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Original Article

DEMOGRAPHIC CHALLENGES OF THE PENSION SYSTEM IN THE REPUBLIC OF SERBIA

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***Abstract**: The crisis in pension systems is present in all countries worldwide. In European Union countries, it is evident that the design of pension systems varies significantly among member states, and generating distinctions between them leads to their different sustainability. The main factors influencing the crisis in pension system functionality are cited as the pronounced longer trend of life expectancy than expected, global economic crises, high unemployment rates, globalization, competition in the pension insurance sector, forms of pension benefit payments, as well as the structure of pension expenditures. This paper analyzes the demographic challenges of the pension system of the Republic of Serbia, focusing on the structure of pension expenditures as the dominant and most important category of expenditures of the Pension and Disability Insurance Fund. The paper aims to highlight the most important factors of pension system sustainability. The research results have shown statistically significant differences in average pension amounts among different categories of pension beneficiaries, thereby endangering the financial stability of the pension system of the Republic of Serbia. In the final part of the paper, possible directions for reforming the pension system of the Republic of Serbia are indicated.*

***Key words**: pension system, pension reform, demografic challenges, financial stability, Republic of Serbia.*

***JEL classification:** H5, H6, H55*

1. INTRODUCTION

In scholarly discussions about the reasons behind the crises in national pension systems, considerable focus has been directed towards the disrupted ratio of workers to retirees. This disparity has profoundly affected the viability of existing pension frameworks. Additionally, the frequent modifications to pension systems globally have been driven not only by deficiencies in pension policy management but also by concerns over social viability.

An assessment of the actuarial shortfall, defined as the gap between pension costs and contribution revenues, suggests that the fiscal viability of most EU Member States is threatened. Over a period of 50-75 years, contributions and other revenues are inadequate to cover the anticipated pension payouts (D`Addio and Whitehouse, 2012). Another concern frequently noted in economic studies is social viability, a concept far more encompassing than just financial viability. Social viability refers to the adequacy of pensions, namely, the proportion between pension amounts and the pre-retirement earnings of the insured. Crafting durable pension systems requires attention to factors influencing both financial and social viability. Thus, it's crucial to evaluate the impacts of pension policies on these aspects during system reforms, aiming to harmonize these objectives. Achieving this necessitates a thorough examination of pension revenues and expenses.

Globally, the compulsory pension system grapples with significant challenges, primarily the rising ratio of retirees to workers. Specifically, a key reason for pension payment deficits is the dwindling pension system revenue coupled with soaring pension costs. An increase in pension expenses highlights not just the growing number of retirees but also the progressively lenient retirement eligibility criteria. Forecasted pension expenses up to 2050 in most EU nations indicate that the current pension contributions will fall short of meeting these costs (European Commission, 2009). In Serbia, pension expenses constitute the largest expenditure category for the Republic Pension and Disability Insurance Fund, comprising about 85% of the Fund's total expenses.

However, Serbia's pension system is not sustainable over the long term, prompting many scholars to advocate for reforms (Đurović-Todorović and Đorđević, 2018). Addressing the financing issues of pensions and exploring sustainable operations of Serbia’s pension system involved a detailed examination of pension expense structures. This study reviews the correlation between pension recipients, pension types, and pension amounts. The data for this empirical analysis were sourced from the Republic Pension and Disability Insurance Fund-Leskovac Branch, focusing on pension expenditure patterns at the city level. Given that opportunities to cut costs in the compulsory state pension and disability insurance system for certain pensions are nearly depleted, it is vital to explore alternative measures and opportunities for redesigning Serbia's pension disability system locally.

Acknowledging that the unsustainability of state pension systems stems from a misalignment between pension system designs and contemporary changes, this research provides a comprehensive overview of the structure and scale of local pension expenditures and potential reform directions for Serbia’s pension insurance system.

2. ECONOMIC DRIVERS OF INSTABILITY IN PENSION SYSTEMS

The pervasive crisis in pension systems manifests globally, with notable variations within the European Union due to differing pension system architectures among Member States, which contribute to disparities in sustainability outcomes (Hadi et al., 2022).

Crucial determinants exacerbating the pension system crisis include the extended longevity of populations surpassing forecasts, global economic downturns, elevated unemployment levels, the effects of globalization, competitive dynamics in pension insurance, and the modalities of disbursing pension benefits. Rakonjac-Antić (2013) posits that for pension schemes to function effectively, all potential pension benefit disbursement methods must be proactively considered. Moreover, the method of determining pension benefits is pivotal for the operational effectiveness of pension systems. “The classification into defined benefit plans, defined contribution plans, and hybrid plans hinges on whether pensions are calculated using a pre-set formula with specific parameters or based on the size of accumulated contributions and returns on these investments” (Rakonjac-Antić, 2013, p. 128).

Holzmann et al. (2003) identify that the pension systems crisis is influenced by the weak linkage between pension contributions and benefits, which necessitates strengthening, as well as factors tied to pension funding sources, such as contribution duration and funding mechanisms. This author underscores the critical need for structural modifications in pension schemes.
Matković (2010) examines the effect of the number of pension recipients on net pension expenditures. The author attributes a decline in revenue to a reduction in the insured workforce due to decreased employment, evasion of contributions, and the informal economy, while an uptick in expenses results from an increase in pension recipients, driven by population aging and more lenient retirement conditions (Matković, 2005).

The complexity of pension system operations is acknowledged by both international and national statistical bodies as well as academic research institutions. According to Stanc et al. (2019), the pension system is influenced by demographic policy, intergenerational equity, national economic equilibrium, public debt levels, and macroeconomic stability. “Challenges such as aging populations, declining employment rates, and financial market fluctuations critically threaten pension system sustainability,” state Stanc et al. (2019, p. 53). These authors contend that any examination of the sustainability of retirement and disability insurance must initially tackle at least three demographic challenges over the forthcoming four decades: population decline, aging, and emigration, all of which jeopardize pension system sustainability. Dobre et al. (2012)

argue that maintaining manageable public debt levels is essential for addressing future public expenditure increases driven by demographic shifts. Peter Askins (2010) discusses the sustainability and risk challenges confronting pension policymakers, emphasizing the urgency for reform in Europe in response to aging populations and falling birth rates.

Barr et al. (2009) suggest that pension system design principles are deeply rooted in economic theory, encompassing multiple objectives and considering the pension system in its entirety. Different systems face varied risks and impacts across generations and genders. The dialogue surrounding these principles intensifies with the emergence of flaws in World Bank analyses and incomplete evaluations of pension liabilities and systems. The author emphasizes the necessity of comprehensive analyses of pension systems that vary with the economic development levels of different countries.

Research also highlights the critical timing of retirement, proposing that resolving the pension crisis requires evaluating the optimal retirement age. Defining retirement age necessitates starting from the foundational definition of retirement, though consensus on this definition remains elusive in academic literature (Gustman, Mitchell and Steinmeier, 1995). Montalto et al. (2000) explore determinants of retirement age, suggesting that retirement adequacy studies should prioritize anticipated retirement planning. Financial advisors are advised to account for the increasing propensity for planned retirement among various beneficiary categories with advancing age. The study focuses on the financial and demographic attributes of pensions as key determinants of the retirement threshold. Boskin (1977) indicates that net earnings levels significantly negatively influence retirement likelihood. Stojilković (2011) integrates metrics such as years of service and average retirement age into analyses of retirement structures in Serbia, noting the critical role of average retirement age for the financial sustainability of the Pension and Disability Insurance Fund. Given the increasing life expectancy at retirement, prolonged pension utilization is anticipated. “Data from the Pension and Disability Insurance Fund indicate long-term trends influenced by demographic and socio-economic factors, including those affecting retirees” (Stojilković, 2011, p. 69).
In Serbia, as in many other nations, pension and disability insurance relies partially on ongoing financing of pensions. Mandatory insurance encompasses employees, employers, self-employed individuals, and farmers. By the late 2000s, significant debts had accumulated within Serbia’s pension and disability system, compounded by workforce reductions, contribution avoidance, and a shrinking insured population since the mid-1980s, escalating through the 1990s. The rise in the number of pensioners, driven by liberal retirement policies and an aging population, has consistently elevated pensioner numbers.

3. DATA COLLECTION AND ANALYTICAL METHOD

Since 2012, the Republic of Serbia has structured its pension disbursements to encompass allocations for employees, self-employed entrepreneurs, agricultural workers, and military personnel. To enhance the accuracy of the analysis, data on pension allocations were systematically gathered at the municipal level (Đurović Todorović et al., 2021).

The investigation employed primary data sourced from the Republic Pension and Disability Insurance Fund, specifically its Leskovac Branch, complemented by secondary data from the Fund's monthly statistical release and aggregate statistics from the Republic Bureau of Statistics.
This analysis delineated the allocation of pension recipients within the Pension and Disability Insurance Fund in Leskovac by exploring the following classifications: beneficiaries identified as employees, agricultural workers, self-employed entrepreneurs, and military insured.

Table 1. Descriptive Statistics

Dependent Variable: ППП

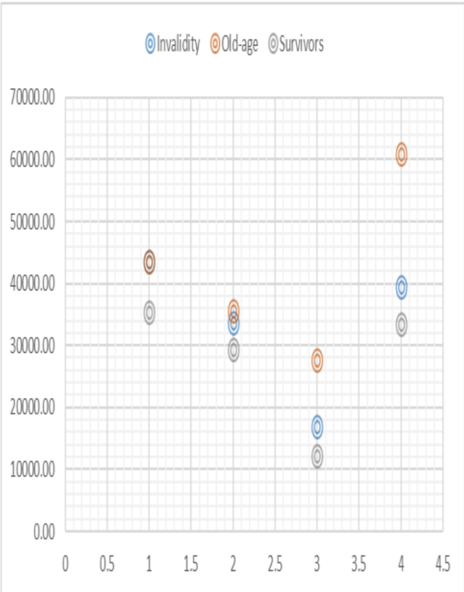
	Type of pension	Mean	Std. Deviation	N
Invalidity	Employees	43637.8335	26635.06196	22
	Craftsmen	33602.2745	17118.06127	17
	Agricultural workers	16865.7046	9198.83879	5
	Military	39533.4879	15893.45607	16
	Total	37468.9222	21390.61950	60
Old-age	Employees	43584.6308	26581.51677	22
	Craftsmen	35585.2204	17426.69543	19
	Agricultural workers	27622.4826	12137.89970	11
	Military	60878.9760	41500.92026	10
	Total	41090.6151	26827.48940	62
Survivors	Employees	35475.6411	20375.92187	19
	Craftsmen	29460.7536	12818.12185	15
	Agricultural workers	12212.0656	8924.11062	4
	Military	33437.5503	15487.25936	17
	Total	31513.3655	17086.19952	55
Overall Total	Employees	41157.6412	24785.40657	63
	Craftsmen	33122.9247	15984.61536	51
	Agricultural workers	21851.2047	12382.05851	20
	Military	42087.5331	25836.10475	43
	Total	36886.9411	22533.71782	177

Source: Authors

The findings, as presented in Table 1, reveal statistically significant variances in the mean values across the three analyzed pension categories (invalidity, old-age, and survivor pensions). The subsequent table provides a summary of the average pension disbursements across both the beneficiary classifications and the types of pensions.

In the disability pension segment, employees are accorded the highest median pension payouts. In contrast, within the old-age pension segment, military personnel are granted the most substantial average pension disbursements. Similarly, in the family pension segment, employees again secure the highest median payouts. Conversely, agricultural workers invariably obtain the lowest average pension disbursements across all assessed segments, encompassing disability, old-age, and family pensions.

Figure 1. Quantitative Analysis of Assessed Pension Recipient Categories



Source: Authors

CONCLUSION

A minimum of one third of OECD nations maintain foundational minimal pension schemes, contingent upon the socio-economic strategies and fiscal robustness of their budgetary frameworks. The evolution of financial and investment architectures within pension systems, since the inception of the inaugural model in Germany, has been propelled by demographic shifts in gender and age distributions, globalization, and the accelerated advancement of technology (Rašević and Galjak, 2022).

The economic downturn of 2008 and the COVID-19 crisis of 2020 underscored the susceptibilities within the global financial infrastructure and the hazards posed to the fiscal stability of pension systems (Dorofeev et al., 2023). The pension policy in the Republic of Serbia, primarily aimed at rectifying the disparity between the burgeoning number of pensioners and the dwindling workforce, underscores the imperative for reform within the pension system. Our scrutiny of the Pension and Disability Insurance Fund's outlays—the principal fiscal expenditures—affords a detailed perspective on the financial burdens of pension distributions, essential for evaluating the sustainability of these systems.

The introductory portion of this analysis emphasizes that the enduring financial stability of the pension framework must be predicated upon a meticulous examination of fiscal outflows. Given the diverse economic and sociopolitical landscapes, Serbian pension policy strives to demonstrate a commitment to regulatory and statutory oversight concerning pension-related fiscal flows, thus bolstering a sustainable pension structure. The Europe 2020 Strategy champions measures such as diminishing public debt, augmenting employment, and comprehensive reforms of social security mechanisms. According to Mercer and the CFA Institute (2018), an exemplary retirement framework integrates defined governmental objectives for each pension segment, establishes a baseline for retirement funding, ensures efficient management of pre- and post-retirement pension schemes, maintains transparency in administrative and investment expenses, allows flexibility in contributions or asset accumulation during retirement years, promotes sustainable motivations for voluntary contributions, and ensures that corporate pension fund management is autonomous from governmental oversight.

In the medium term, improvements in the financial underpinnings and sustainability of Serbia's pension system may arise from heightened employment levels or a diminution in the informal sector. Yet, enduring challenges such as demographic aging and the prolongation of retirement ages signal the looming instability of state pension schemes reliant on perpetual funding.

Our municipal-level inquiry reveals statistically significant discrepancies in average pension distributions among various recipient, with the highest pensions disbursed to military personnel and employees, followed by moderately lower payments to artisans, and the minimal amounts to agricultural workers. Furthermore, considerable variations are apparent across pension, with old-age pensions being the highest, succeeded by disability and survivor benefits.

This analysis not only probes the composition of pension expenditures at the city level but also sets the stage for further investigation into cost containment and the enhancement of pension system policy analysis, including potential modifications to the social security architecture. Additionally, the insights gleaned help illuminate the factors to be considered when assessing retirement determinants, aimed at rectifying disparities within the pension framework. The call for extended national-level research to further guide policy formulations is also accentuated.

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