

# FINANCIAL RESILIENCE OF PUBLIC HEALTH IN THE REPUBLIC OF MOLDOVA

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DOI: <https://doi.org/10.65672/jfme.2025.1.20>

## **Abstract:**

*The healthcare system, like other areas of the national economy, is constantly changing, driven by the development of medical techniques and technologies, improvements in medical performance, and the refinement of treatment techniques and methods. The improvement of medical management is a consequence of the development of medical processes and culture, which ultimately contributes to the improvement of the quality of medical services and the effectiveness of treatments, which is ensured on an ongoing basis through financial resilience in the healthcare system.*

*Financial resilience in medicine refers to the capacity of the health system to provide equitable and accessible services in the face of changes in certain socio-economic factors and economic, social, and epidemiological shocks.*

*The presented study proposes to conduct research on the current socio-economic situation in the Republic of Moldova, characterized by accelerated demographic changes and budgetary constraints, and to propose innovative economic and financial solutions to ensure the economic resilience of the healthcare system.*

*Based on the theoretical concept, financial resilience in health is perceived as the ability of the healthcare system to absorb economic, demographic, and epidemiological shocks while maintaining equitable access to healthcare services. In the Republic of Moldova, this issue is becoming increasingly important, given the current vulnerable situation created by objective political factors (the war in Ukraine) and subjective factors, such as demographic factors, including an aging population and the migration of medical personnel, which are also putting additional pressure on the financial sustainability of the healthcare system.*

*The research was based on official statistical data from NHIC 2021–2024, WHO, Index Mundi, Eurostat, and demographic reports from IPN, the National Bureau of Statistics, and specialized literature on informal payments and financial protection for patients (Stepurko et al., 2015).*

*The research methodology is expressed through the use of statistical research methods: comparative analysis of the medical system in the Republic of Moldova vs. Romania and the EU average); statistical-descriptive analysis of the evolution of health expenditure in the period 2000-2024; correlational method (the link between the level of funding and the degree of protection of households against catastrophic expenditure), as well as the institutional*

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*case study of budgetary payments to the NHIC by regional hospitals. The results showed a relatively low level of public health funding in Moldova (3.5–4.8% of GDP in 2023), which argues for the need to use direct private co-payments by the population. Approximately 17% of households face catastrophic expenditures, and 7% of the population remains below the poverty line due to medical costs. Although 88% of the population in the Republic of Moldova contributes to the mandatory health insurance system, the coverage provided remains only partial, while the persistence of informal payments and the limited list of reimbursed medicines continue to hinder equitable access to medical services and treatment.*

*In conclusion, we propose increasing the share of public health expenditures, strengthening governance and financial transparency, and developing innovative financing mechanisms — including public–private partnerships, performance-based funding instruments, innovation and prevention funds, and the earmarking of taxes on harmful products — in order to ensure the sustainability and equity of the health system. The Republic of Moldova needs coherent policies to reduce structural vulnerabilities and ensure the long-term financial resilience of public health. The financial resilience of health in the Republic of Moldova also depends heavily on the financial instrument of the money supply (to avoid inflation) and the relative stability of the national currency, which influences the costs of medical imports and the sustainability of external financing. EU countries with stable currencies and robust money supplies can finance health sustainably and absorb external shocks. The Republic of Moldova, with a smaller monetary base and a vulnerable leu, faces lower financial resilience, being dependent on the balance between the money supply and market demand for medical services, including the prices set for them.*

**Keywords:** *public health, health policies, budget financing, direct payments, financial resilience*

**JEL classification:** *A1, I1, H51, P10*

## **Introduction**

The financial resilience of the healthcare system refers to the ability of medical institutions to maintain the functionality and accessibility of services in the face of economic or demographic shocks (OECD, 2023). In the Republic of Moldova, this resilience is being tested by factors such as rising medical costs, an aging population, the migration of medical personnel, and the state's fiscal constraints. Following the COVID-19 pandemic and the energy crisis of 2022–2023, the Moldovan healthcare system was forced to adjust its expenditure structure, highlighting the need for proactive financial governance and the ability to absorb external shocks.

## **Theoretical framework**

According to the literature (Kruk et al., 2017; Stepurko et al., 2015), financial resilience is based on three main pillars:

1. **Absorption capacity** – the system can maintain service levels in times of crisis;
2. **Adaptability** – adjustment of budgetary and institutional structures;
3. **Transformability** – reforming financing models to increase efficiency.

In the Republic of Moldova, the central financing mechanism is the National Health Insurance Company (NHIC), which manages public funds for compulsory insurance. However, the budget structure remains vulnerable due to the low share of public expenditure and dependence on payroll contributions in an economy characterized by a high degree of informality (WHO, 2023).

### Research methodology

This research adopts a quantitative-descriptive and comparative approach, aimed at assessing the relationship between the level of healthcare system funding and the degree of financial protection of the population in the context of the Republic of Moldova, compared to Romania and the European Union average. The empirical basis of the analysis consists of official statistical data from national and international sources – the National Health Insurance Company (NHIC, 2021–2024), the National Bureau of Statistics (NBS), Eurostat (2024), and the WHO Global Health Expenditure Database. These sources ensure the comparability and relevance of the indicators used, allowing for the identification of consistent trends at the macroeconomic and institutional levels. Methodologically, the research applies comparative analysis to highlight the structural differences between the health systems analyzed and **the correlational method (Pearson)** to determine the link between public health expenditure (% of GDP) and the proportion of households affected by catastrophic medical expenses (%). The results of the almost perfect negative correlation ( **$r = -0.9996$ ,  $p < 0.05$** ) confirm the direct interdependence between the level of public investment and the degree of financial resilience of the population.

Institutional case studies were also used to examine the mechanisms for financing and managing resources within the NHIC, and district hospitals, in order to understand the practical application of financial protection policies.

The main indicators analyzed include:

- public health expenditure (% of GDP);
- direct private expenditure (% of total health expenditure);
- proportion of households affected by catastrophic health expenditure (%);
- health insurance coverage (% of population).

By integrating these dimensions, the proposed methodology allows for the assessment of the resilience of the healthcare system from a multidimensional perspective, highlighting both the financial component and the social impact of health policies.

### Results and comparative analysis

The analysis highlights a major structural gap between Moldova and the EU average. Public funding for health in Moldova is almost half the European average, and the share of direct private expenditure remains among the highest in the region (43%). (Table 1).

**Table 1 Selected indicators of financial resilience (2021–2024), %**

Country / Indicator	Public health expenditure (GDP, 2023)	Direct private expenditure (total)	Households with catastrophic expenses	Insurance coverage
Republic of Moldova	4,1	43	17	88
Romania	6,4	21	11	95
EU average	8,1	15	7	98

Source: NHIC (2024), OMS (2024), Eurostat Health Accounts (2024)

The phenomenon of informal payments, estimated at around 8–10% of total medical expenses (Stepurko et al., 2015), reduces transparency and affects patients' financial protection. In addition, 17% of households report medical expenses exceeding the threshold of 10% of disposable income, and 7% of citizens are pushed below the poverty line due to medical costs (WHO, 2024).

At the macroeconomic level, health financing is influenced by **currency stability** and the **national money supply**. The depreciation of the Moldovan leu by about 12% in 2022–2023 increased the costs of medical imports, reducing the efficiency of the NHIC budget.

### Correlational analysis of financial resilience

In order to highlight the link between the level of public funding of the health system and the degree of financial protection of households, Pearson's correlation method was applied to the data available for 2023 for the Republic of Moldova, Romania, and the European Union average. The analysis was based on the following indicators: public health expenditure (% of GDP) and the proportion of households affected by catastrophic health expenditure (%), calculated in accordance with WHO methodology (Global Health Expenditure Database, 2024).

The statistical results revealed a **Pearson correlation coefficient** of  $r = -0.9996$  ( $p = 0.018$ ), indicating an almost perfect negative relationship between the two variables analyzed. In other words, as the share of public expenditure in GDP increases, the proportion of households bearing catastrophic medical expenses decreases significantly.

This relationship is empirically confirmed in the case of the three entities analyzed:

- Republic of Moldova – 4.1% of GDP allocated to public health, 17% of households affected;
- Romania – 6.4% of GDP, 11% of households affected;
- EU average – 8.1% of GDP, 7% of households affected.

The economic interpretation of these results highlights the fact that the level of public funding is a key determinant of the financial resilience of health systems. Insufficient allocation of public resources leads to increased household dependence on out-of-pocket payments, amplifying the risk of social exclusion and inequity in access to healthcare. In contrast, strengthening public funding correlates with better protection of the population and reduced economic vulnerability of households.

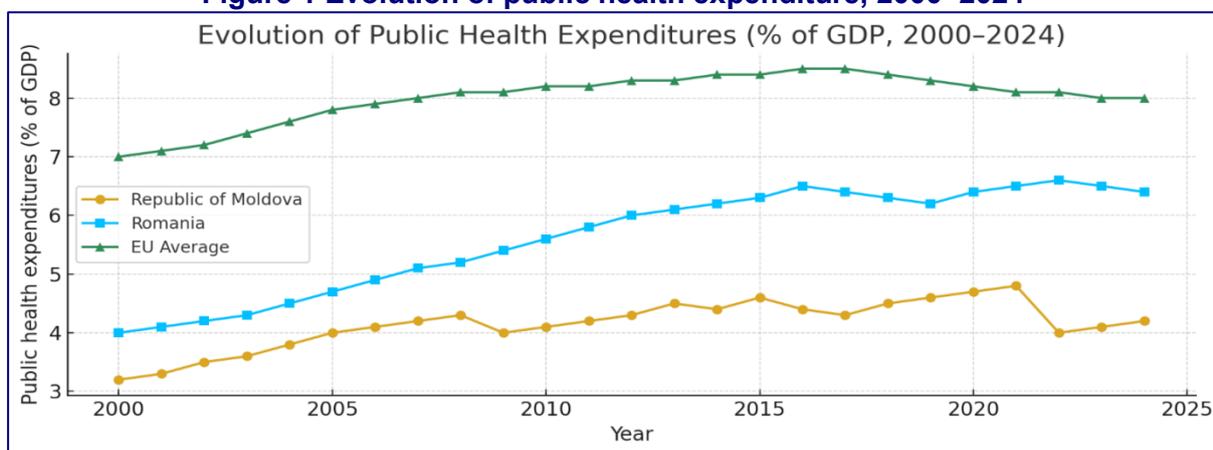
Therefore, the results support the hypothesis that the financial resilience of the healthcare system depends directly on the structure of funding sources and the share of state intervention in covering medical costs. In the context of the Republic of Moldova, a gradual

increase in public spending to the European minimum level could lead to a significant reduction in the financial pressure on the population, strengthening the equity and sustainability of the healthcare system.

The author mentions that Figure 1, illustrates a comparative evolution of public expenditure between 2000 and 2024, highlighting the persistent gap between the Republic of Moldova and European standards.

The interpretation of these data suggests that real financial resilience can only be achieved by increasing the share of public expenditure, while reducing the pressure of direct payments on households. Strengthening the role of the NHIC, and expanding drug reimbursement mechanisms would be essential measures to reduce current vulnerabilities.

**Figure 1 Evolution of public health expenditure, 2000–2024**



Source: prepared by the author based on data from NHIC (2024), WHO (2024), and Eurostat Health Accounts (2024)

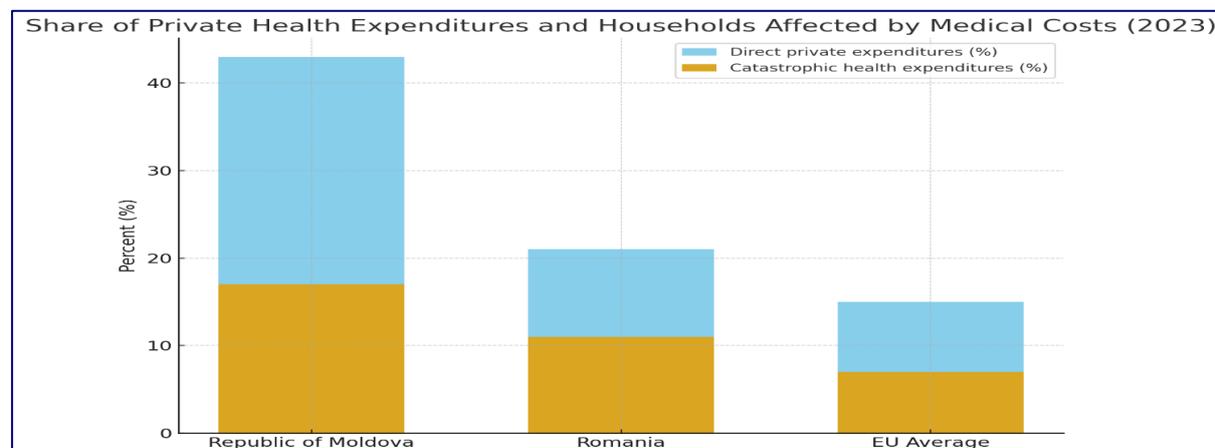
### Comparative analysis of the structure of public and private health expenditure

The structure of healthcare financing in the Republic of Moldova reflects the balance between public and private contributions, which is a key indicator of financial sustainability and equity. A comparative analysis Republic of Moldova, Romania, and the European Union average for the period 2020–2024 highlights significant differences in the share of public and private spending in total healthcare expenditure.

According to WHO (2024) and Eurostat (2024) data, public health expenditure in the Republic of Moldova accounts for approximately 56–58% of total expenditure, while direct private expenditure (out-of-pocket) exceeds 42%, which is considerably above the European average of 15–18%.

In Romania, the structure is somewhat more balanced, with public spending accounting for 70% and private spending for 30%, but still far from the European Union model, where public funding exceeds 80–82%.

**Figure 2 Share of out-of-pocket expenditures and households affected by catastrophic health expenditures in Moldova, Romania, and the EU average (2023)**



Source: prepared by the author based on data from NHIC, (2024), WHO (2024), Eurostat Health Accounts (2024)

These discrepancies reflect a low level of financial protection in the Republic of Moldova, where the population bears a significant portion of medical costs through direct payments, including informal payments and unofficial contributions. As a result, the health system is exposed to the risk of chronic underfunding, and access to medical services becomes dependent on individual income and geographical location.

Figure 2, highlights two key dimensions of financial vulnerability in health systems: the share of out-of-pocket expenditures and the proportion of households facing catastrophic health expenditures.

The data show that Moldova has the highest values in both categories. Out-of-pocket expenditures account for 43% of total health expenditures, reflecting the system's significant dependence on population contributions. At the same time, 17% of households incur catastrophic health expenditures, i.e., exceeding the threshold of 10% of disposable income. By comparison, Romania has moderate values—21% for direct expenses and 11% for affected households—which shows a better level of financial protection for patients, but still below European standards.

In the European Union, the average share of private expenditure is 15%, and only 7% of households bear catastrophic costs, confirming the effectiveness of health insurance systems and compensation schemes.

The comparative analysis thus reveals a systemic gap between the Republic of Moldova and European standards, with direct effects on the equity and financial sustainability of the healthcare system. The high level of out-of-pocket payments is determined both by the limited list of reimbursed medicines and by the persistence of informal payments in hospitals, which indicates fragile financial resilience of households and excessive dependence on individual contributions.

### **Demographic analysis and impact on the financial sustainability of public health**

The financial resilience of the healthcare system cannot be analyzed in isolation from demographic trends, which determine the pressure on public spending and the need for

medical services. In the Republic of Moldova, demographic dynamics are marked by the accelerated aging of the population, declining birth rates, and the external migration of medical workers, phenomena that amplify the vulnerability of the healthcare system.

According to the National Bureau of Statistics (NBS, 2024) and Eurostat (2024), the proportion of the population aged over 65 increased from 10.8% in 2000 to 17.3% in 2024, while the share of the working-age population (15–64 years) decreased from 68.1% to 61.4%. This structural transformation is leading to an increase in the demographic dependency ratio, from 38 to 52 elderly people per 100 working-age people, which means additional pressure on public finances, particularly on the Compulsory Health Insurance Fund (CHIF).

On the other hand, the migration of medical personnel is a factor in the institutional erosion of the system's resilience. NHIC data (2023) show that, in the last five years, the Republic of Moldova has lost over 22% of its specialist doctors and 18% of its nurses through external migration, mainly to Romania, Germany, and Italy. This professional exodus reduces the system's ability to respond to epidemiological shocks (such as the COVID-19 pandemic) and affects the efficient use of internal financial resources.

A comparative analysis with Romania and the EU average shows that countries with a more balanced demographic structure and a stable medical workforce manage to maintain greater financial resilience, even in the face of external economic pressures. In the case of the Republic of Moldova, demographic vulnerabilities amplify the impact of budget constraints, leading to a spiral of underfunding – exodus – inefficiency – vulnerability.

To counteract these trends, integrated policies are needed that combine measures to retain medical staff, incentives for young professionals, and investments in rural health infrastructure. At the same time, the development of automatic financial adjustment mechanisms (indexing NHIC funds to inflation and GDP growth) would ensure the long-term sustainability of the system.

## Discussion

The study of the interdependence between macroeconomic factors and health system financing highlights that monetary stability is one of the fundamental conditions for ensuring the sustainability of public spending and the financial protection of the population. In the context of the Republic of Moldova, where the economy is small and highly dependent on imports, the dynamics of the money supply and the exchange rate directly influence both the costs of medical services and the government's ability to ensure an adequate level of public financing.

### Money supply (M1, M2) and health financing

Expanding the money supply through stimulative monetary policies can help increase the amount of resources available for health care, encouraging investment in infrastructure, equipment, and public health programs. However, in the absence of a correlation with economic productivity, this expansion can generate inflation, including medical inflation — a phenomenon that consists of accelerated price increases for medicines, medical devices, and healthcare services. In the Republic of Moldova, where the money supply is limited and the medical market is heavily dependent on imports, any uncontrolled monetary expansion tends to be reflected in the costs borne by the population, increasing the pressure on out-of-pocket expenses. The government's ability to increase public spending on health thus

remains conditional on a delicate balance between monetary and fiscal policy and dependence on external financing.

### **Exchange rate and impact on medical costs**

Exchange rate fluctuations are a major determinant of healthcare costs. Moldova imports most of its medicines, equipment, and medical supplies, which means that the depreciation of the Moldovan leu (MDL) against major international currencies (the euro and the dollar) has an immediate effect on price increases. This dynamic amplifies budgetary pressure on medical institutions and reduces the accessibility of services for the population. In addition, projects financed by external grants and loans become more expensive in the repayment phase, affecting the financial sustainability of the sector. Therefore, currency stability becomes an essential condition for maintaining the balance between internal and external financing of the healthcare system.

### **Macroeconomic correlation and implications for the resilience of the healthcare system**

In the developed economies of the European Union, currency stability and a solid monetary base enable sustainable health financing, reducing vulnerability to external shocks and keeping catastrophic household expenditure low. In contrast, the Republic of Moldova faces limited financial resilience, driven by the fragility of the national currency and dependence on external financial flows. This situation means that the effectiveness of health policies depends on the ability of the National Bank of Moldova (NBM) to manage the money supply without generating inflation and on the government's ability to ensure a stable exchange rate. Compared to Romania and the EU average, the Republic of Moldova has a low degree of financial resilience, determined by: This situation means that the effectiveness of health policies depends on the ability of the National Bank of Moldova (NBM) to manage the money supply without generating inflation and on the government's ability to ensure a stable exchange rate.

- the low share of public financing (below 5% of GDP);
- inefficient collection of compulsory insurance contributions;
- high dependence on external financing and donors;
- demographic imbalances and migration of specialists.exchange rate.

However, there is visible progress: digitization of NHIC processes, ongoing hospital reform, and a gradual increase in the public health budget (+22% between 2020 and 2024).

The author proposes that in order to strengthen financial resilience, it is necessary to:

1. expand the base of active taxpayers;
2. ensuring transparency of informal payments;
3. develop public-private partnerships in medical infrastructure;
4. create a reserve fund for major health shocks.

## **Conclusions**

The financial resilience of the healthcare system is a fundamental condition for the sustainability of medical services in a context of multiple crises—economic, social, and epidemiological. The study analyzes the evolution of the financial resilience of public health

in the Republic of Moldova between 2000 and 2024, through comparative reporting with Romania and the European Union average. The research highlights the structural vulnerabilities of financing, the impact of budgetary constraints and dependence on external support, but also directions for strengthening financial sustainability.

The financial resilience of Moldova's healthcare system is limited but can be improved. Its consolidation depends on increased public funding, macroeconomic stability, and structural reforms in fund management.

In the long term, sustainability can be achieved by integrating performance-based financing mechanisms; adapting fiscal policies to demographic risks; and coordinating monetary policy (NBM) with health policy to stabilize medical costs.

Thus, the Republic of Moldova is undergoing a financial transition, in which the healthcare system must strike a balance between economic efficiency and social protection. This transition requires not only an increase in public funding, but also optimisation of resource management, institutional transparency and the integration of modern financial monitoring tools.

The relationship between money supply, exchange rates, and health financing reflects a complex balance between macroeconomic stability and social objectives. In the case of the Republic of Moldova, strengthening the financial resilience of the health system requires a prudent monetary policy geared towards controlling inflation and maintaining exchange rate stability. Only such an approach can guarantee the sustainability of health financing and protect the population against the financial risks generated by internal and external economic shocks.

In conclusion, demographics are a crucial determinant of financial resilience. Without an active population base and a stable medical workforce, any increase in public funding risks being only temporary. Thus, the financial resilience of public health in the Republic of Moldova depends directly on the correlation of demographic, social, and economic policies within a strategic framework for sustainable development until 2030.

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