

Assessment of the effectiveness of the pension system in the context of population ageing in the Republic of Moldova

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To cite this article:

Rojco, A., & Heghea, E. (2026). Assessment of the effectiveness of the pension system in the context of population ageing in the Republic of Moldova. *Romanian Journal of Economics*, 62 (1), 263-276.

Abstract. Objective: The demographic aging process in the Republic of Moldova has a negative impact on the effectiveness of the pension system, which is based on the principle of intergenerational solidarity. This situation creates the need to reform the system to ensure an adequate level of pensions while maintaining an acceptable financial burden for contributors. The objective of this study is to assess the main indicators of the socio-economic effectiveness of the pension system under the pressure of an aging population. **Method:** The study employed a combination of monographic, statistical, comparative, and analogy-based research methods. The demographic aging of the population was analysed through the dynamics of several indicators: the aging coefficient, the old-age dependency ratio, and the intergenerational support ratio. To evaluate the effectiveness of the pension system, the research applied World Bank criteria, calculating indicators such as the ratio of the average pension to the subsistence minimum for pensioners, pension purchasing power, the insured workers-to-pensioners ratio, and pension expenditures as a percentage of GDP. Special attention was given to the replacement rate, calculated according to internationally recognized methodological approaches. **Results:** The results confirm the deepening of demographic aging in the Republic of Moldova, reflected in the deterioration of key indicators. The ratio of insured workers to pensioners is steadily declining, contributing to increased financial pressure on the system. The average pension remains insufficient in relation to the minimum subsistence level, and its purchasing power has been eroded by inflation. The replacement rate, a key measure of adequacy, falls short of international benchmarks. Overall, the findings indicate a decreasing efficiency of the pension system, calling for immediate improvement measures in the face of demographic constraints. **Originality:** This study provides a structured and multi-indicator evaluation of the Moldovan pension system within the framework of demographic aging. Its originality lies in the integration of demographic trends with internationally recognized efficiency criteria. The application of World Bank indicators to the Moldovan context offers a new perspective on systemic weaknesses and highlights the need for proactive and sustainable pension reforms.

Keywords: population ageing; life expectancy; pension system effectiveness; absolute poverty level; distribution of the number of pensioners by pension size; replacement rate; contribution rate.

JEL classification: J11, J14, H55, I38

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1. Introduction

The effectiveness of the pension system is achieved through the simultaneous guarantee of a socially acceptable level of pension provision for the population, on the one hand, and the balance and long-term financial sustainability of the pension system, on the other. The pension system of the Republic of Moldova operates on a pay-as-you-go (PAYG) basis, whereby the pensions of current retirees are financed by the contributions of the current workforce. Under these conditions, the ageing of the population in the Republic of Moldova poses a serious challenge to the sustainability of the pension system. The worsening ratio between the number of contribution payers and the number of pension benefit recipients, resulting from population ageing, undermines the financial sustainability of the pension system, thereby reducing its effectiveness and threatening the well-being of future generations of pensioners. Taking this into account, this study was carried out in two aspects: (a) an assessment of the population ageing process and (b) an analysis of the effectiveness of the pension system in the Republic of Moldova. The research objective is to evaluate how demographic ageing affects the adequacy, affordability and sustainability of the Moldovan pensions system, using internationally recognized indicators and World Bank criteria and to formulate evidence-based recommendations for policy reform.

2. Literature review

The impact of demographic ageing on the sustainability of pension systems is actively studied in foreign scientific literature. Classic studies highlight the role of the replacement rate as a key indicator of the adequacy of pension benefits (OECD, 2023; ILO, 2020). Several authors (Barr & Diamond, 2008; Holzmann & Hinz, 2005) point to the need for a balanced combination of pay-as-you-go and funded pension components in the context of population ageing. Studies focusing on OECD and EU countries (European Commission, 2021; Eurostat, 2023) note significant variation in the old-age dependency ratios and replacement rates, which underscores the importance of national specificities.

For countries with post-socialist economies, specific problems are typical: low pension adequacy, high poverty rates among pensioners, and significant dependence of pension funds on transfers from the state budget (Chlon-Dominczak, 2021; Müller, 2020). In Moldovan studies, pension provision has been examined mainly in the context of the transformation of the social insurance system (Rojco & Heghea, 2022); however, comprehensive assessments of the interrelation of demographic factors, multivariate calculation of the replacement rate, and the financial sustainability of the system are rarely encountered.

Thus, the analysis of existing literature highlights the need for an in-depth study of the effectiveness of the pension system of the Republic of Moldova, taking into account international standards and practices, as well as the specific demographic situation and the structure of the social insurance system.

3. Methodology and data

The methodological basis of this article includes the use of official data from the National Bureau of Statistics of the Republic of Moldova, as well as reports from the Court of Accounts and the National Social Insurance House. To place the Moldovan case in a broader context, international databases (OECD, ILO, World Bank) were also consulted, which ensured comparability with European Union and Organisation for Economic Cooperation and Development (OECD) countries.

The analysis of the population ageing process is based on several demographic indicators commonly employed in international research (OECD, 2023; European Commission, 2021). Their selection is justified by their ability to capture demographic change and its implications for social protection. The *ageing coefficient* indicates the share of the population aged 60+ (or 65+) and serves as a basic measure of demographic pressure. The *old-age dependency ratio* reflects the relationship between people aged 65+ and the working-age population (15-64), according to World Bank and OECD frameworks, it is considered a key indicator of the sustainability of pay-as-you-go pension systems.

Another important measure is the *intergenerational support ratio*, which compares the number of elderly people with the number of children (0-14) and thus provides insights into the long-term balance between generations and the sustainability of intergenerational solidarity. Finally, *life expectancy at birth and at age 65* captures both the demographic transition as a whole and the expected duration of retirement, having direct implications for the financial burden placed on the pension system (United Nations, 2023).

The effectiveness of the pension system was analysed according to World Bank criteria (Holzmann & Hinz, 2005; Barr & Diamond, 2008), which integrate indicators of adequacy, affordability and sustainability. The selected indicators correspond both to the existing literature and to the research objective of examining how demographic ageing affects the socioeconomic performance of the Moldovan pension system. To this end, the *poverty level of households with pension-age members* was analysed in order to assess whether pensions reduce the risk of poverty (ILO, 2020). The *distribution of their number by pension size* was also considered, as it highlights inequality in pension provision and is relevant for evaluating social fairness (Chlon-Dominczak, 2021). A central indicator, the *replacement rate*, was calculated as the ratio of average pensions to preretirement wages and is regarded as the key benchmark of adequacy in both ILO and OECD standards. To evaluate the affordability of the system, the analysis included *pension expenditure as and its ratio of GDP*. Which reflects both the fiscal burden on the economy and the long-term sustainability of pension financing (European Commission, 2021). Lastly, the *ratio of insured workers to pensioners* was used to measure the financial viability of the system by showing how many contributors support each retiree (OECD, 2023).

This methodological framework makes it possible to assess the Moldovan pension system in an integrated way, taking into account both demographic change and its socioeconomic consequences. The analysis goes beyond simple statistical description and is carried out in accordance with internationally accepted indicators of adequacy, affordability and long-term sustainability.

4. Research results and comments

4.1. Assessment of the population ageing process in the Republic of Moldova

Population ageing is the result of long-term demographic processes, shifts in the pattern of population reproduction, changes in the balance between birth and death rates, increased likelihood of surviving to old age, and longer life expectancy thereafter. In the Republic of Moldova, in addition to these factors, large-scale labour migration abroad makes a significant contribution to population ageing. This migration predominantly involves young people, which affects the age structure of the population and leads to an increased share of elderly people within it.

An international classification is used to assess the ageing process, according to which elderly people are defined as persons aged 60 (or 65) and over. The Republic of Moldova is characterised by a significant increase in the number of elderly people. Between 2014 and 2024, the number of people aged over 60 increased from 503.1 thousand to 610.6 thousand (by 21.4%), while the number of people over 65 rose from 313.0 thousand to 421.0 thousand (by 34.5%) – see Table 1.

This increase occurred against the backdrop of a decrease in the total resident population of the country: from 2,869.3 thousand people in 2014 to 2,423.3 thousand in 2024, representing a decline of 15.5%. Thus, the growth rate of the elderly population exceeded the rate of decline in the total resident population. As a result, the share of the population aged over 60 in the total population structure increased from 17.5% to 25.2%, and the share of those over 65 rose from 10.9% to 17.4%. Therefore, in the Republic of Moldova, demographic ageing is reflected both in the growth in the number of people aged over 60 (65) and in the increase of their proportion within the total population.

The Republic of Moldova is characterised by a trend of accelerating population ageing. This primarily concerns the dynamics of the ageing coefficient, which is calculated as the proportion of persons aged 60+ or 65+ in the total population. Between 2014 and 2024, the ageing coefficient (60+) increased from 17.5% to 25.2%, that is, by 1.4 times (Table 2). In 2014, every sixth resident of the country was over 60 years old, whereas in 2024, it is already every fourth resident. The rate of increase in the ageing coefficient (65+) was even higher: from 10.9% to 17.4%, which represents an increase by 1.6 times. In 2014, only every ninth person was older than 65 years, while in 2024, it is already every sixth person.

Table 1. Population size and age structure of the resident population of the Republic of Moldova (at the beginning of the year)

	2014	2016	2018	2020	2022	2024	2024 as % of 2014
	<i>Headcount, thousand persons</i>						
Population – total	2,869.3	2,825.6	2,729.6	2,643.7	2,565.0	2,423.3	84.5
Including age (years):							
0-14	513.0	511.5	509.5	488.6	468.8	423.8	82.6
15-59	1,853.2	1,790.5	1,674.5	1,580.8	1,506.2	1,388.9	74.9
60+	503.1	523.6	545.6	574.3	590.0	610.6	121.4
including 65+	313.0	339.1	360.5	381.0	392.4	421.0	134.5
	<i>Structure, %</i>						
Population – total	100.0	100.0	100.0	100.0	100.0	100.0	-
Including age (years):							
0-14	17.9	18.1	18.7	18.5	18.3	17.5	-
15-59	64.6	63.4	61.3	68.1	59.8	58.7	-
60+	17.5	18.5	20.0	21.7	23.0	25.2	-
including 65+	10.9	12.0	13.2	14.4	15.3	17.4	-

Source: calculated based on data from: statbank.statistica.md

Nevertheless, the ageing coefficient of the population in the Republic of Moldova was lower than its average level in the EU. In 2024, the average population ageing coefficient (65+) in the EU reached 21.6%, which is 1.2 times higher than the level in the Republic of Moldova. Among EU countries, the highest ageing coefficients (65+) were observed in Italy (24.3%) and Portugal (24.1%) (Eurostat). In two EU countries, the ageing coefficient was lower than in the Republic of Moldova (Ireland – 15.5% and Luxembourg – 15.0%).

In the Republic of Moldova, the old-age dependency ratio has increased year by year. Calculated as the percentage ratio of the number of people aged 65+ to the population aged 15–64, it rose from 15.3% in 2014 to 26.7% in 2024, that is, by 1.7 times (Table 2). Thus, in 2014, there were 153 elderly people per 1,000 people of working age, whereas in 2024 there will be 267. In EU countries, the old-age dependency ratio averaged 33.9% (Eurostat), which is 1.3 times higher than in the Republic of Moldova. Among EU countries, the highest values for this indicator were recorded in Italy (38.4%) and Portugal (38.2%), while the lowest were in Ireland (23.8%) and Luxembourg (21.7%).

Table 2. Population ageing indicators of the Republic of Moldova (at the beginning of the year), %

Year	Ageing coefficient		Old-age dependency ratio	Generational ratio coefficient	
	Persons aged:			Persons aged:	
	60+	65+		60+	65+
2014	17.5	10.9	15.3	98.1	61.0
2016	18.5	12.0	17.2	102.4	66.3
2018	20.0	13.2	19.4	107.1	70.7
2020	21.7	14.4	21.5	117.5	78.0
2022	23.0	15.3	23.0	125.8	83.7
2024	25.2	17.4	26.7	144.1	99.3

Source: calculated based on data from: statbank.statistica.md

In the Republic of Moldova, the trend of population ageing has also been reflected in the dynamics of the intergenerational ratio, which is calculated as the percentage ratio of the number of people aged 60+ (65+) to the number of children (aged 0–14 years). In 2014, the number of elderly people aged 60+ was lower than the number of children aged 0–14 by 9.9 thousand people. However,

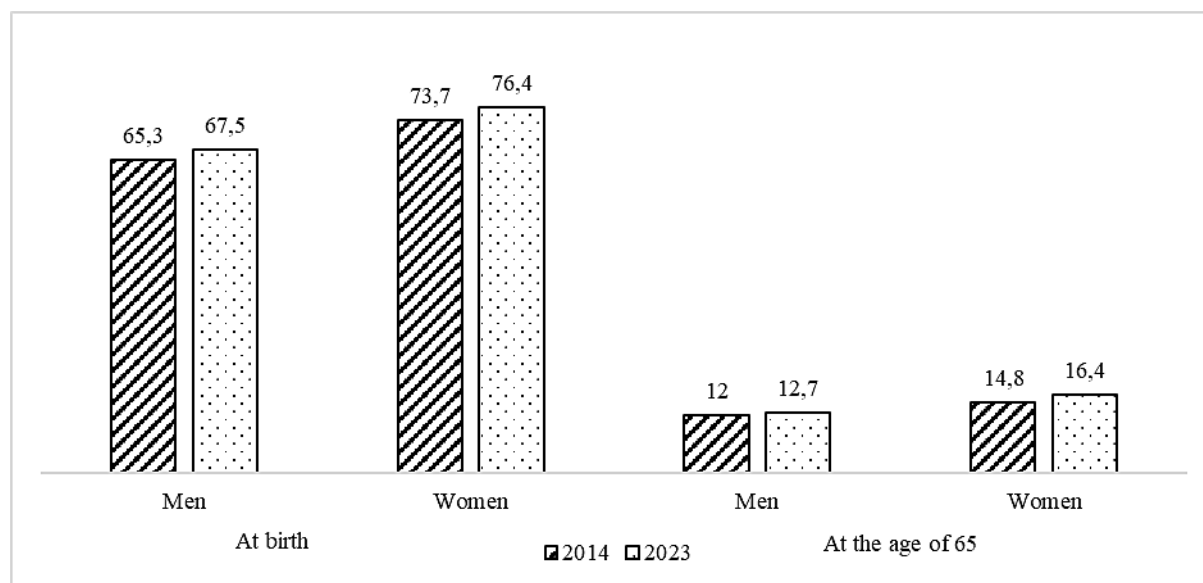
in the following years, this trend reversed – the number of elderly people aged 60+ exceeded the number of children (by 186.8 thousand people in 2024). As a result, the intergenerational ratio, which was 98.1% in 2014, increased to 144.1% in 2024 (Table 2). As for elderly people aged 65+, throughout 2014–2024, their number remained lower than that of children. However, there was a significant reduction in this gap: from 200.0 thousand people in 2014 to just 2.8 thousand people in 2024. This led to a substantial increase in the ratio between the number of people aged 65+ and the number of children: from 61.0% in 2014 to 99.3% in 2024.

In EU countries, the number of elderly people has exceeded the number of children for a long time. Moreover, the “gap” between the number of elderly people and the number of children has widened year by year, which has led to an increase in the intergenerational ratio. While in 2014 the ratio between the number of people aged 65+ and the number of children aged 0–14 was 122.2%, by 2024 it had reached 147.9% (Eurostat).

The acceleration of the population ageing process in the Republic of Moldova is reflected in the increase of its average age. As of the beginning of 2024, it reached 41.1 years, which is 3.7 years higher than at the beginning of 2014 (in EU countries, the median age increased by 2.2 years). Life expectancy at birth has also increased: from 69.4 years in 2014 to 71.9 years in 2023, that is, by 2.5 years (in the EU, life expectancy at birth was 81.4 years). During the same period, life expectancy at birth for men rose from 65.3 years to 67.5 years (an increase of 2.2 years), and for women – from 73.7 years to 76.4 years (an increase of 2.7 years) – see Figure 1.

An increase in life expectancy is also characteristic for people in older age groups. In 2014, a 65-year-old man could expect to live another 12.0 years, whereas in 2023 – 12.7 years. Thus, a man who reached the age of 65 in 2014 could expect to live to 77.0 years, and in 2023 – to 77.7 years. The life expectancy of a 65-year-old woman increased from 14.8 years in 2014 to 16.4 years in 2023. On average, a woman who reached the age of 65 in 2014 could expect to live to 79.8 years, and in 2023 – to 81.4 years.

Figure 1. Life Expectancy at birth and at age 65, years



Source: statbank.statistica.md

A comparison with EU countries in terms of life expectancy at older ages does not favour the Republic of Moldova. For example, in France and Italy, the life expectancy of a 65-year-old man was 20.0 years and 19.7 years, respectively (7.3 and 7.0 years higher than in the Republic of Moldova) (UN data). The life expectancy of a 65-year-old woman in France and Italy was 23.8 years and 22.8 years, respectively (7.4 and 6.4 years higher than in the Republic of Moldova).

Thus, the Republic of Moldova is experiencing an accelerated population ageing process, which is manifested in a declining share of younger cohorts and an increasing share of older cohorts in the

total population; a rise in the old-age dependency ratio; a worsening intergenerational ratio; and an increase in life expectancy at older ages. Population ageing poses serious challenges for the pension system of the Republic of Moldova, which operates on the principle of intergenerational solidarity: at any given time, pensions are paid to beneficiaries through contributions levied on workers' wages.

4.2. Analysis of the effectiveness of the pension system of the Republic of Moldova

An effective pension system should take into account the interests of three groups of the population: the current generation of pensioners, the current working population, and future generations of citizens. Based on this, the effectiveness of the pension system is determined according to the following criteria:

- *adequacy of pension amounts.* This reflects the interests of the current generation of pensioners: the size of pensions should be sufficient to achieve two objectives: (a) to reduce the risk of poverty among pensioners, and (b) to smooth the decline in people's income after they leave the labour market.

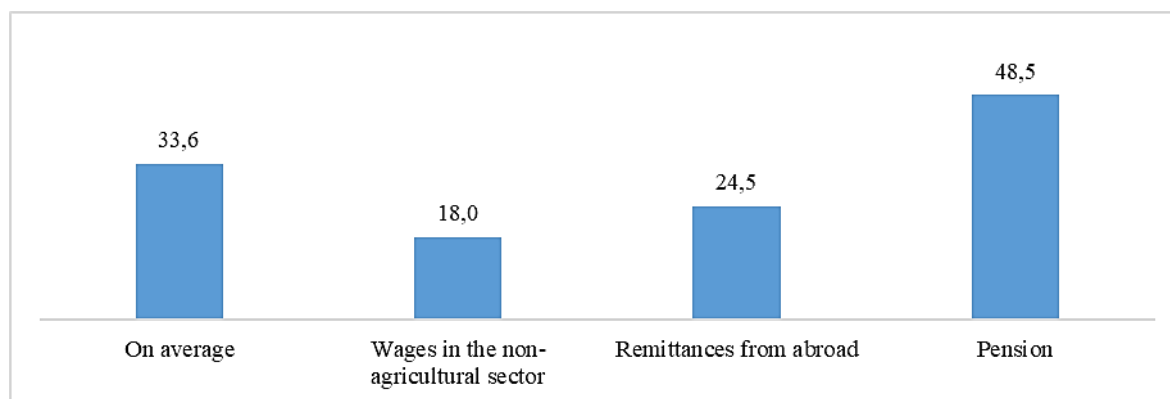
- *affordability of the financing burden.* This criterion reflects the interests of the current working population. It implies an acceptable financial burden on contribution payers to sustain the pension system. This burden should not: (a) undermine the current consumption of contribution payers; (b) discourage their economic activity.

- *long-term sustainability.* This is important for all generations and implies the ability of the pension system to meet its obligations over the long term. Both the "adequate" level of pensions and the "affordable" financing burden of the pension system should remain relatively stable.

The main indicators characterising the adequacy of pension benefits are: (i) the absolute poverty level of pension benefit recipients; and (ii) the pension replacement rate for lost earnings.

Pension benefit recipients face the highest risk of falling below the poverty line. Among different types of households, pensioner households have the highest poverty level. In 2024, the absolute poverty rate for households whose heads rely primarily on pensions as their main source of income was 48.5% (1.44 times higher than the national average) – see Figure 2.

Figure 2. Poverty rate by main source of income of household heads, 2024, %



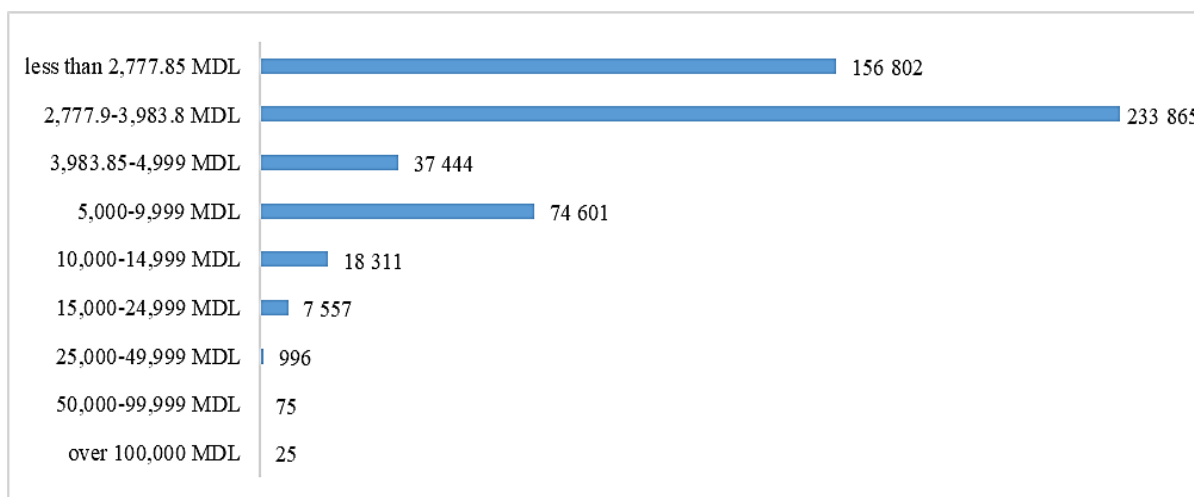
Source: compiled based on data from statbank.statistica.md

Thus, nearly every second household whose head relies primarily on a pension as the main source of income lives in absolute poverty, whereas, on average across the country, it is only every third household. In pensioner households, the risk of falling below the poverty line is significantly higher than in households whose heads have other sources of income. This is particularly true for households whose heads' main source of income is wages in the non-agricultural sector (poverty rate – 18.0%, which is 2.69 times lower than in pensioner households) and households whose heads' main source of income is remittances from abroad (poverty rate – 24.5%, which is 1.98 times lower than in pensioner households). Therefore, having a pension as the main source of household income is a factor that predisposes households to fall into poverty.

The high level of poverty among pensioner households is largely due to significant inequality in the distribution of pension resources. As of the end of 2024, there were 529,676 old-age pension recipients (78.7% of the total number of pensioners), with an average pension amount of 3,983.85 MDL per month. A total of 390,667 people, or 73.8% of old-age pensioners, received pensions below this average amount (see Figure 3). At the same time, 139,009 people, or 26.2% of old-age pensioners, received pensions above the average. Thus, there is a clear asymmetry in the distribution of pensioners by pension amount, with almost three-quarters of old-age pension recipients concentrated in the lower part of the distribution and just over one-quarter in the upper part. Moreover, the number of people receiving pensions significantly higher than the average has been increasing year by year (in 2024, 100 people received pensions exceeding 50,000 MDL per month).

Pensioners receiving pensions below the minimum old-age pension amount face a particularly high risk of falling into poverty. It should be noted that one of the conditions for receiving the minimum pension (2,777.85 MDL per month) is having a full insurance contribution period – 34 years for men (established as of 1 July 2018) and for women (established as of 1 July 2024). If the length of the contribution period is less than 34 years, the pension is granted in a smaller amount, proportional to the time during which contributions were paid. In 2024, the number of pensioners receiving pensions below the minimum amount was 156,802 people, or 29.6% of all old-age pensioners. This represents a large group of people whose pension payments are clearly inadequate, making their fall into poverty inevitable. Thus, low pension amounts and the asymmetrical distribution of recipients, which predetermine the high risk of poverty among pensioners, indicate the inefficiency of the pension system in the Republic of Moldova.

Figure 3. Distribution of the number of old-age pensioners by pension amount (as of 01.01.2025), persons



Source: Court of Accounts of the Republic of Moldova, 2025.

An important indicator characterising the adequacy of pension benefits is the *replacement rate*. The pension replacement rate for lost earnings (which is determined as the ratio of the average old-age pension to the average monthly gross wage) is the main criterion for assessing the level of pension provision in any country. Comparing the old-age pension with wages is entirely reasonable if the pension system is viewed as a mechanism for smoothing the level of consumption throughout the life cycle. A higher replacement rate means greater compensation for the loss of labour income after retirement. Therefore, the objectives of pension policy are often formulated in terms of achieving a certain target replacement rate.

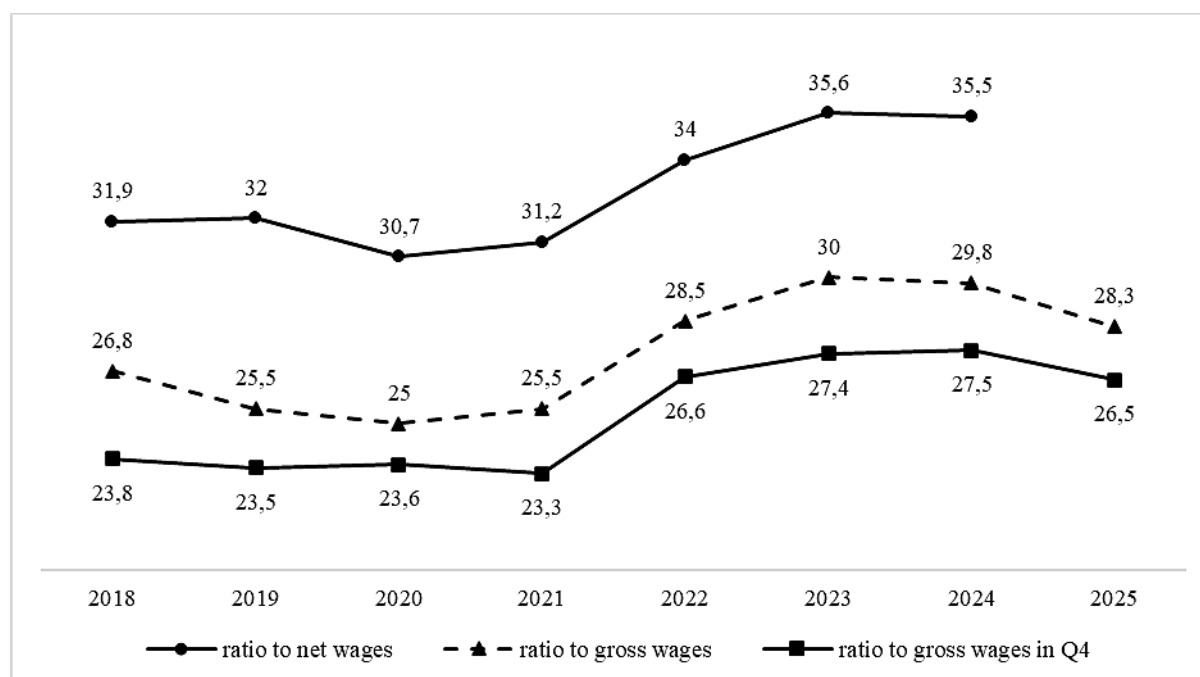
The use of the replacement rate makes it possible to determine how retirement income compares to earnings before retirement. For such an assessment, the pension amount during the first year of retirement should be compared to the earnings in the preceding period. In this case, the numerator should reflect the average pension amount of only those individuals who retired in the analysed year, while the denominator should show their average earnings in the previous year. In addition, it is advisable to use net earnings – that is, the average wages after taxes and various deductions. However,

in many cases a simplified calculation is used, in which the average pension amount of all pensioners, regardless of their year of retirement, is compared with the average gross wage of all employees in the analysed year. This approach is largely due to the lack of necessary statistical data and the significant difficulty in accessing it. In this regard, it is reasonable to calculate the replacement rate in several variants. The first variant: the old-age pension amount (as of 1 January of the respective year) is compared to the gross average monthly wage of the previous year. The second variant: the old-age pension amount (as of 1 January of the respective year) is compared to the gross average monthly wage in the fourth quarter of the previous year. This makes it possible to approximate the date when the pension amount is fixed and the period when the employee earned their wages. The third variant: the old-age pension amount (as of 1 January of the respective year) is compared to the net average monthly wage of the previous year. This allows for a more accurate assessment of the replacement rate, as the pension amount (which is not subject to taxation or deductions) will be compared to the employee's "net" earnings.

The replacement rate in the Republic of Moldova remains at a low level. The lowest replacement rate values (23.3% – 27.5%) were recorded when using the gross average monthly wage in the fourth quarter for the calculations (see Figure 4). This is due to the fact that wages in the fourth quarter were significantly higher than the annual average. As a result, the ratio of the pension amount to the wage in the fourth quarter will be lower than when using the annual average wage in the calculations. The replacement rate calculated using the gross average monthly wage for the entire year showed higher values, ranging from 25.0% to 30.0%. The highest replacement rate values (30.7% – 35.6%) were recorded when using the net average monthly wage for the calculations.

It should be noted that the dynamics of the replacement rate are ambiguous. At the beginning of the analysed period, the growth of the old-age pension lagged behind the growth rate of wages, which led to a decrease in the replacement rate. In subsequent years, the replacement rate increased; however, by the end of the analysed period, this trend reversed. The replacement rate (calculated as the ratio of the pension amount to the gross wage of the previous year) as of 1 January 2025 was 28.3%, which is 1.7 percentage points lower than in 2023 and 1.5 percentage points lower than in 2024. This is due to the fact that in 2025 the average old-age pension increased by 25.9% compared to 2023 and by 8.1% compared to 2024, whereas the average monthly wage grew at a higher rate – by 33.9% and 14.1%, respectively.

Figure 4. Old-age pension replacement rate (as of 1 January of the respective year), %



Source: statbank.statistica.md

Retirement objectively leads to a deterioration in the material well-being of the working person. The issue of preventing poverty caused by retirement has been addressed in several ILO documents. These documents specify that the amount of the pension granted should not be less than 40% of the income lost due to retirement.

This standard is set out in ILO Convention No. 102 "On Minimum Standards of Social Security" (1952) and states that the old-age pension should be no less than 40% of the wage. The later ILO Convention No. 128 "On Invalidity, Old-Age and Survivors' Benefits" (1967) increases this level to 45% (the same ratio is contained in the documents of the European Union). An even higher level - 55% - is determined by ILO Recommendation No. 131 "On Invalidity, Old-Age and Survivors' Benefits", which establishes that the minimum old-age pension introduced by national legislation should guarantee a minimum standard of living.

In the Republic of Moldova, even the modest level of ILO Convention No. 102, established back in 1952, has not been achieved. At the same time, it is necessary to take into account that the ILO recommendation, according to which the amount of old-age pension should not be less than 40% of lost earnings, applies to pensioners with 30 years of service who received an average salary. The relevance of this standard is also limited by the fact that it was adopted in a fundamentally different socio-economic situation (in particular, with minimal labour activity of women, which is reflected in the object of the recommendation – "a pensioner with a wife of retirement age"). Therefore, it is advisable to analyse the ILO recommendation for its compliance with modern international practice.

They show that the replacement rate (within the framework of compulsory pension insurance) has significant variations across countries. Thus, the replacement rate in Greece is 80.8%, Spain – 80.4%, Italy – 76.1%, Luxembourg – 74.8%, the Netherlands – 74.7% (excluding voluntary insurance) – Table 3. On the other hand, in a number of OECD countries the replacement rate is less than the ILO recommended level of 40% (Switzerland, Latvia, USA, Chile, Canada). In Poland, Estonia, Ireland and Australia the replacement rate is less than 30%, and in Lithuania – less than 20%. On average, the replacement rate in OECD countries is more than 50%.

Table 3. Replacement rates in OECD countries¹

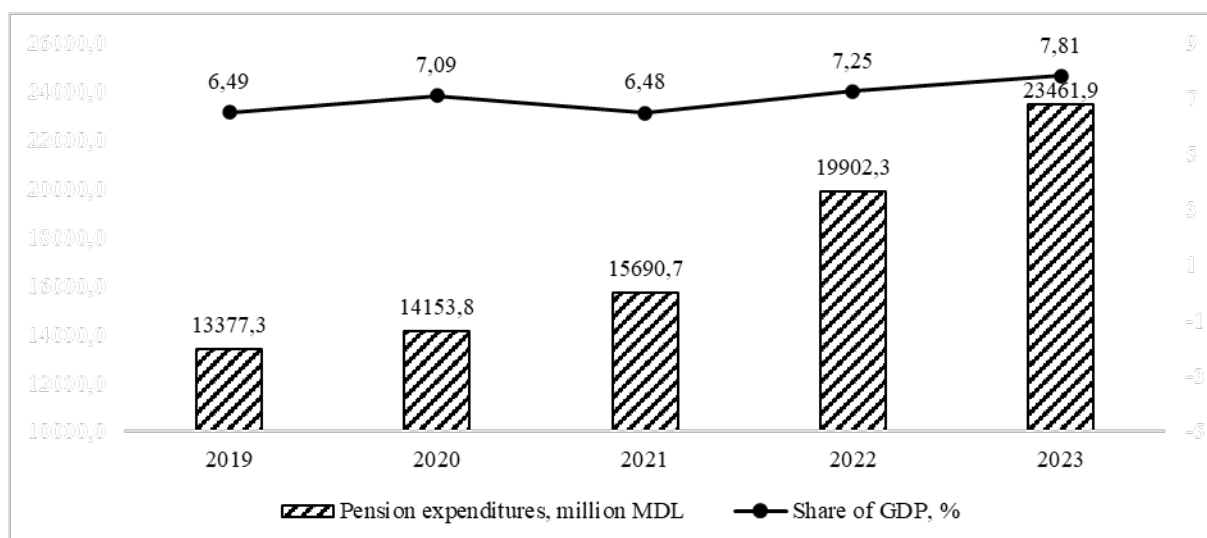
Country	Replacement rate, %	Country	Replacement rate, %
Greece	80.8	Belgium	43.5
Spain	80.4	Iceland	43.1
Italy	76.1	Slovenia	42.1
Luxembourg	74.8	United Kingdom	41.9
Netherlands	74.7	Switzerland	39.9
Austria	74.1	Latvia	39.8
Denmark	73.1	USA	39.1
Sweden	62.3	Chile	37.1/34.9 ²
Finland	58.4	Canada	36.8
France	57.6	Poland	29.3/22.9 ²
Slovakia	54.9	Estonia	28.1
Hungary	52.4/49.0 ²	Ireland	26.2
Czechia	47.4	Australia	26.0/23.8 ²
Norway	44.5	Lithuania	18.2
Germany	43.9	OECD average	50.7/50.1²

Notes: ¹) Excluding voluntary pension insurance; ²) For men and women, respectively.

Source: OECD, 2023.

The affordability of the pension burden is assessed by the amount of expenditure on pension payments and their ratio to GDP. In the Republic of Moldova, expenditure on social insurance pensions increased from 13,377.3 million lei in 2019 to 23,461.9 million lei in 2023, or by 75.4% (Figure 5). During this period, the volume of GDP (in current prices) increased by only 45.7%, which led to an increase in the ratio of expenditure on pension payments to GDP. This ratio increased from 6.49% in 2019 to 7.81% in 2023.

Figure 5. Pension expenditures and their ratio to GDP in the Republic of Moldova



Source: calculated and constructed by the authors based on the data from: statbank.statistica.md

Comparison with other countries showed that the ratio of pension expenditure to GDP in the Republic of Moldova is higher than in some developed countries (Table 4). This applies to countries such as Canada, Great Britain, the Netherlands, and Lithuania. However, compared to Italy, Greece, France, and Austria, the ratio of pension expenditure to GDP in the Republic of Moldova is significantly lower. On average, in OECD countries, this indicator (7.7%) is higher than in the Republic of Moldova (in 2019 - 6.49%). At the same time, polarization of OECD countries in terms of pension expenditure is noticeable. In some countries, the ratio of pension expenditure to GDP varies from 15.9% to 12.4% (Italy, Greece, France, Austria, Portugal), while in others it ranges from 4.9% to 6.6% (Great Britain, Canada, the Netherlands, Lithuania, Estonia). This shows that each OECD country has its own national pension model, the functioning of which is ensured by different insurance burdens.

Thus, the Republic of Moldova has a higher pension expenditure to GDP ratio than some developed countries, but it is below the OECD average.

Table 4. Payments under mandatory pension insurance schemes in OECD countries, 2019

Country	% GDP	Country	% GDP
Italy	15.9	Czechia	7.9
Greece	15.7	Hungary	7.6
France	13.4	Slovakia	7.1
Austria	13.0	USA	7.1
Portugal	12.4	Norway	7.1
Finland	11.9	Sweden	7.0
Spain	11.3	Latvia	6.8
Poland	10.9	Estonia	6.6
Belgium	10.7	Lithuania	6.4
Germany	10.4	Netherlands	5.0
Slovenia	10.0	Canada	5.0
Luxembourg	8.7	United Kingdom	4.9
Denmark	8.1	OECD average	7.7

Source: OECD, 2023.

The affordability of the pension burden is also determined by the amount of insurance contribution rates. In the Republic of Moldova, for many years, the rate of the individual insurance contribution of the employee was 6% of his monthly salary, and the rate of the employer's insurance contribution was 23% of the wage fund of his employees. However, from January 1, 2021, the procedure

for paying insurance contributions changed. According to it, the payment of pension insurance contributions in full became the responsibility of the employer only, and he contributes an amount equal to 29% of the wage fund of employees. The employee was exempted from the obligation to pay an individual pension contribution. However, if previously 4.5% was withheld from the employee's salary to the health insurance fund and the same amount was contributed by the employer, now all 9% is deducted from the employee's salary. (In general, the rate of the individual insurance contribution of the employee decreased by 1.5 percentage points, which indicates a decrease in the insurance burden on the employee).

In the Republic of Moldova, with the standard rate of mandatory social contributions of 29.0%, employers in the private sector, as well as universities and health care institutions, pay 24% of the employees' wage fund. The same rate applies to employers in agriculture (legal entities and individuals), with employers paying only 18%, and 6% is financed from the state budget.

The transferred insurance contributions finance not only social insurance pensions: old-age pensions, disability pensions, survivor's pensions, but also social insurance benefits (temporary disability benefits, including child care benefits; disease prevention and rehabilitation benefits; maternity benefits; child care benefits until the child reaches 3 years of age; unemployment benefits; funeral benefits). At the same time, the data on OECD countries provided in (OECD, 2023) contain information on the rates of mandatory pension contributions to finance only old-age pensions and survivor's pensions. This must be taken into account when comparing the affordability of the pension insurance burden between the Republic of Moldova and OECD countries, where the average level of pension contributions is significantly lower and amounts to 18.2%.

The rates of compulsory pension insurance in OECD countries are characterized by significant differences in their values. While it reaches 33.0% in Italy, 28.0% in the Czech Republic, 27.8% in France, in Korea the rate of pension contributions is 9.0%, in Lithuania - 8.7%, and in Mexico - 6.3%. Thus, the differentiation in compulsory pension insurance rates between their highest value of 33.0% (Italy) and the lowest value of 6.3% (Mexico) is more than 5 times.

It should be noted that in the compulsory pension insurance system in most OECD countries only state programs operate, in some of them only private programs (Chile, Denmark, Australia, Mexico), and in Israel, Sweden, Iceland, Norway and Switzerland both state and private programs operate. At the same time, if in Israel the rate of pension contributions under the state program is only 2.1 percentage points higher than under the private program, then in Norway this excess is 10.6 times, and in Sweden - 3.9 times. And, conversely, in Iceland the rate of pension contributions under the private program is 2.4 times higher than under the state program, and in Switzerland - 1.5 times.

In most OECD countries, the main role in forming funds for pension payments belongs to employers. At the same time, the rates of their pension contributions range from 23.8% (Italy) and 21.5% (Czech Republic) to 4.5% (Korea). It should be noted that in Lithuania, employers do not make mandatory insurance pension contributions.

Employees bear a smaller burden of financing pension systems. In some OECD countries (Australia, Estonia), they have not participated in this financing at all until recently, or their financial contribution was relatively small (USA - 5.3%, Canada - 5.7%. Korea - 4.5%, Slovakia - 4.0%). However, in most countries, the rates of employees' pension contributions were higher and amounted to 15.5% in Slovenia, 11.3% in France, 10.0% in Latvia, and 4.35% in Switzerland. In the Republic of Moldova, starting in 2021, a 0% rate of individual insurance contributions for employees is in effect.

The high rate of contributions for compulsory social insurance, on the one hand, and the low level of pensions, on the other, indicate the insufficient efficiency of the country's pension system.

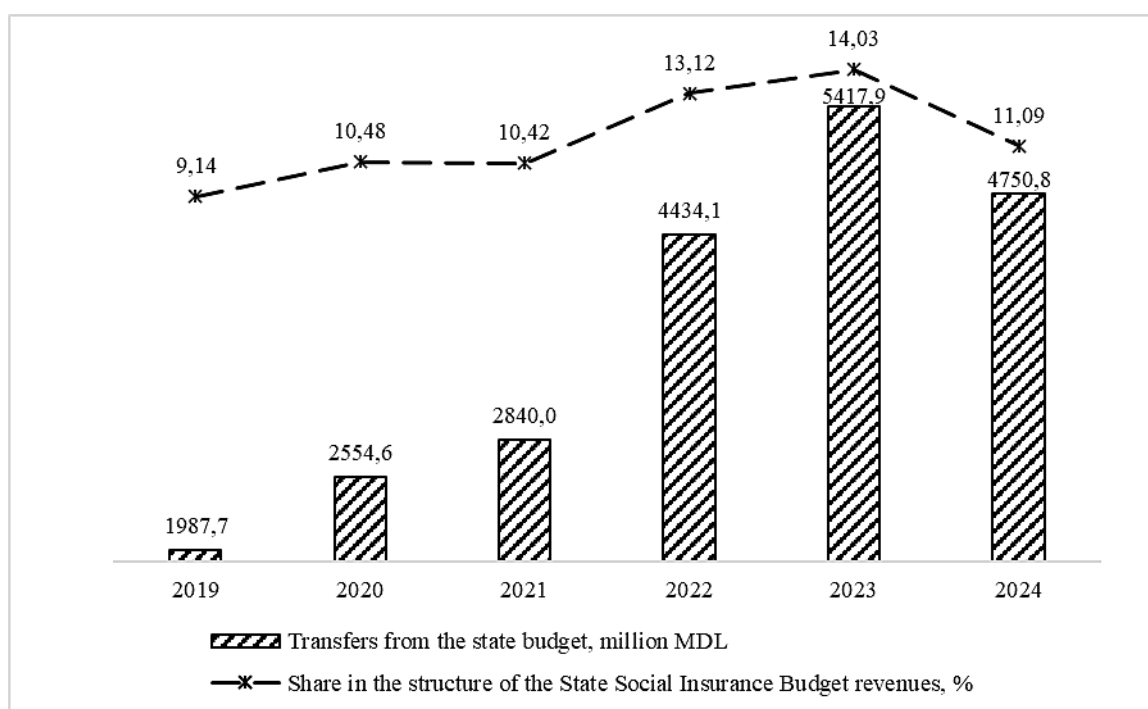
The main threat to the *long-term financial sustainability* of the pension system of the Republic of Moldova is the deterioration of the demographic situation in the country. According to demographic forecasts, the proportion of the population of retirement age will increase and the proportion of the population of working age will decrease. The number of employees will decrease, which will lead not only to the impossibility (all other things being equal) of maintaining the existing ratio of pensions and wages, but will also create high risks of financial instability of the pension system.

Therefore, in order to strengthen the long-term financial sustainability of the pension system, it is necessary to improve the ratio between the number of employees and pensioners. In this case, only employees who are insured persons and from whose wages employers make insurance contributions to

the state social insurance budget should be taken into account. In recent years, the number of employees - payers of insurance contributions has tended to increase: from 806.2 thousand in 2021 to 823.8 thousand in 2024 (by 17.6 thousand, or 2.2%). During this period, the number of pensioners of all categories decreased from 674.4 thousand to 672.7 thousand (by 1.7 thousand, or 0.2%). As a result, the pensioner support ratio increased, calculated as the ratio of the number of payers of insurance contributions to the number of pensioners. While in 2021 there were 119 people per 100 pensioners. - payers of insurance contributions, in 2024 their number increased to 122 people. However, by international standards, this ratio is insufficient for effective financing of a pension system based on insurance principles.

To maintain the financial sustainability of the pension system, the nature of the relationship between the state social insurance budget (SSIB) and the state budget is of significant importance. For many years, the SIB has been financially dependent on the state budget, which is reflected in the growth trend of transfers from the state budget to cover the SIB deficit. In 2019-2024, the volume of these transfers increased from 1987.7 million lei to 4750.8 million lei, or 2.4 times (Figure 6). In the structure of SIB revenues, the share of transfers used to cover the SIB deficit varied from 9.14% to 14.3%. Thus, already now the financial sustainability of the pension system largely depends on transfers from the state budget to cover the SIB deficit. In the future, this dependence is likely to tend to increase.

Figure 6. Transfers from the state budget to cover the deficit of the BGSS and their share in the structure of BGSS revenues



Source: calculated and constructed by the authors based on data from: statbank.statistica.md

5. Conclusion

The analysis showed that the Republic of Moldova is facing an accelerated process of population ageing, which is reflected in the growth of the number and proportion of elderly people, an increase in the demographic burden and a deterioration in the ratio of generations. Despite the increase in life expectancy, its indicators remain significantly lower than those of EU countries.

The results of the study confirmed that the poverty level among pensioner households significantly exceeds the national average, and the distribution of pension payments is clearly asymmetrical, with a significant portion of pensioners receiving payments below the average and

minimum level. The pension replacement rate for lost wages remains consistently low and does not reach the minimum ILO standards.

In addition, the analysis showed the growing financial dependence of the pension system on state budget transfers and the insufficiency of the ratio of the number of insurance premium payers and pensioners to ensure long-term sustainability.

The above gives grounds for concluding that the pension system of the Republic of Moldova is ineffective and unprepared for the upcoming demographic challenges. The need to maintain even the very modest current level of pension payments in the future with limited possibilities for financing the pension system makes it even more vulnerable.

At the same time, although the old-age dependency ratio in the Republic of Moldova has increased considerably over the last decade, it is still 1.7 times lower than the EU average. This difference creates an opportunity to adopt preventive measures before demographic pressures reach critical levels. Drawing on the experience of EU countries, several directions can be considered to support sustainable pension reforms: diversifying the system by complementing the pay-as-you-go pillar with funded components; encouraging active ageing and longer participation in the labour market; strengthening minimum pension guarantees in order to reduce poverty among the most vulnerable groups of retirees. Incorporation of such measures into national policy would help mitigate the negative effects of demographic ageing and align the Moldovan pension system more closely with European standards.

Some of these measures are already partially reflected in Moldovan legislation and policies. However, their implementation remains limited, fragmented, or delayed, which makes the system still vulnerable to demographic pressures. Drawing on the experience of EU countries can therefore provide valuable guidance for consolidating and extending these reforms.

Authors' contribution: *Introduction, R.A., H.E.; Literature review, H.E.; Methodology and data, H.E.; Research results and comments, R.A., H.E.; Conclusion, R.A.*

Acknowledgement: *The article was developed within the framework of Subprogram 030101 „Strengthening the resilience, competitiveness, and sustainability of the economy of the Republic of Moldova in the context of the accession process to the European Union”, institutional funding.*

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