Other distinctions include, for example, cross-border coverage of depositors at branches set up by the DGS's member institutions. In such cases, depositors at branches established by banks in other member states would be repaid by the DGS in the host member state on behalf of the home member state. To accomplish this, DGSs in EU member states have already concluded multilateral and bilateral agreements which regulate the exchange of funds and data in case of a cross-border bank failure.

Another important provision which has not been transposed in Serbian legislation so far concerns the temporary high balances. In case a deposit results from a transaction such as the sale of a private residential real estate or a life event like marriage, divorce, retirement, etc., it may enjoy temporary protection above the coverage limit for no less than three and no more than 12 months.

According to Serbia's fifth revised National Programme for Adoption of the Acquis of 24 October 2024, full transposition of the DGSD in Serbian legislation is expected by Q4 2027.

Although formally and legally in existence since 1989, during its first 15 years, DGS in Serbia was plagued by many weaknesses, as it struggled to remain relevant and credible in a society and economy in turmoil. However, its regulatory and structural base, set in 2005, has remained firm for 20 years now, with periodic re-designs in response to potential threats to financial stability. The most important changes occurred in 2008, when the insurance limit and scope of coverage were substantially increased. With technological advances, the reimbursement delay was progressively shortened to make sure the depositors covered by the DGS suffer no losses or major distress in case of a banking crisis. Gradual transposition of the applicable EU acquis has been the focus of regulatory reforms for over a decade. With the majority of the provisions of the Deposit Insurance Law already harmonized with the EU DGSD, the remaining divergences still include important features such as the limit and scope of coverage. They are expected to be addressed by the time of Serbia's accession to the European Union.

Chapter 11.

INNOVATIONS IN THE PENSION INSURANCE SYSTEM

The operation of the pension insurance system depends on numerous factors. Pension insurance systems financed using the "pay-as-you-go" system mostly depend on demographic, economic, and actuarial factors, while pension insurance systems financed through the "fully funded" system mainly depend on economic and actuarial factors. Operational risks exist in the functioning of both systems. The development of the pension insurance system implies strengthening of the key development factors and innovation in the organisation, structure, and management of this complex system, which is also the subject of this chapter. The aim of the chapter is to emphasise, based on the analysis, the importance of innovation when it comes to pension insurance system development. The chapter consists of three sections. The first section analyses the current state and basic innovations applied in global pension insurance systems. The second section presents the results and new elements in the compulsory pension insurance system in the Republic of Serbia, while the third section focuses on the state and changes in the voluntary pension insurance system in the Republic of Serbia.

1. STATE AND KEY INNOVATIONS IN GLOBAL PENSION INSURANCE SYSTEMS

There have been a large number of changes in the key factors influencing global pension insurance systems. Generally speaking, demographic changes can have a profound influence: declining birth rates, increased life expectancy, a decrease in the "dependency ratio" (the ratio between contributors and beneficiaries of the pension system), and so on. Moreover, there have been important changes in the economic sphere: recessions, economic inequality, social fragmentation, geopolitical risks, etc. Public pension insurance systems operating according to "pay-as-you-go" financing model more often than not face actuarial deficits due to these factors. To address these deficits, systemic changes (changing the method of financing pension benefits) are rarely implemented, while parametric adjustments (retirement age increase, changing the indexation method for pension benefits, etc.) are more frequently applied.[344]

[344] Kočović, J., Rakonjac-Antić, T., Koprivica, M., & Šulejić, P. (2021). *Osiguranje u teroriji i praksi*. Belgrade: University of Belgrade, Faculty of Economics and Business, p. 488.

Within private forms of pension insurance, there has been a shift from defined benefit plans (DBP)[345] to defined contribution plans (DCP)**.** Within DBP, pension benefits are predetermined using a specific formula that includes parameters such as the employee's salary, length of service, and contribution rate. DCP are the pension insurance plan which do not initially specify the amount of pension benefit. The pension benefit depends on the amount of the funds accumulated at the time the right to a pension benefit is acquired, based on the contributions paid into the fund and the returns generated from investing those funds. Participants are the ones who bear the investment risks in DCP.[346]

Investments in equities represent a significant segment of defined contribution (DC) pension portfolios. Over the past two decades, these investments have been steadily increasing, ranging from 20% to 40% of the total pension insurance portfolio. Even though the results are somewhat better, in those situations pension markets are more sensitive to volatility in financial markets.[347] The optimal strategy is for regulators not to define overly conservative investment strategies, and to protect participants by allowing them to go back to more conservative investment options, which offer lower but more stable returns, if there are poor results.

In 2024, 22 largest pension insurance markets (Australia, Brazil, Canada, Chile, China, Finland, France, Germany, Hong Kong, India, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, South Africa, South Korea, Spain, Switzerland, the United Kingdom, and the United States) accumulated approximately $58.5 billion, representing approximately 68% of their GDP (Table 1 and Figure 1). About 91% (or $53.51 billion) of these assets were accumulated in seven major pension insurance markets (the United States, Japan, Canada, the United Kingdom, Australia, the Netherlands, and Switzerland). Compared to 2023, in 2024 there was a slight increase of just under 5% ($55.87 billion). The largest pension insurance market, the USA ($37.992 billion), accumulated 64.9% of the total funds on the 22 largest global pension insurance markets in 2024 (Table 1). The Switzerland pension insurance market in 2024 accumulated 152.06% of the GDP (Figure 1).[348]

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[345] OECD (2023). *Pension Markets in Focus 2023*. Paris: OECD Publishing.

[346] Rakonjac-Antić, T. (2024). *Penzijsko i zdravstveno osiguranje*. Belgrade: University of Belgrade, Faculty of Economics and Business, p. 42.

[347] OECD (2024). *OECD Pensions Outlook 2024: Improving Asset-backed Pensions for Better Retirement Outcomes and More Resilient Pension Systems*. Paris: OECD Publishing, p. 10.

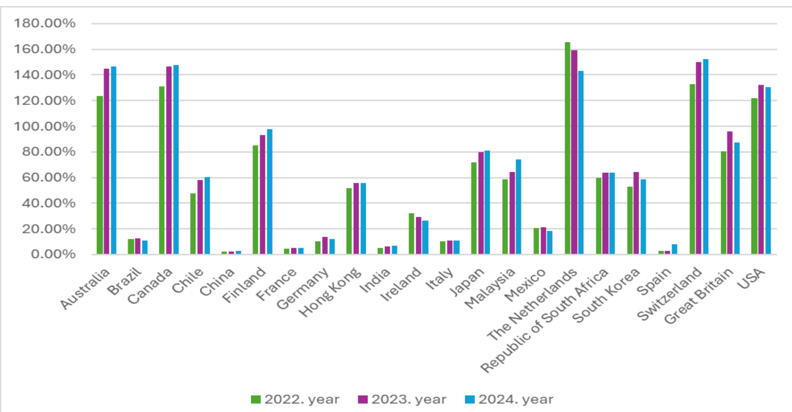
[348] Thinking Ahead Institute (2025). *Global Pension Assets Study 2025*, www.thinkingaheadinstitute.org/research-papers/global-pension-assets-study-2025/, pp. 1-8.

Table 1. Accumulated pension fund assets by country in 2022, 2023, and 2024

Country	Pension fund assets (billion USD)		
	2022	2023	2024
Australia	2,137	2,448	2,639
Brazil	233	272	232
Canada	2,880	3,105	3,267
Chile	148	199	198
China	382	423	480
Finland	240	284	299
France	125	155	166
Germany	415	596	556
Hong Kong	190	216	224
India	173	241	270
Ireland	166	172	149
Italy	205	243	258
Japan	3,099	3,385	3,300
Malaysia	254	278	326
Mexico	291	381	342
Netherlands	1,641	1,737	1,747
Rep. of South Africa	245	243	257
South Korea	921	1,102	1,098
Spain	36	43	142
Switzerland	1,074	1,361	1,433
Great Britain	2,568	3,206	3,139
USA	30,439	35,600	37,992
Total:	47,862	55,688	58,511

Source: www.thinkingaheadinstitute.org

Figure 1. Percentage of Accumulated Pension Fund Assets in GDP by country in 2022, 2023 and 2024



Source: www.thinkingaheadinstitute.org

The most significant innovations in global pension insurance systems are the following ones: the growing need for defining more appropriate ways of managing investment risks within pension insurance systems; increased focus on health, ecosystem, and financial security for the elderly; greater involvement of the insured in making investment decisions and taking on risks through unit-linked pension insurance model; the integration of insurance, pension, and banking savings systems; the use of both human and artificial intelligence to improve administration and achieve better outcomes in pension insurance systems; emphasising the importance of a retirement plan or timely creation of income strategy that users will rely on when they retire (referred to as financial planning); searching for the forms of providing lifetime income (with a holistic approach as the focus); strengthening personalised solutions; creating stronger connections to ensure better outcomes in the pension system through collaborative efforts of all participants in the chain: the insured (contributors), pension beneficiaries, potential insurers/contributors, employers, pension plan sponsors, pension plan management companies, financial advisors, regulatory bodies, etc.[349] Pension funds, in developed markets, have played an important role for decades due to a greater number of debt and equity securities, and derivatives as well. The increased volatility of interest rates and stricter supervision are key reasons why pension funds have encouraged the aforementioned development of financial markets. Due to growing global macroeconomic uncertainties, geopolitical, and systemic risks, pension funds have increasingly focused on alternative investments, such as real assets (real estate, land, collectables, etc.), aiming not only to diversify their portfolios and increase returns[350] but, in certain cases, to preserve the value of their assets.[351]

There have been significant changes in the global pension insurance market, particularly regarding the investment policies of pension funds, resulting from the expansion of technological innovations, artificial intelligence, and machine learning.[352] The impact of artificial intelligence on making adequate investment decisions is immensely important in many aspects. Major innovations have occurred in using artificial intelligence to strengthen pension plan management processes. The interaction among key participants (the insured, pension beneficiaries, pension plan sponsors, pension plan management companies, regulatory bodies, and others) is improving and accelerating. Administrative tasks and costs are decreasing. Intelligent virtual assistants are being implemented to enhance the information exchange process between system

[349] www.mercer.com, www.ey.com

[350] www.thinkingaheadinstitute.org

[351] Rakonjac-Antić (2024), op. cit., pp. 105-106.

[352] Hayman, G. (2024). *Pensions in the Age of Artificial Intelligence*. CFA Institute, p. 3.

participants, send electronic requests, and improve system control to isolate unauthorised processes and the like. The significance of artificial intelligence is particularly evident in helping the insured to plan and ensure financial security for their retirement years. It plays a key role in retirement planning; that is, creating a retirement preparation plan (a sample plan is shown in Table 2) and simulation scenarios using "what-if" analysis.[353]

It is essential for participants to take a proactive approach to retirement planning.[354] Financial security during the retirement period should be planned long before being entitled to receive a pension. If a retirement plan is made early, it is more likely to be far more successful. The effectiveness of a retirement plan depends on several factors. Particular attention should be paid to carefully considering the needs during the retirement period and exploring ways to secure financial resources for the future. Moreover, one should consider the potential for investing funds, which, depending on the length of the investment, may lead to higher accumulated amounts for pension benefits

Table 2. Retirement preparation plan

	Future needs in $ (or in €)
Estimated Expenses	
Rent and utility services	
Food	
Transportation	
Travel and leisure	
Medical services	
Other expenses	
Total expenses	
Estimated Income	
Social insurance	
Employer-sponsored pension insurance	
Interim result (sum of the two previous items)	
Additional required income	
Total income	

Source: Rakonjac-Antić (2024), op. cit., p. 290.

Experts in pension insurance suggest that every individual should: a) understand their future needs as a retiree; b) learn about the benefits offered by the national social security program; c) get acquainted with pension plans sponsored by employers; d) focus on contributing to "tax-advantaged" pension plans; e) avoid

[353] Rakonjac-Antić (2024), op. cit., pp. 289-293.

[354] Hugh, J. (2022). *Planning and Preparing for Reretirement.* Cardiff, p. 5.

withdrawing savings before retirement; f) start saving for retirement immediately, set goals, and stick to them; g) respect the basic principles of investing; h) constantly ask questions related to their pension plan, etc.[355]

Changes in labour markets and the emergence of new jobs, including informal ones (e.g., bloggers, influencers, etc.), have led to the introduction of micro pensions in many systems. These are voluntary, flexible pension schemes with defined contributions and the results are recorded in the individual pension accounts of the insured. Micro pensions are primarily aimed at the informal sector, individuals with low incomes, self-employed workers, and small businesses (e.g., those with up to three employees). These plans do not have a plan sponsor, and it is up to a participant to voluntarily save over a longer period. Unlike the organised, formal sector, employees in the informal sector do not officially retire (i.e., when they meet the usual age criteria required to access their funds from voluntary individual pension plan, that age can be considered as the start of retirement), but they still face the need to ensure financial security for the later years of their lives when their earning capacity will likely decrease (that is, when they get older). The pension schemes are tailored to their specific conditions, and in most cases, these employees have lower and irregular earnings.[356]

There are significant economic pressures (such as issues in the economy, inflation, unemployment, etc.) as well as demographic pressures (such as ageing populations and low fertility rates in many countries, etc.) on pension systems in certain countries. As a response to these challenges, and to increase transparency, efficiency, and security in managing pension systems, there has been ongoing research into the possibility of integrating blockchain technology into pension system management (for example, pilot projects have already been implemented in Germany and Great Britain). The possibility of integrating the optimisation and simplification of business processes with the use of integrated data is being explored. The data can be utilised in a decentralised**,** transparent**,** and secure way when needed.[357]

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[355] Rakonjac-Antić (2024), op. cit., pp. 289-290.

[356] Iwelumo, M., & Olanipekun, T. (2017). Micro Pensions: The New Frontier. *Advisory Outlook,* PwC, pp. 1-2. In Sub-Saharan Africa, around 80% of the population is not covered by pension insurance. There is a high level of unemployment, savings mechanisms are not well established, and wages are low. Micro pensions are one of the solutions to ensure financial security for the population in older age.

[357] Kovács, D., Molnár, B., & Weininger, V. (2024). Blockchain-Enabled Pension System Innovations: A Hungarian Case Study on Business Process Management Integration. *Computers 2024*, *13,* 345, pp. 2-35, https://doi.org/10.3390/computers 13120345

A certain number of countries, in addition to setting a minimum pension benefit, have been using for a while other mechanisms to prevent and reduce poverty among pension insurance beneficiaries (e.g., social, universal pensions, etc.). Some countries, such as certain former Yugoslav republics (Macedonia and Croatia), have relatively recently adopted these mechanisms. Social pensions are actually the transfers from the budget or general tax revenues and are not connected to contributions. These pensions can be defined as universal (paid to individuals once they reach a certain age, along with perhaps fulfilling one more requirement regarding the number of years of residence in the country) or pensions that involve setting the income level of potential beneficiaries. There is a prerequisite regarding a maximum income level (the amount of pension benefit), and there may be restrictions regarding property ownership.[358] Since 2019, Macedonia[359] and Croatia, since 2021[360], have provided social (state) pensions for the elderly. In Macedonia, the basic condition for receiving a social pension is that individuals must be over 65 years old and citizens of North Macedonia for at least 15 years before acquiring the right to a social pension. Furthermore, they must not possess personal property or property rights that would provide some kind of support, nor be beneficiaries of pensions or another form of support from another country based on age, disability or some other kind of support. If a person over 65 lives in a marital or common-law partnership with another person who is over 65, only one of them is entitled to the pension. The amount of the social pension is approximately 100 euros. In Croatia, the national benefit for the elderly can be received by individuals over 65 who have had continuous residence in the country for at least 10 years[361] prior to applying. The applicant must not be a pension beneficiary, the household must not receive an income exceeding 309 euros per household member (twice the amount of the national benefit for the elderly), and the individual must not be using social assistance, social accommodation, etc. In March 2024, 12,703 beneficiaries received the national benefit for the elderly (76.49% women and 23.51% men). Starting from 1st January, 2025, the national benefit for the elderly will amount to 154.5 euros.[362]

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[358] Holzmann, R., & Hinz, R. (2005). *An international perspective on pension systems and reform: Old age income support in the 21st century.* Washington, DC: The World Bank, p. 2.

[359] The Decree of the Proclamation of the Law on Social Security for the Elderly, *Official Gazette of the Republic of North Macedonia*, No. 104 of 23.5.2019.

[360] The National Benefit for the Elderly, *Official Gazette of the Republic of Croatia*, No. 62/2020.

[361] Law on Amendments to the Law on the National Benefit for the Elderly, *Official Gazette of the Republic of Croatia*, No. 156/23.

[362] https://www.mirovinsko.hr

2. RESULTS AND INNOVATIONS IN THE COMPULSORY PENSION INSURANCE SYSTEM IN THE REPUBLIC OF SERBIA

As mentioned in the introduction of the chapter, the operation of the public pension and disability insurance system is influenced by economic, demographic, and actuarial factors. The average pension, which is calculated using a point-based formula,[363] in the Republic Pension and Disability Insurance Fund of the Republic of Serbia in 2024 amounted to 46,138 dinars (approximately 60% of pension insurance beneficiaries received a pension below the average pension level). The "replacement ratio" (the ratio of average pension to average wage) was 47.0%. The "dependency ratio" (the ratio between contributors and beneficiaries of the pension system) in 2024 was 1.7:1. There were 2,832,893 contributors and 1,657,549 pension insurance beneficiaries in the Republic Pension and Disability Insurance Fund. The pension and disability insurance fund for employed individuals is the largest one in the Republic Pension and Disability Insurance Fund. In 2024, it had 2,382,087 contributors and 1,410,793 pension beneficiaries (the "dependency ratio" was 1.7:1). The average pension for beneficiaries in the fund for the employed amounted to 48,855 dinars. The highest "dependency ratio" of 3.1:1 was in the pension and disability insurance fund for the self-employed (363,892 contributors and 116,783 pension beneficiaries), and the average pension in this fund amounted to 43,038 dinars. The worst "dependency ratio" was in the pension and disability insurance fund for farmers, with a ratio of 0.7:1 (86,914 contributors and 129,973 pension beneficiaries), and the lowest pension amount of 19,966 dinars.[364] It is evident that there is a need to seek solutions to redefine the pension and disability insurance fund for farmers, since farmers have seasonal incomes that are unstable and largely depend on weather conditions, which is one of the key reasons for the abovementioned poor parameters. The Fiscal Council suggests that the pension provision for farmers should be removed from the compulsory pension insurance system and transferred to the social protection system.[365] Since 2023, the contribution rate in the public pension insurance system has been 24% (14% of the employee's gross earnings and 10% by the employer).[366] According to the financial plan for 2025,

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[363] A pension (pension benefit) is calculated as the product of the personal point and the general point (as of December 2024, the general point has amounted to 1,492.58 dinars).

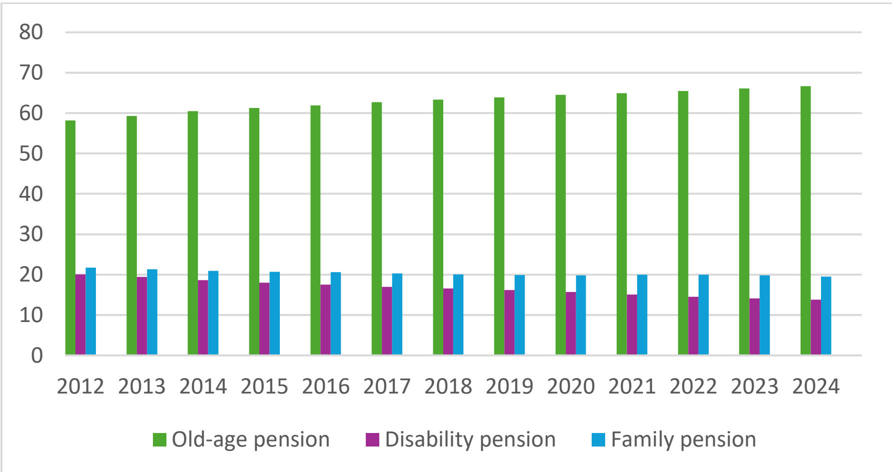
[364] Pension and Disability Insurance Fund of the Republic of Serbia (2025). *Statistical Annual Bulletin 2024,* Belgrade, pp. 1-16.

[365] www.paragraf.rs

[366] Law on Contributions for Compulsory Social Insurance, *Official Gazette of the Republic of Serbia*, No. 84/2004, 10/2022, and 6/2023, article 44.

the total revenues of the Republic Pension and Disability Insurance Fund are projected to amount to 948.1 billion dinars (78%) from contributions, and 267.5 billion dinars (22%) from budget transfers, meaning that the system is not economically self-sufficient.[367]

Figure 2. Structure of pension insurance beneficiaries according to types of pensions in the Republic Fund for Pension and Disability Insurance of the Republic of Serbia in the period 2012-2024 (expressed in %)



Source: Pension and Disability Insurance Fund of the Republic of Serbia (2025), op. cit., p. 5.

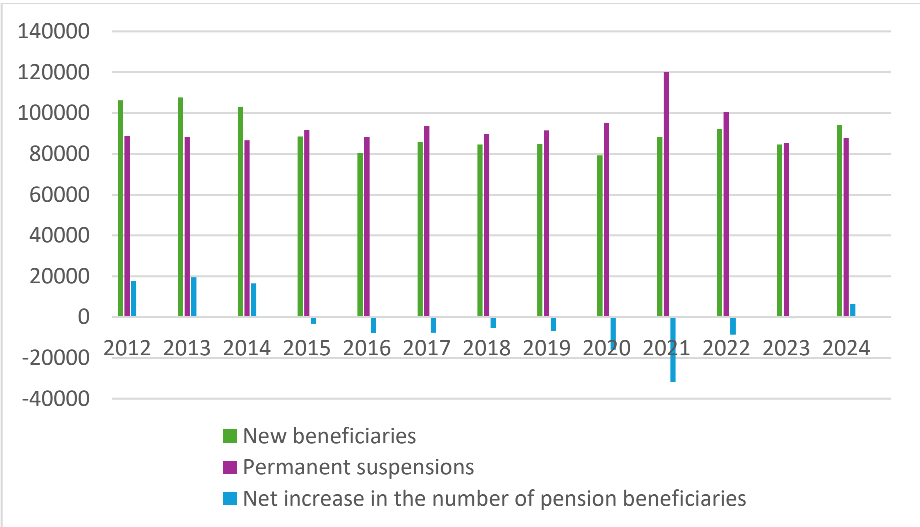
The three basic rights that can be achieved within the public (compulsory) pension insurance system are: the right to old-age and early old-age pensions, the right to disability pension, and the right to family pension. The majority of beneficiaries are those who achieve the right to an old-age pension. In 2024, they represented 66.7% of the total number of insurance beneficiaries (Figure 2). In 2025, male insured individuals can qualify for an old-age pension at the age of 65 with at least 15 years of insurance coverage, or 45 years of insurance coverage, regardless of age. Female insured individuals can qualify for an old-age pension at the age of 63 years and 10 months with at least 15 years of insurance coverage, or 45 years of insurance coverage, regardless of age. In 2025, the right to early old-age pension is entitled to both male and female insured individuals with 40 years of insurance coverage and at least 60 years of age. The right to early old-age pension was first introduced in 2015. That year, 7,962 pension insurance

[367] www.pio.rs

beneficiaries became entitled to it. By the end of 2024, the number of beneficiaries increased to 75,215.[368]

Compared to 2012, when the participation of disability pensioners was 20.1% of the total number of pensioners, in 2024, there was a decrease in the number of disability pensioners to 13.8%. The participation of pensioners who are entitled to a family pension in 2024 was 19.5%. This represents a slight decrease compared to 2012, when the participation accounted for 21.7% (Figure 2). The number of new pension beneficiaries, which refers to all insured individuals, in 2024 amounted to 94,090. There were 87,856 permanent pension terminations, and the net increase in pension insurance beneficiaries was 6,234 (Figure 3).

Figure 3. Number of new pension beneficiaries and number of permanent pension terminations per year in the Republic Fund for Pension and Disability Insurance in the Republic of Serbia in the period 2012-2024



Source: Pension and Disability Insurance Fund of the Republic of Serbia (2025), op. cit., p. 17.

So far, two methods have been used to reduce poverty among beneficiaries in the public pension insurance system: redistribution within the pension insurance system through the lowest pension institute and the mechanism of tracking and adjusting pension movements with economic developments in the country via pension adjustment (indexation). In addition to these two mechanisms, one-time

[368] Pension and Disability Insurance Fund of the Republic of Serbia (2025). *Glas osiguranika, LVI* (3), p. 3.

payments have also been made to pension beneficiaries. Pension insurance systems more often than not utilise automatic adjustment mechanisms. These mechanisms define in advance the limits to which parameters can extend and specify corrections. Through the automatic adjustment mechanism, financial imbalances can be avoided, and consistency can be established between decision-makers and participants in the system.[369]

Article 80 of the Law on Pension and Disability Insurance[370] and Article 27 e of the Law on Budget System[371] in the Republic of Serbia stipulates that if the total pension expenditures and the amount as an increase for pensions are less than 10% of GDP, pensions will be adjusted based on the change in the average wage excluding taxes and contributions. If the total pension expenditures and the amount as the increase for pensions are between 10% and 10.5% of GDP, pensions will be adjusted to a combination of half a percentage of change in the average wage excluding taxes and contributions, and half a percentage of change in consumer prices. If the total pension expenditures and the amount as the increase for pensions are equal to or higher than 10.5% of GDP, pensions will be adjusted according to the changes in consumer prices. Starting with the pension for December of the current year, pension adjustments are made depending on the percentage share of the pension amount and the amount of the increase in pension funds paid during the third and fourth quarters of the previous year and the first and second quarters of the current year, in the GDP for the specified period.[372] Currently, in the Republic of Serbia, total pension expenditures and the monetary amount as the increase for pensions are between 10% and 10.5% of GDP, therefore, pension adjustments are made based on a combination of half a percentage of change in consumer prices and half a percentage of change in the average wage excluding taxes and contributions. Starting from 1st December, 2024, the adjustment will be by 10.9%.[373]

In the process of implementing the Poverty Reduction Strategy, as well as within the framework of the National Strategy on Ageing for the period 2006-2015, it

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369 De Tavernier, W., & Boulhol, H. (2021). Automatic Adjustment Mechanisms in Pension Systems. In: *Pensions at a Glance 2021: OECD and G20 Indicators*, Paris: OECD Publishing.

370 Law on Pension and Disability Insurance, *Official Gazette of the Republic of Serbia*, No. 34/2003-86/2019, 62/2021, 138/2022, 76/2023, 94/2024, article 80.

371 Law on Budget System, *Official Gazette of the Republic of Serbia*, No. 54/2009, 118/2021, 92/2023, 94/2024, article 27 e.

372 Law on Pension and Disability Insurance, *Official Gazette of the Republic of Serbia*, No. 34/2003-86/2019, 62/2021, 138/2022, 76/2023, 94/2024, article 80.

373 www.pio.rs

was suggested to introduce a social pension system. It would be provided to elderly individuals without income who cannot qualify for a regular pension. Occasionally, this proposal is communicated to the public by certain officials, but without a detailed elaboration on the conditions for obtaining the social pension or its amount. It is estimated that between 150,000 and 200,000 people over the age of 65 in the Republic of Serbia have no income. The number of women without income is much higher compared to men.

In recent years, IT support has been intensified on the website of the Republic Fund for Pension and Disability Insurance through the implementation of an electronic service. An e-counter has been set up, enabling the electronic submission of requests for granting pension and disability insurance rights, issuing certificates, etc. Furthermore, an e-calculator for pension projection has been installed on the website of the Republic Fund for Pension and Disability Insurance. It is also possible to submit requests for gaining information regarding insurance periods, etc.[374]

3. CHANGES IN THE VOLUNTARY PENSION INSURANCE SYSTEM IN THE REPUBLIC OF SERBIA

The voluntary pension insurance system has been gradually developing since the adoption of the Law on Voluntary Pension Funds and Pension Plans in 2005, with the majority of provisions applied in 2006.[375] Amendments to the Law on Voluntary Pension Funds and Pension Plans were made in 2011, and since then, for 14 years, there have been no changes to the legal framework. Over the past years, the net assets of voluntary pension funds have increased slightly. The exception was 2022, when the net assets of voluntary pension funds (48.2 billion dinars) were lower by about 1.8% compared to 2021 (49.1 billion dinars).[376] In 2023, the net assets of voluntary pension funds amounted to 53.8 billion dinars[377], which is an increase of 11.5% compared to the net assets of voluntary pension funds in 2022 (48.2 billion dinars) (Figure 4). Due to the return on investment of 3.906 billion dinars, the net assets of voluntary pension funds had the largest

[374] www.pio.rs

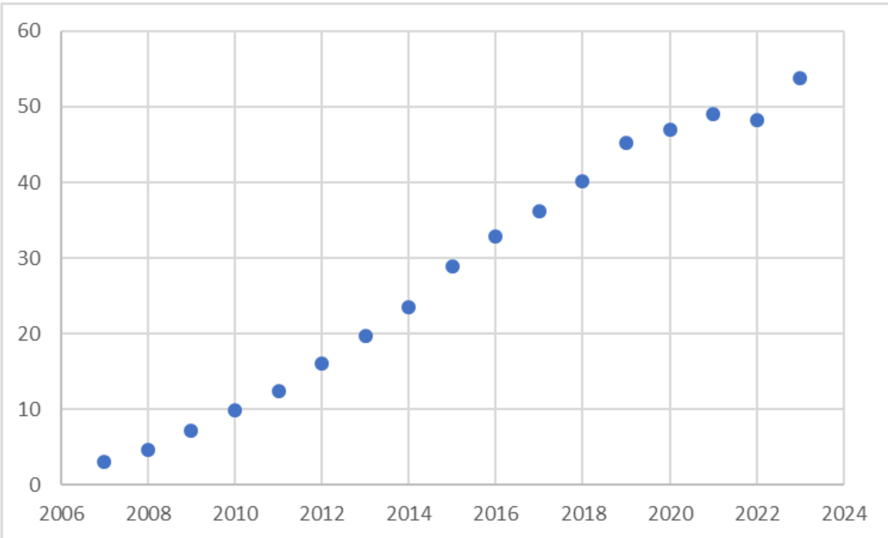
[375] Law on Voluntary Pension Funds and Pension Plans, *Official Gazette of the Republic of Serbia*, No. 85/2005, 31/2011.

[376] National Bank of Serbia (2023). *Voluntary Pension Funds in Serbia: Fourth Quarter Report 2022*, Belgrade, p. 4.

[377] National Bank of Serbia (2024a). *Voluntary Pension Funds in Serbia: Fourth Quarter Report 2023*, Belgrade, p. 4.

increase.[378] The total amount of fees obtained from contribution payments amounted to 94.5 million dinars, and the management fee was 633.4 million dinars.[379] Generally speaking, the share of voluntary pension funds in the balance sheet total in the financial sector was insignificant, around 1%.

Figure 4. Net assets of voluntary pension funds in the Republic of Serbia, in billion dinars, for the period of 2007-2023



Source: National Bank of Serbia (2008-2024). Voluntary Pension Fund Sector in Serbia - annual reports by year for the period of 2007-2023, Belgrade.

FONDex, the index representing the weighted average return of all pension funds, accounted for 9.8% in 2023. Since the introduction of voluntary pension insurance in the Republic of Serbia until 2023, FONDex averaged 7.4%. In 2022, the worst result of FONDex was recorded at -2.2%. The best result, 16.6%, was achieved in 2015 (Table 3). Most of the investments were made in government bonds, accounting for around 70.1% of the assets. The remaining 17.8% was invested in custodial accounts and term deposits with banks, while investments in stocks accounted for 10.8%.[380]

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[378] Total contributions amounted to around 4,600 million dinars (about 694 million dinars more than in 2022), while withdrawals totalled around 2,685 million dinars (about 844 million dinars less than in 2022).

[379] National Bank of Serbia (2024b). *Annual Financial Stability Report 2023*, Belgrade, pp. 86-87.

[380] National Bank of Serbia (2024a), op. cit., p. 5.

Table 3. FONDex (2014-2024)

Year	Return (%)
2014	11.4
2015	16.6
2016	7.7
2017	4.7
2018	5.5
2019	7.1
2020	1.0
2021	1.3
2022	-2.2
2023	8.1
2024	9.8

Source: National Bank of Serbia (2008-2024). The Voluntary Pension Fund Sector in Serbia, annual reports for the period of 2007-2023, Belgrade.

Since 2013, four companies have been operating in the voluntary pension insurance market, managing the assets of seven voluntary pension funds. Three companies manage the assets of two funds each (with different investment policies), while one company manages the assets of a single fund. In 2023, there were approximately 220,000 insured individuals in the voluntary pension insurance system[381] (an increase of about 5,000 insured individuals compared to the previous year), who had around 305,000 membership contracts. Only about 36% of insured individuals actively made contributions in 2023. In 2023, funds were held in two custodial banks[382] (compared to one custodial bank in 2022[383]).

Most commonly, when an insured person reaches the age stipulated by law, they withdraw the funds from their pension account in a lump sum (in 2023, the share of lump-sum payments in total payments was 80.7%). These lump-sum payments are generally not that high, which does not reflect the essence of this type of insurance, and it is to provide financial security to the population after retirement over a longer period of time.

In 2025, employers will be exempt from paying personal income tax and contributions for compulsory social insurance on contributions up to the amount of 8,449 dinars.[384] Contributions made by the employer via administrative

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[381] Approximately 9.6% of the total number of employees. The average age of policyholders is 48.

[382] OTP Bank, Serbia and Unicredit Bank, Serbia.

[383] OTP Bank, Serbia.

[384] *Official Gazette of the Republic of Serbia*, No. 08/2025.

deduction from pay, through withholding and payment from the employee's salary, will also be exempt from paying personal income tax. Favourable tax treatment in 2007 applied to the contributions in the amount of 3,000 dinars.[385]

As for regulation, there have been revisions to certain decisions and regulations. Education is not intensive, and potential insured individuals are not sufficiently encouraged to engage in financial planning. The companies managing voluntary pension funds are making efforts to strengthen their IT systems, aiming to provide a higher quality, faster, and more accessible service. The inclusion of a larger number of insured individuals in the voluntary pension insurance system is directly correlated with improvements in the population's standard of living, better economic results in the country, the development of the financial market, the enhancement of financial literacy among the population, etc.

Global pension insurance markets have undergone substantial changes, both in compulsory pension insurance (frequent pension insurance deficits) and voluntary pension insurance (frequent shifts from DBP to DCP plans). There have been innovations in the global pension insurance markets over the past period: a more significant inclusion of insured individuals in investment decision-making and risk management ("unit-linked" pension insurance); strengthening the connection between insurance, pension, and bank savings aiming to provide lifelong income for the insured; the application of the forms which combine human and artificial intelligence to achieve better results in pension insurance systems (especially in pension plan management processes, reducing administration, etc.); emphasising the importance of pension planning (as part of financial planning) along with strengthening personalised solutions; increasing application of alternative investment forms (e.g., in real assets like real estate, land, and collectibles) due to frequent financial market crises; the rise of so-called micro pensions: voluntary, flexible pension forms mainly targeted at the informal sector and individuals with low incomes; and the introduction of social pensions and other similar methods to prevent and reduce poverty among pension insurance beneficiaries.

In Serbia, the compulsory pension insurance system is kept sustainable through contributions paid by insured individuals and their employers, as well as thanks to subsidies from the state budget. In recent years, an automatic adjustment mechanism has started to be implemented within the pension insurance

[385] Rakonjac-Antić, T. (2017), The Possibility of the Development of Long-Term Insurance Forms in Serbia. In: *Challenges and Tendencies in Contemporary Insurance Market*, Kočović, J. et al. (eds.), Belgrade: University of Belgrade, Faculty of Economics and Business, pp. 171-183.

indexation, and IT support has been intensified (electronic checks, submitting e-requests, etc.). Voluntary pension insurance is not sufficiently developed. There is a small number of insured individuals, the accumulated contribution amounts are also insufficient, and the legal framework has not changed for 14 years. On the other hand, companies managing voluntary pension funds have improved their IT support systems