁹ ²⁹ Legea României Nr. 263 din 16 decembrie 2010 privind sistemul unitar de pensii publice. În Monitorul Oficial al României nr. 852 din 20 decembrie 2010, cu modificări și completări. [citât 15 iulie 2024]. Disponibil: <https://legislatie.just.ro/Public/DetaliiDocumentAfis/124530>

³⁰ Uniunea Europeană. *Regulamentul (CE) nr. 883/2004 al Parlamentului European și al Consiliului din 29 aprilie 2004 privind coordonarea sistemelor de securitate socială*. Jurnalul Oficial al Uniunii Europene, L 166, 30.04.2004, p. 1-123.

transparency, while technologies such as Big Data and Blockchain improve resource management and fraud prevention.

Table 8. Challenges and solutions for the optimal functioning of the social security system in Romania [elaborated by the author]

Categories	Problem	Causes	Solutions
Policy	Inefficient regulation	Outdated and ambiguous legislation	Simplifying legislation and making procedures more flexible
	Political instability	Frequent changes of government	Creating a stable legislative framework
	Dependence on political decisions	Unclear policies on social security financing	Setting long-term independent policies
Economical	Insurance budget deficit	Insufficient revenues and high spending on pensions and social benefits	Optimizing contribution collection and reducing tax evasion
	Labor migration	Mass emigration of young people shrinks the active taxpayer base	Creating youth retention policies and tax incentives
	Increasing social spending	Ageing population and increasing number of pensioners	Raising the retirement age and developing private pensions
Social	Ageing population	Falling birth rates and higher life expectancy	Policies to boost the birth rate and keep young people in the country
	Vulnerability of disadvantaged social groups	More people with disabilities and low-income families	Extending social protection and developing integration programs
	Mass labor migration	Youth migration and declining active taxpayer base	Programs to boost the workforce and bring young people back home
Technological	Lack of digitization of administrative processes	The IT system is outdated and inefficient	Investments in modernizing IT infrastructure and automating processes
	Limited access to digital services	Insufficient technological infrastructure and resources to provide online services	Developing digital platforms for public services accessible to all citizens
	Vulnerability to cyber fraud	Weak cyber security and lack of advanced data protection measures	Implement strict cyber security measures

Proposed solutions for the viability of the system include diversifying funding sources, such as automation taxation and public-private partnerships, and creating a system for monitoring reforms, based on performance indicators and feedback from citizens.

In conclusion, the sub-chapter analyzes the challenges and solutions for the sustainability of the Romanian social security system, highlighting that the suggested reforms can transform the system into a more robust and equitable one, able to respond to the needs of the population and protect vulnerable groups.

The second subchapter, *Statistical modeling and forecasting of pension developments in Romania*, analyzes the evolution of pensions using advanced statistical methods to forecast future trends in the economic and demographic context. Using time series and regression analysis, the subchapter focuses on the impact of economic and demographic variations on the public pension system. The analysis covers the period 2016-2023, providing a detailed assessment of the dynamics of monthly average pensions through indicators such as absolute, relative and average levels, with the aim of developing reliable long-term forecasts.

"Analytical time series fitting methods are methods by which the theoretical trend values of a

time series are determined on the basis of mathematical functions chosen to best describe the evolution of the phenomenon"³¹.

The author has used a time series model to calculate various indicators, such as: the dynamics index, showing the annual fluctuations in the average pension; the growth rate, measuring the speed of pension growth on a fixed and moving basis; and the average level, giving an overview of the trend in pension growth. The analysis also highlights key economic factors influencing pensions, such as GDP per capita, wage growth and the average consumption basket, underlining the need for regular monitoring and adjustments.

To forecast the evolution of the average pension in the coming years, the author uses several *analytical time series adjustment models*, such as linear, parabolic and exponential adjustment. These models allow anticipating future trends based on observed historical trends.

1. *The linear model* represents a steady growth in pensions without significant variations in the rate of growth. While it gives a clear picture of the overall trend, it does not capture dynamic changes in the economic context.

Table 9. Trend levels and deviations of the actual levels of the average pension in Romania from the linear trend in the period 2016-2023 [elaborated by the author]

Year	Average pension, thousand RON ³² y (actual values)	$\bar{y} = a + bt$ (estimated values)	$ y - \bar{y} / \bar{y}$	$(y - \bar{y})^2$	$\left \frac{y - \bar{y}}{\bar{y}} \right \times 100\%$
2016	0,95	0,879	0,071	0,0050	7,47
2017	1,07	1,043	0,027	0,0007	2,52
2018	1,17	1,207	0,037	0,0014	3,16
2019	1,29	1,371	0,081	0,0066	6,28
2020	1,50	1,535	0,035	0,0012	2,33
2021	1,67	1,699	0,029	0,0008	1,74
2022	1,86	1,863	0,003	0,0001	0,16
2023	2,11	2,027	0,083	0,0069	3,93
Total	11,62	11,624	0,366	0,0227	27,59

2. *The parabolic model* suggests an accelerated growth in pensions and is more appropriate for periods when the rate of growth is not constant but varies. According to this model, the average monthly pension could grow faster in the future in line with positive economic developments.

³¹ ANGHELACHE, C-TIN, ANGHEL, M.G. *Statistică economică generală*. Ediția a 2-a (revăzută). București: Economică, 2019, p. 189. ISBN 978-973-709-895-5.

³² Institutul Național de Statistică al României. *Comunicate: Numărul de pensionari și pensia medie lunară, 2016-2023*. [citat 15 mai 2024]. Disponibil: <https://insse.ro/cms/ro/tags/comunicat-numarul-de-pensionari-si-pensia-medie-lunara>

Table 10. Trend levels and deviations of the actual levels of the average pension in Romania in the period 2016-2023 from the trend of the second-degree parabola [elaborated by the author]

Year	Average pension, thousand RON ³³ y	$\bar{y} = a + bt + ct^2$	$ y - \bar{y} / \bar{y}$	$(y - \bar{y})^2$	$\left \frac{y - \bar{y}}{y} \right \times 100\%$
2016	0,95	0,967	0,017	0,0003	1,79
2017	1,07	1,059	0,011	0,0001	1,03
2018	1,17	1,175	0,005	0,00003	0,43
2019	1,29	1,315	0,025	0,0006	1,94
2020	1,50	1,479	0,021	0,0004	1,40
2021	1,67	1,667	0,003	0,00001	0,18
2022	1,86	1,879	0,019	0,0004	1,02
2023	2,11	2,115	0,005	0,00003	0,24
Total	11,62	11,656	0,106	0,00187	7,03

3. *The exponential model* is the most realistic as it reflects a gradual and sustained increase in the average pension. According to this model, the average pension could grow at an accelerated pace, given the economic and political developments in Romania.

Table 11. Trend levels and deviations of the actual levels of the average pension in Romania from the trend obtained by fitting an exponential curve for the period 2016-2023 [prepared by the author]

Year	Average pension, thousand RON ³⁴ y	$\bar{y}_t = a \times b^t$	$ y - \bar{y} / \bar{y}$	$(y - \bar{y})^2$	$\left \frac{y - \bar{y}}{y} \right \times 100\%$
2016	0,95	0,94	0,01	0,0001	1,05
2017	1,07	1,06	0,01	0,0001	0,93
2018	1,17	1,18	0,01	0,0001	0,85
2019	1,29	1,33	0,04	0,0016	3,10
2020	1,50	1,49	0,01	0,0001	0,67
2021	1,67	1,67	0,00	0,0000	0,00
2022	1,86	1,87	0,01	0,0001	0,54
2023	2,11	2,09	0,02	0,0004	0,95
Total	11,62	11,63	0,11	0,0025	8,09

³³ Institutul Național de Statistică al României. *Comunicate: Numărul de pensionari și pensia medie lunară, 2016-2023*. [citat 15 mai 2024]. Disponibil: <https://insse.ro/cms/ro/tags/comunicat-numarul-de-pensionari-si-pensia-medie-lunara>

³⁴ Ibidem.

To validate these models, the author also calculates the forecast errors, revealing that the parabolic and exponential models are the most appropriate for forecasting the evolution of average pensions over time.

In the next step, we select and apply the trend with the smallest variation, considered the most appropriate, to adjust the evolution of the average pension over time. Thus, estimates for the future values of the average pension will be made by extending the trend identified in the period analyzed, aiming at short-term forecasts, usually for a maximum of 5 years.

Estimation of extrapolated values involves calculating future values based on a model or trend inferred from existing data. In essence, this process involves extending historical trends to predict future developments. The projection of future values is determined by the relationships of the analytical functions used in the adjustment (Table 12).

**Table 12. Average pension forecast in Romania for the period 2024-2028
[elaborated by author]**

Year	Average forecast pension, thousands of RON, by analytical functions		
	$\bar{y}_t = a+bt$ (linear function)	$\bar{y}_t = a+bt+ct^2$ (parabolic function)	$\bar{y} = ab^t$ (exponential function)
2024	2,191	2,375	2,344
2025	2,355	2,659	2,627
2026	2,519	2,967	2,944
2027	2,683	3,299	3,299
2028	2,847	3,655	3,697

Analysis of the data in Table 12 reveals significant differences between the three forecasting models (linear, parabolic and exponential) in estimating the average pension for the period 2024-2028, each influencing the results in a distinct way.

1. *The linear model* provides the most conservative forecast, suggesting steady and moderate growth.
2. *The parabolic model* shows the highest estimates, indicating an accelerating increase in the average pension over time.
3. *The exponential model* proposes a gradual increase between the values predicted by the parabolic and linear models.

By the year 2028, the parabolic function estimates an average pension 28.4% higher than the linear function, indicating significant variability between models. This variability underlines the importance of choosing an appropriate model depending on the economic and social context.

In the period 2016-2023, the evolution of the average pension best followed the parabolic and exponential models, due to minimal deviations and low coefficient of variation, while the linear model provided a pessimistic forecast.

Deviations in the forecast can be caused either by the variability of external factors or by the limitations of the model used. In order to ensure the accuracy of the forecast, these factors - GDP per capita, thousand RON/capita (x_1), the growth rate of gross wages compared to the average monthly pension (x_2) and - the average monthly consumption basket per person, RON (x_3) - were evaluated by statistical methods such as the average relative approximation error, multiple regression, elasticity analysis, correlation and coefficient of determination. These techniques make it possible to

identify the influence of each factor on the average monthly pension and to adjust the forecasts based on the relationships identified between the economic variables analyzed.

Table 13 presents the external factors that have significantly influenced the average monthly pension in Romania in the period 2016-2023, highlighting the economic indicators that have had a direct impact on the evolution of pensions and that are essential for accurate forecasting and for a clear understanding of the economic context in this period.

Table 13. Exogenous factors with a significant influence on the average monthly pension in Romania in the period 2016-2023 [elaborated by the author based on ^{35 36 37}]

Years	x_1 - GDP per capita, thousands of RON/capita	x_2 - the rate of increase in gross salaries compared to the average monthly pension	x_3 - average monthly consumption basket per person, RON	y - average monthly pension, RON
2016	59,0	3,44	953	948
2017	63,0	3,43	1 094	1 069
2018	66,0	4,21	1 407	1 172
2019	70,0	4,23	1 667	1 292
2020	73,0	3,94	1 702	1 500
2021	74,0	3,80	2 093	1 666
2022	77,0	3,83	2 332	1 855
2023	78,1	3,44	2 570,6	2 108

We can conclude that the average monthly pension will increase as the economic factors analyzed improve. According to the data in Table 14, factors such as increasing GDP per capita, increasing gross wages and adjusting the average consumption basket will contribute to a steady and sustainable increase in the average monthly pension in the long run.

Table 14. Projected increase in the average monthly pension in Romania for 2023-2030 [elaborated by the author]

Years	Average monthly pension level, RON	Growth rate, %
2023	2 108	100
2024	2 356	112
2025	2 641	125
2026	2 961	140
2027	3 319	157
2028	3 723	177
2029	4 177	198
2030	4 690	222

In conclusion, the research shows a steady and significant increase in the average monthly pension in Romania, which is estimated to be about 2.22 times higher in 2030 than in 2023. However, a better correlation between the pace of growth of wages and pensions is needed to avoid discrepancies that may affect the financial equilibrium of beneficiaries. An integrated and sustainable approach to

³⁵ Eurostat. *GDP per capita in purchasing power standards (PPS), 2016-2023, (RO)*. [citat 9 august 2024] Disponibil: <https://ec.europa.eu/eurostat/databrowser/view/tec00114/default/table?lang=en>

³⁶ Institutul Național de Statistică al României. *Comunicate: Veniturile și cheltuielile gospodăriilor, 2016-2023*. [citat 9 august 2024]. Disponibil <https://insse.ro/cms/ro/tags/comunicat-veniturile-si-cheltuielile-gospodariilor>

³⁷ Institutul Național de Statistică al României. *Comunicate: Numărul de pensionari și pensia medie lunară, 2016-2023*. [citat 9 august 2024]. Disponibil: <https://insse.ro/cms/ro/tags/comunicat-numarul-de-pensionari-si-pensia-medie-lunara>

these factors will help to maintain economic stability and to increase pensions at a pace in line with the real needs of the population.

In the third sub-chapter, *Improving the reform of the pension system in Romania*, the urgent need for reforms to address structural problems and ensure long-term sustainability is analyzed. Key *challenges* include:

✚ *An ageing population and a shrinking number of contributors*, which puts pressure on the pension fund and creates imbalances between income and expenditure.

✚ *Inequities in the distribution of pensions*, exacerbated by special pensions that do not respect the principle of contributory contributions, underline the need for reform to ensure fairness between beneficiaries.

✚ *The complexity of the system*, with multiple types of pensions and a lack of coordination between the pillars, makes administration difficult and increases inefficiencies.

✚ *The fall in purchasing power* caused by inflation underlines the need for an automatic mechanism to adjust pensions in line with inflation.

✚ *Lack of coverage for the self-employed* and those with irregular contributions limits social protection, exposing them to financial vulnerability in retirement.

In this context, pension reform needs to be comprehensive, encompassing short-term solutions and long-term measures to address current challenges. The author proposes the following *lines of action*:

1. *Adjusting the retirement age in line with life expectancy*, inspired by models in other European countries, to reduce pressure on the pension fund and ensure the sustainability of the system.

2. *Integrate special pensions into the public system*, calculating them on the basis of actual contributions, to reduce inequities and increase transparency in the distribution of pensions.

3. *Extend and diversify Pillar III* with additional voluntary contribution options tailored to citizens' risk profiles and develop Pillar IV to stimulate long-term saving, accompanied by awareness campaigns.

4. *Introducing tax incentives for voluntary contributions* to Pillar III and IV, thus encouraging citizens' participation and increasing the resources available for future pensions.

5. *Simplify administration by creating a centralized digital platform* for the efficient management of contributions and benefits across all pillars, reducing bureaucracy and administrative errors, and synchronizing with other social systems.

6. *Promote financial education and long-term savings awareness* through information campaigns and accessible financial advisory services.

7. *Extend pension coverage for vulnerable groups*, such as the self-employed and those on low incomes, through flexible contribution schemes, ensuring adequate social protection for these groups.

The author also analyzes the experiences of other European countries that have implemented effective reforms in their pension systems, identifying *good practices* that could be adapted to Romania:

- *Sweden and the Netherlands* have implemented voluntary contributory pension schemes, giving citizens more options to save and ensuring greater financial security in retirement.

- *Germany* has gradually adjusted the retirement age in line with life expectancy, thus maintaining a long-term financial balance.

- *Denmark* has adopted a similar multi-pillar model, providing diversification and financial security through state, occupational and private pensions.

This subchapter emphasizes that improving the reform of the pension system in Romania is a complex process, which must focus on developing a fair, transparent and sustainable system. The author proposes measures aimed at both economic and financial adjustments, as well as solutions to extend coverage and social protection for vulnerable groups. By implementing these reforms, Romania can meet the demographic and economic challenges and ensure a dignified life for all its pensioners.

The overall conclusion of Chapter 3 emphasizes that the Romanian social security system faces major challenges, such as an ageing population, financial deficit, tax evasion and administrative inefficiencies, which threaten its long-term sustainability. However, by implementing well-designed reforms, diversifying funding sources and adopting technological and administrative solutions, the sustainability of the system can be ensured. The proposed reforms, including adjusting the retirement age, improving the collection of contributions, boosting private pensions and cutting red tape, are essential to ensure adequate social protection and economic stability in the future.

3. GENERAL CONCLUSIONS AND RECOMMENDATIONS

Theoretical, methodological and empirical research on the impact of public finances on the regulation of social security systems in Romania, together with the evaluation of these systems and their influence on economic stability, allowed the author to formulate the following *general conclusions*:

1. Public finances are essential for the functioning of the state, contributing to economic stability and reducing social inequalities.

2. Flexible fiscal policies are needed to respond to rapid change in a globalized world. Reforms are essential to maintain economic competitiveness and long-term sustainability.

3. Social insurance systems are vital to protect citizens against economic risks and reforming them is crucial to respond to demographic challenges such as an ageing population and falling birth rates.

4. The interdependence between the state budget and social protection systems underlines that public spending has a direct impact on the sustainability of these systems.

5. Romania and the Republic of Moldova face significant pressures due to ageing populations, making reforms needed to increase transparency and control over social spending.

6. Demographic and economic imbalances between the working and non-working population threaten the sustainability of social protection systems and budgetary allocations are insufficient compared to other EU countries.

7. Budget deficits and dependence on government subsidies affect the financial stability of the social security system, requiring urgent reforms to optimize revenues and expenditure.

8. Digitalization and improved administration of social security systems are essential to increase efficiency and reduce vulnerabilities to corruption and fraud.

As a result of the thematic addressed in the research thesis, the author proposes the following *recommendations* to stimulate and ensure the financial sustainability of the social security system, including the pension system in Romania:

1. Diversification of funding sources: the Romanian Government and the Ministry of Public Finance should introduce new dedicated taxes and levies to financially support the social security system, thus ensuring long-term stability.
2. Improve administrative efficiency: The Ministry of Labor and Social Solidarity should simplify procedures and implement digital technologies to reduce administrative costs and better manage resources.
3. Expanding Pillar III: Financial institutions and private pension funds, together with the Romanian government, should offer flexible contribution options, supported by tax deductions and government subsidies.
4. Combating tax evasion: the National Agency for Fiscal Administration (ANAF) should step up tax monitoring and implement strict measures to combat tax evasion, thus contributing to broadening the taxpayer base and increasing revenues.
5. Adjusting the retirement age: Romania's Parliament should adopt the necessary legislation to adjust the retirement age according to life expectancy, and the Ministry of Labor should implement these measures to ensure fairness and sustainability of the system.
6. Promote financial education: the Ministry of Education and the Ministry of Public Finance should work together to develop comprehensive financial education campaigns to encourage saving and voluntary pension contributions.
7. Protecting the vulnerable and employing the elderly: The government and the Ministry of Labor should adopt policies to protect the vulnerable and promote the employment of the elderly, while the Ministry of Finance should provide tax incentives to support them.
8. Creation of a Social Stability Fund: The Romanian Government and the Ministry of Public Finance should set up a reserve fund dedicated to the social security system to serve as a financial buffer in times of crisis.
9. Regular pension re-evaluation: The Romanian Parliament and the Ministry of Labor should introduce automatic mechanisms to adjust pensions and social benefits in line with inflation and economic growth.
10. Develop public-private partnerships: The Romanian government should work with the private sector to develop and deliver additional social services, such as care for the elderly and health programs.
11. Promote flexible work: the Ministry of Labor should adopt policies to facilitate flexible jobs for the elderly and the Ministry of Finance should provide tax incentives to support their employment.
12. National strategy for migration: the Ministry of Labor and the Ministry of Foreign Affairs should develop a national strategy for attracting and integrating diaspora and non-EU workers.
13. Reform of contributions for informal economy employees: the ANAF and the Ministry of Labour should implement measures to formalize jobs in the grey economy, ensuring a fair contribution to the social security system.
14. Continuing training programs for the elderly: The Ministry of Education and the Ministry of Labor should create retraining and retraining programs for older workers, prolonging their activity in the labor market and reducing pressure on the pension system.
15. Incentives for individual savings: the Ministry of Public Finance and banking institutions should develop programs that provide fiscal and financial incentives for citizens who save for retirement, ensuring better financial stability in retirement.

16. Improving access to preventive health services: the Ministry of Health and the Romanian Government should develop prevention and health education programs, contributing to reducing the long-term costs of the health system.

In conclusion, while progress has been made in some areas, there is a clear need for better coordinated and widely implemented measures. Many reforms essential for the stability and sustainability of the Romanian social security system remain partial or insufficiently implemented. A strategic and concerted approach, backed by strong political and administrative commitment, is decisive for modernizing the system and adapting it to the current demographic and economic challenges, thus ensuring a fair and sustainable system for all social groups.

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ANNOTATION

**to the PhD thesis in economics of Ms. Roman (August) Ana-Maria
"Public finances in the system of social insurance in Romania",
Free International University of Moldova, Chisinau, 2024**

Structure of the thesis: introduction, three chapters, conclusions and recommendations, bibliography of 233 titles, 164 pages of basic text, 24 figures, 33 tables and 14 annexes.

Keywords: public finances, social security, pension sustainability, structural reform, demographic challenges.

Field of study: finance, analysis of public finances in the social security system in Romania.

The aim of the paper is to emphasize the importance of public finance in the social security system, with a special focus on pensions. The author aims to analyze the role of public finances in the collection, administration and distribution of funds needed to support the pension system, to assess its financial sustainability, to examine national and European financial regulations, and to propose solutions to improve the efficiency and transparency of the system.

The research objectives include: analyzing the contribution of public finances to the sustainability of the social security and pension system; assessing the demographic and economic impact, in particular the ageing population and economic fluctuations, on long-term sustainability; examining national and European financial regulations to identify legislative challenges; analyzing social spending in Romania, Republic of Moldova and EU countries; proposing solutions for modernizing the system by integrating technologies and reducing bureaucracy.

The novelty and scientific originality lies in the integrated approach of public finances and social insurance, emphasizing their interdependence; the analysis of the influence of public finances on the sustainability of pensions in Romania and the Republic of Moldova; the use of advanced statistical methods for pension adjustment; the proposal of solutions for modernizing social insurance through technology and aligning with EU requirements, adapted to the context; the elaboration of the PEST analysis of the social insurance system in Romania; the elaboration of the online sociological questionnaire that collects data on citizens' perception of the pension system.

The results obtained that contribute to solving important scientific problems include: proposing structural reforms to address the demographic and economic challenges in modernizing the Romanian social insurance system; integrating modern technologies to streamline administrative processes and resource management in Romanian social insurance, in line with EU requirements; developing a statistical analysis model for pension forecasting and informing public policy decisions, adapted to the specific socio-economic Romanian context.

The theoretical significance of the thesis is to deepen the interdependence between public finances and social security systems, highlighting the crucial role of public finances in supporting social security systems, especially pensions, in the context of demographic and economic challenges, while providing a framework for comparative analysis of these systems.

The applied value of the thesis lies in proposing solutions for modernizing and streamlining social insurance systems by integrating modern technologies and providing tools for policy makers, facilitating the implementation of necessary structural reforms.

The implementation results of focus on structural reforms and solutions for modernizing the social insurance system in Romania and the Republic of Moldova through modern technologies and legislative adjustments, results published in 13 scientific papers and presented in conferences, with the aim to support the relevant institutions in ensuring financial sustainability and social equity.

ADNOTARE

la teza de doctor în științe economice a dnei Roman (August) Ana-Maria „Finanțele publice în sistemul de reglare a asigurărilor sociale în România”, Universitatea Liberă Internațională din Moldova, Chișinău, 2024

Structura tezei: introducere, trei capitole, concluzii și recomandări, bibliografie din 233 de titluri, 164 pagini text de bază, 24 figuri, 33 tabele și 14 anexe.

Cuvinte-cheie: finanțe publice, asigurări sociale, sustenabilitatea pensiilor, reformă structurală, provocări demografice.

Domeniul de studiu: finanțe, analiza finanțelor publice în sistemul de reglare al asigurărilor sociale în România.

Scopul lucrării este de a sublinia importanța finanțelor publice în cadrul sistemului de asigurări sociale, cu un accent special pe pensii. Autorul își propune să analizeze rolul finanțelor publice în colectarea, administrarea și distribuția fondurilor necesare pentru susținerea sistemului de pensii, să evalueze sustenabilitatea financiară a acestuia, să examineze reglementările financiare naționale și europene, și să propună soluții pentru îmbunătățirea eficienței și transparenței sistemului.

Obiectivele cercetării includ: analiza contribuției finanțelor publice la sustenabilitatea sistemului de asigurări sociale și pensii; evaluarea impactului demografic și economic, în special îmbătrânirea populației și fluctuațiile economice, asupra viabilității pe termen lung; examinarea reglementărilor financiare naționale și europene pentru a identifica provocările legislative; analiza cheltuielilor sociale în România, Republica Moldova și țările UE; propunerea de soluții pentru modernizarea sistemului prin integrarea tehnologiilor și reducerea birocrăției.

Noutatea și originalitatea științifică rezidă în abordarea integrată a finanțelor publice și a asigurărilor sociale, subliniind interdependența lor; analiza influenței finanțelor publice asupra sustenabilității pensiilor în România și Republica Moldova; utilizarea metodelor statistice avansate pentru ajustarea pensiilor; propunerea de soluții pentru modernizarea asigurărilor sociale prin tehnologie și alinierea cerințelor UE, adaptată contextului; elaborarea analizei PEST a sistemului de asigurări sociale din România; elaborarea chestionarului sociologic online care colectează date despre percepția cetățenilor asupra sistemului de pensii.

Rezultatele obținute care contribuie la soluționarea problemelor științifice importante includ: propunerea de reforme structurale pentru a aborda provocările demografice și economice în modernizarea sistemului de asigurări sociale din România; integrarea tehnologiilor moderne pentru eficientizarea proceselor administrative și gestionarea resurselor în asigurările sociale din România, conform cerințelor UE; elaborarea unui model de analiză statistică pentru prognozarea pensiilor și fundamentarea deciziilor de politică publică, adaptat la specificul socio-economic al României.

Semnificația teoretică a tezei contă în aprofundarea interdependenței dintre finanțele publice și sistemele de asigurări sociale, evidențiind rolul crucial al finanțelor publice în susținerea sistemului de asigurări sociale, în special al pensiilor, în contextul provocărilor demografice și economice, oferind totodată un cadru pentru analiza comparativă a acestor sisteme.

Valoarea aplicativă a tezei rezidă în propunerea de soluții pentru modernizarea și eficientizarea sistemelor de asigurări sociale, prin integrarea tehnologiilor moderne și furnizarea de instrumente pentru factorii de decizie, facilitând implementarea reformelor structurale necesare.

Implementarea rezultatelor se concentrează pe reforme structurale și soluții pentru modernizarea sistemului de asigurări sociale din România și Republica Moldova, prin tehnologii moderne și ajustări legislative, rezultate publicate în 13 lucrări științifice și prezentate în conferințe, cu scopul de a sprijini instituțiile relevante în asigurarea sustenabilității financiare și echității sociale.

ROMAN (AUGUST) ANA-MARIA

**PUBLIC FINANCES IN THE SOCIAL INSURANCE REGULATION
SYSTEM IN ROMANIA**

522.01 - FINANCE

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of the PhD thesis in economics**

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