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INNOVATION AND GROWTH IN THE REPUBLIC OF MOLDOVA: EUROPEAN INTEGRATION, STATE AID AND INNOVATION INTERMEDIARIES

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Abstract: Research and innovation are indispensable for sustainable economic growth, which is why the study examines innovation in the Republic of Moldova from the perspective of economic activity and, in this context, highlights the role of state aid for research, development and innovation, as well as the role of intermediaries for innovation. The importance of the efficiency of the use of production factors (total factor productivity), largely due to innovation, is recognized in economic growth theories, while empirical studies prove the importance of innovation for the competitiveness and growth of the European economy in the 21st century.
The Republic of Moldova currently has research and innovation potential, but it does not have complex industrial ecosystems that allow for the commercialization of innovations and, consequently, sustainable economic growth. Structural imbalances, such as the general regulatory framework, the underdevelopment of the financial market and the early stage of development of venture capital, do not stimulate innovation and its commercialization, but two central components that can partially mitigate the imbalances are the subject of research of the study, implicitly: state aid for research, development and innovation, in the context of European integration and; the role of Innovation Intermediaries.
Key words: Innovation, Innovation Intermediaries, European integration, State aid, Economic growth.
JEL Classification: E1; H2; O1; O3; O4.

Introduction

The importance of innovation for the competitiveness of firms and countries is increasingly recognized by researchers and policymakers, while the specialized literature most often defines innovation along four dimensions: the introduction of new products/services, new processes, the opening of new markets, or the use of new resources to create value on the market (Obunike, *et al.*, 2017). At the same time, researchers distinguish different types of innovation, implicitly technological innovation and non-technological innovation (Rahman, *et al.*, 2016), but there is a common understanding of the role of innovation in overall economic growth, as well as the implications of innovation or the inability to innovate for companies—an inability that leads to reduced competitiveness, a difficult transition to the green economy and, consequently, poor performance (Hausman, 2005).

The development of endogenous growth theories has sparked innovation-related research since the 1970s. After the first studies focused on the concept of innovation and its measurement (Hurt, *et al.*, 1977; Midgley, *et al.*, 1978), innovation research later expanded to areas such as innovation capacity and its impact (Venkatraman, 1991; Hult, *et al.*, 2004). In this vein, the most important empirical study of the early 21st century on European competitiveness – *The Draghi report: The future of European competitiveness* – defines the need to accelerate innovation and find new growth engines as the first of the three pillars for the European Union, along with decarbonization and increased security (Draghi, 2024).

Research eventually extends to the determinants of innovation, since its role is practically unanimously accepted for every company and for sustainable economic growth. Various empirical studies dedicated to different countries or groups of countries define different determinants of innovation, which cover a wide range – from institutions and research infrastructure, government policies and incentives, to intellectual property rights (Bate, *et al.*, 2023).

The determinants of innovation in the Republic of Moldova are predominantly monitored within the Global Innovation Index (GII), since relevant empirical studies are yet to be developed in the domestic academic environment. For this reason, the research uses GII data and indicators for the year 2025 to understand the general context regarding innovation, to relate it to the European integration process and, ultimately, to focus on a state aid scheme that stimulates innovation and develops Innovation Intermediaries.

Innovation in the Republic of Moldova: Imbalances Related to Innovation Inputs and Outputs

The development of the GII, a report published since 2007 and, starting in 2011, elaborated in partnership with the World Intellectual Property Organization (WIPO), represents the expression of the importance of innovation for competitiveness and growth for companies and economies as a whole. The GII Index measures innovation at the international level, offering a detailed picture of the state of innovation performance in countries. The index measures three dimensions of innovation at the country level in order to capture innovation ecosystems, namely:

Innovation Input: structured around five core pillars that represent the factors stimulating innovation – creating the necessary conditions for future innovation outcomes.

Innovation Output: structured around two core pillars that measure the results of innovation.

Overall GII score: represents the average of the Input and Output sub-indices (WIPO, 2025, a).

The dynamics of all these indices are negative for the Republic of Moldova compared to the rest of the monitored economies, as evidenced by the GII dropping from position 59 in 2020 to position 74 in 2025. The trend is similar for both the Input and Output indices, with the mention that the Republic of Moldova performs better in terms of innovation results than in terms of innovation inputs (Figure 1).

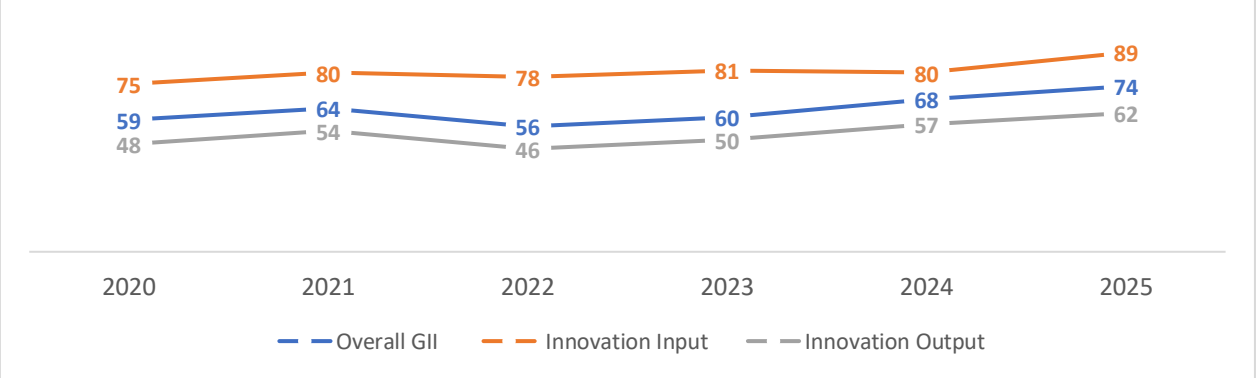


Figure 1. Ranking of the Global Innovation Index (GII) for the Republic of Moldova (2020–2025)

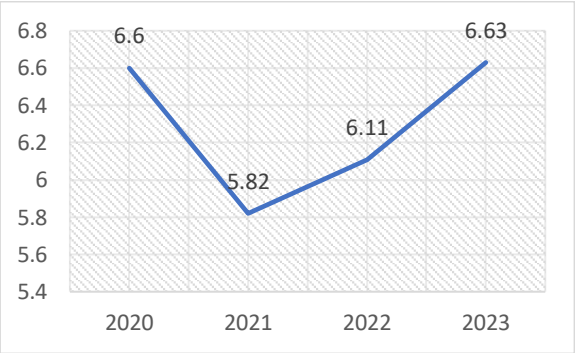
Source: adapted in accordance with WIPO, 2025, b.

Disaggregated, Innovation Input is measured through seven essential indicators within the GII, namely: Expenditure on education; Graduates in science and engineering; Researchers; Gross expenditure on research and development; QS university rankings; Domestic industry diversification; Employment in knowledge-intensive sectors. The first indicator – expenditure on education – is volatile but has shown a slightly positive trend since 2021, reaching 6.63% of GDP in 2023, while the last three are not necessarily representative for the Republic of Moldova, given

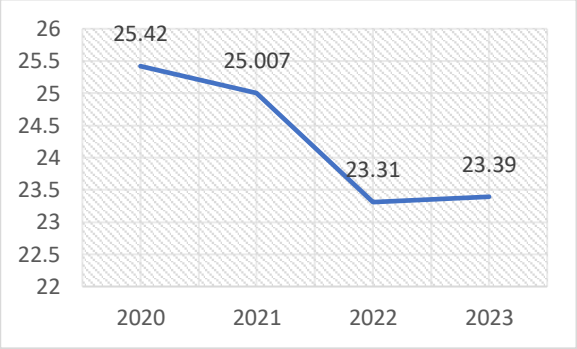
that it has no university listed in the QS World University Rankings in 2024, while the increase in the score for industry diversification (from approximately 1.7 in 2016 to around 2.0 in 2022) and the growth in the share of high-skilled labor (from about 16% in 2016 to 19% in 2023) are largely driven by foreign investments in the automotive and IT sectors.

At the same time, the number of graduates in science and engineering, the number of researchers, as well as expenditure on research and development have shown a negative trend in recent years (Figure 2).

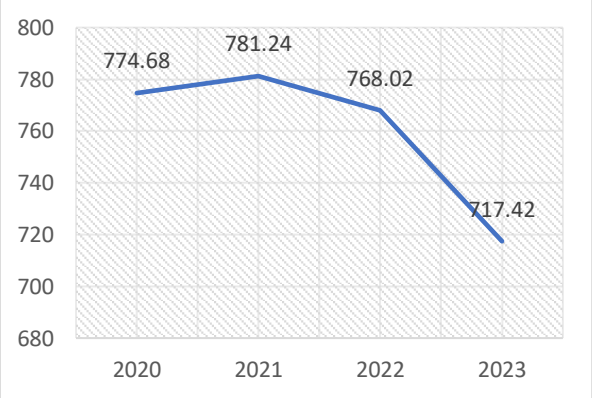
2.a. Expenditure on Education (% in GDP)



2.a Graduates in science and engineering (% of total graduates)



2.c. Researchers (Nr per million population)



2. d. Gross expenditure on R&D (% in GDP)

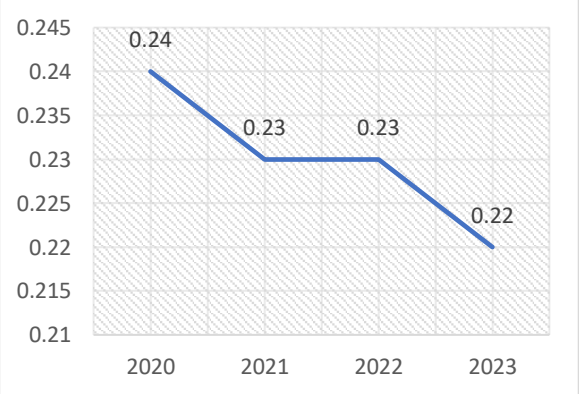


Figure 2. Innovation inputs in Republic of Moldova.
Source: adapted in accordance with WIPO, 2025, b.

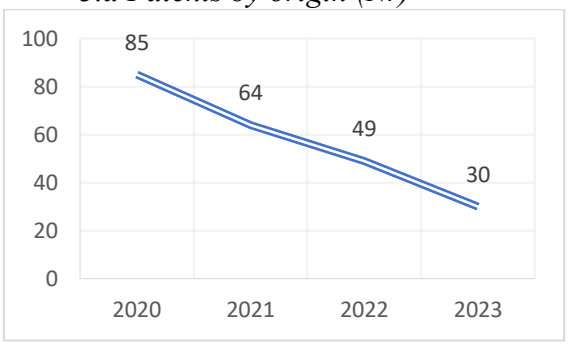
Gross expenditure on R&D represents one of the most important indicators where the Republic of Moldova lags behind compared to OECD countries, which had an average expenditure of 2.7% of GDP in 2023, and implicitly compared to European Union member states, which had an average expenditure of 2.13% of GDP in 2023 (OECD, 2025). The difference is largely due to the fact that research and development investments are predominantly made from public sources, which mainly fund public research institutions. Thus, in 2024, research and development activity was carried out in 42 institutions, including: 13 universities, 19 research institutes/centers, and 10 other types of units. Of the total number of institutions, 27 entities (or 64.3%) were publicly owned (NBS, 2025).

The private sector, consisting of commercial companies and non-governmental organizations, is insignificant in the research system and is not yet included in the statistical reports on research in the Republic of Moldova. Statistics on the protection of intellectual rights indicate that only about 1.5-2% of patents are filed by private sector entities (GD, 2023).

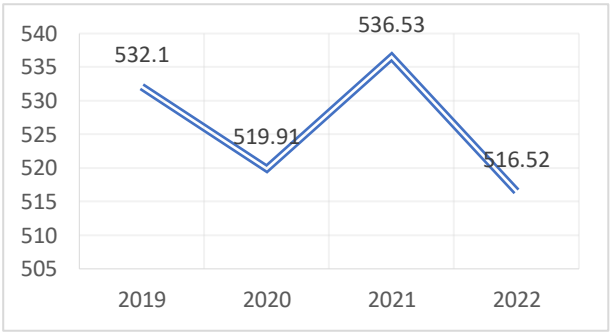
In this context, innovation output in the Republic of Moldova also shows a negative trend, and the fact that it ranks higher than innovation input is determined by the particularities of the

domestic research ecosystems and the structure of the Moldovan economy. Data from Figure 3 indicate a significant decrease in the number of patents, down to 30 in 2023, as well as a decline in high-tech industrial production volume and mobile app creation (Figure 3).

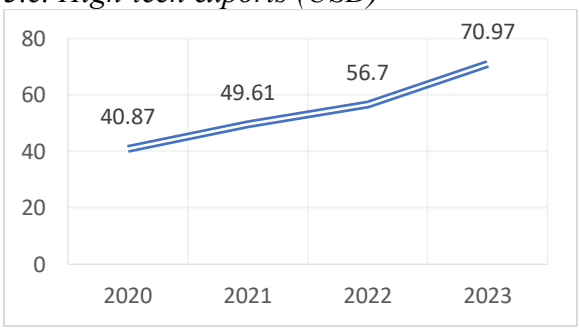
3.a Patents by origin (Nr)



3.b. High-tech manufacturing (USD)



3.c. High-tech exports (USD)



3.d. Mobile app creation (USD)

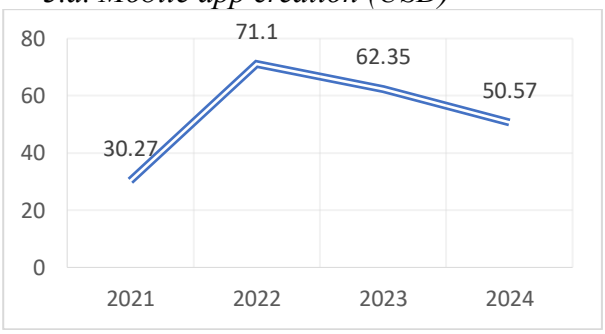


Figura 3. Innovation Outputs in Republic of Moldova.

Source: adapted in accordance with WIPO, 2025, b.

It is worth mentioning that high-tech production, and implicitly the growth of high-tech exports, some of the most important indicators of the GII, are predominantly driven by the increase in production and exports from two sectors that have grown in recent years – the automotive components industry and the IT industry – sectors that have grown implicitly due to foreign investments within the Free Economic Zones and, respectively, Moldova IT Park.

European Integration, State Aid, and Innovation Intermediaries

In order to create a resilient society and a competitive economy within a European single market, the Republic of Moldova must design and implement a long-term, complex approach to innovation, which entails, *inter alia*, institutional modernization, reform of the educational system, and development of the capital market, implicitly of venture capital. Moreover, beyond the necessary mandatory reforms, essential for increasing innovation and its commercialization in the Republic of Moldova is the valorization of private investments.

Stimulating and leveraging private investments represents the only sustainable solution for increasing investment in research and development, since public investments are insufficient and often do not translate into innovation outputs. Therefore, two basic mechanisms must be implemented: the development of a state aid scheme for research, development, and innovation (RDI), and the development of Innovation Intermediaries.

In this context, European integration has a direct impact on research and innovation in the Republic of Moldova, implicitly through access to related European Union funds, such as Horizon Europe, and through the stimulation of collaboration between academia and private sector companies. Furthermore, European integration and the transposition of the EU acquis require that the facilities granted to the private sector for research and development must comply with EU

legislation on state aid, namely the Framework for State Aid for Research, Development, and Innovation (RDI Framework).

The European Commission has developed a framework for state aid for research, development, and innovation (RDI Framework)—a framework that, although periodically criticized for the stringency of EU rules on competition and state aid (Greenacre M., 2025), allows for the stimulation of private investment in research and development in member states.

The RDI Framework distinguishes between economic and non-economic activities, with only economic activities falling under the scope of state aid rules. It then defines the measures for which state aid may be compatible with the internal market, in accordance with the provisions of Article 107(3) of the Treaty on the Functioning of the European Union. The listed measures and the maximum general aid intensity for each measure depending on the size of the enterprise are described in Table 1.

Table 1. Maximum Aid Intensity for RDI

	Small Enterprise	**Medium Enterprise**	**Large Enterprise**
Aid for R&D Projects			
- Fundamental Research	100 %	100 %	100 %
- Industrial Research	70 %	70 %	70 %
- Experimental Development	45 %	35 %	25 %
Aid for Feasibility Studies	70 %	60 %	50 %
Aid for the Construction and Modernization of Research Infrastructure	50 %	50 %	50 %
Aid for the Construction and Modernization of Testing and Experimentation Infrastructure	45 %	35 %	25 %
Aid for Innovation Targeted at SMEs	50 %	50 %	-
Aid for Process and Organizational Innovation	50 %	50 %	15 %
Aid for Innovation Clusters	50 %	50 %	50 %

Source: adapted in accordance with the EC, 2021.

The EU rules on competition and state aid, along with related funding mechanisms, have enabled the stimulation of the European economy through state aid that represents, on average, 1% of the European Union's GDP, with the exception of the pandemic years when state aid exceeded 2% of GDP, amounting to approximately €320 billion in 2020 and €323 billion in 2021. Additionally, the RDI Framework enabled the mobilization of approximately €16 billion in state aid exclusively for research, development, and innovation in 2023 (Figure 4).

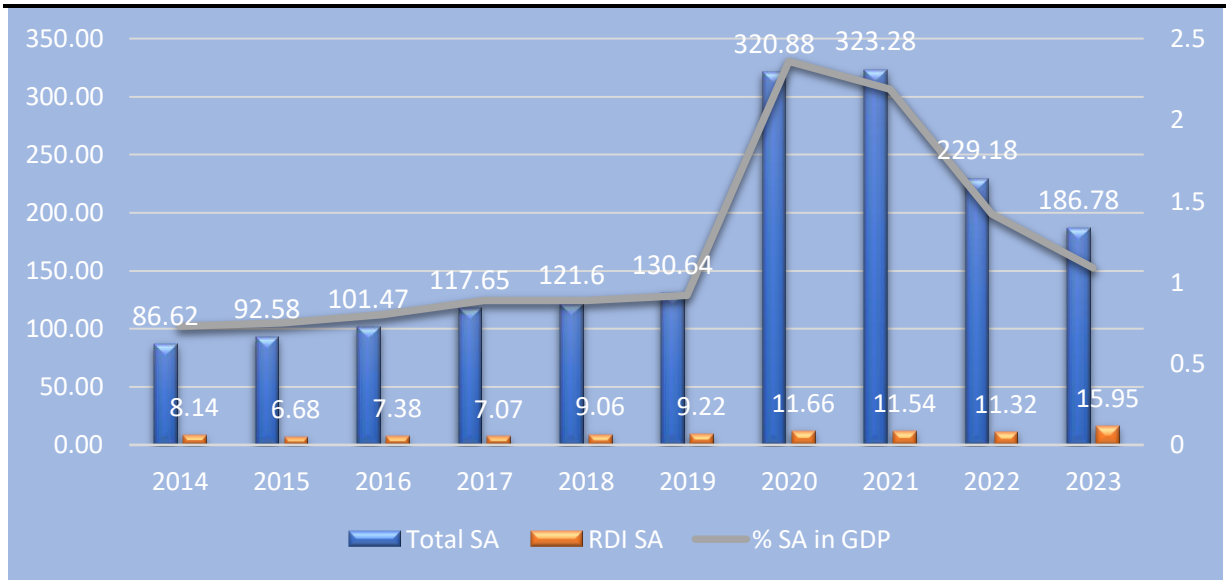


Figure 4. Dynamics of State Aid in the European Union, in Billion Euros and % of EU GDP

Source: adapted by the author based on EC, 2025.

There are significant differences between EU member states regarding the state aid granted and the state aid granted specifically for research, development, and innovation, but these differences are predominantly in absolute values. Germany and France are the EU member states that granted the highest total value of state aid in 2023, including the highest value of state aid granted under the RDI framework. Specifically, Germany granted a total of approximately €51 billion in state aid (of which €3.3 billion was for research, development, and innovation), while France granted a total of approximately €36 billion (of which €4.7 billion was for research, development, and innovation).

The Republic of Moldova is gradually aligning its national legal framework on competition and state aid with EU rules, in accordance with the commitments under the European Union – Republic of Moldova Association Agreement and the negotiation positions related to Chapter 8, while all existing fiscal facilities must be subject to state aid schemes. In this context, the state aid scheme in the free economic zones of the Republic of Moldova has been aligned with the EU acquis, namely through Government Decision No. 882/2024, and the first regional state aid scheme for investments in the Republic of Moldova was approved through Government Decision No. 875/2024. The regional state aid scheme for investments is the first state aid scheme fully aligned with EU state aid rules, specifically with the Communication from the Commission Guidelines on Regional State Aid 2021/C 153/01 (EC, 2021), which represents a mechanism for stimulating investments in the manufacturing industry.

The interest of domestic companies in the above-mentioned financing mechanism, along with the need to leverage private investments for innovation, recommends the development and implementation of a state aid scheme for research, development and innovation. The elaboration and implementation of this mechanism initially requires updating the Regulation on aid for research, development and innovation, approved by Competition Council Decision No. 8/2013, followed the elaboration by the Ministry of Economic Development and Digitalization and the Government's approval of a state aid scheme for research, development and innovation.

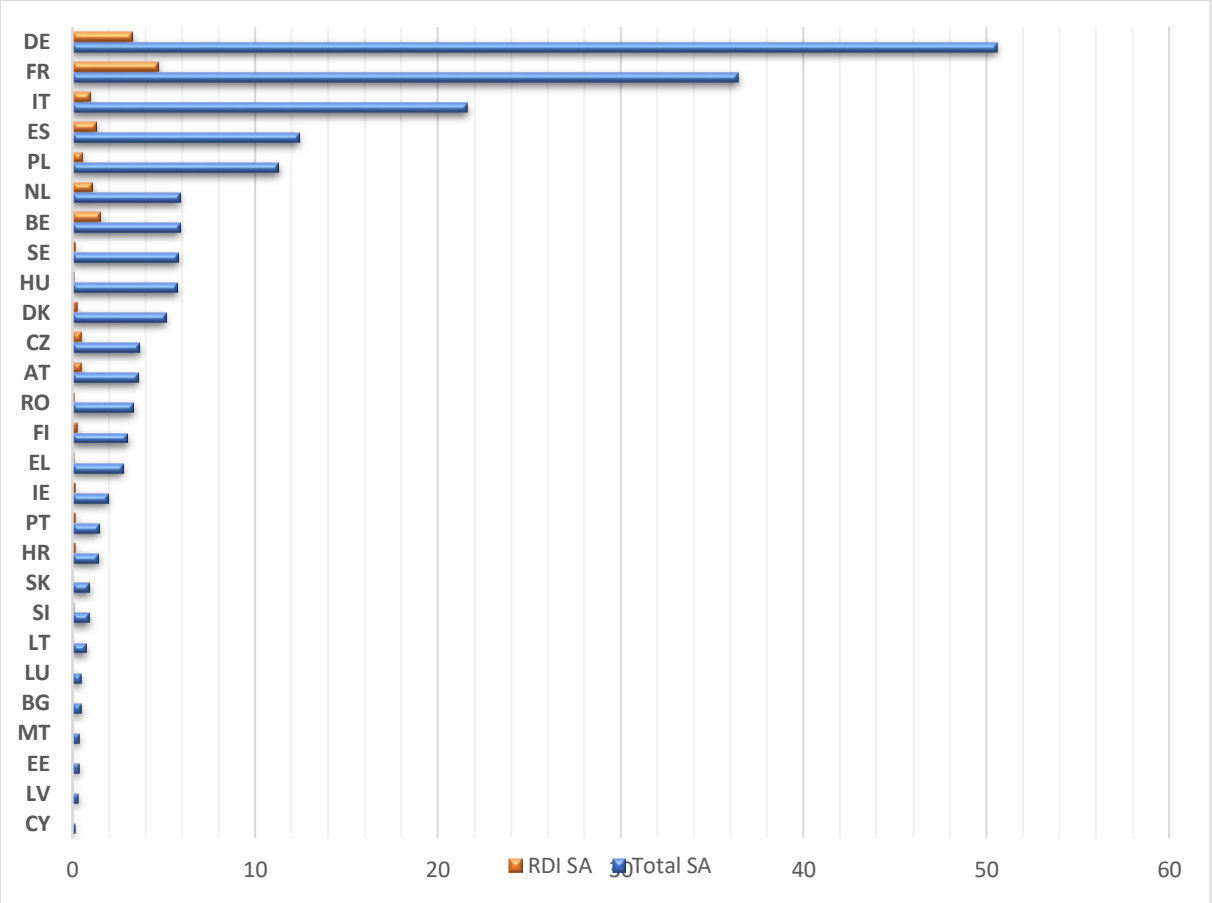


Figure 5. Total State Aid and State Aid for Research, Development and Innovation in European Union Member States in 2023, Billion Euros

Source: adapted by the author based on EC, 2025.

Moreover, in order to improve the efficiency of the support mechanism and to capitalize on the potential of the private sector, the state aid scheme for research, development and innovation must be implemented concurrently with the development of Innovation Intermediaries. Having undergone dynamic development over the past decades, under various names and functions (Caloffi, *et al*., 2023), Innovation Intermediaries are essential to the digital transition of modern economies and, consequently, are becoming key actors in fostering innovation and its commercialization in the Republic of Moldova. Innovation Intermediaries are involved both on the demand side and the supply side of innovation and technological solutions, as they mediate between organizations that request innovation and technology (large companies, SMEs, or public authorities) and organizations that provide technology or innovation (large companies, SMEs, universities, and public research organizations) (Rossi, *et al*., 2020).

Partnerships between the public sector, private sector, academia, and development partners have enabled the creation of several institutions in recent years that are expected to become authentic Innovation Intermediaries in the Republic of Moldova (Table 2).

Table 2. Potential Innovation Intermediaries in Republic of Moldova

The scientific and technological park, and innovation incubators
Scientific and Technological Park "Academica" with "Inovatorul" Innovation Incubator
"Politehnica" Innovation Incubator
"Innocenter" Innovation Incubator
"Inventica-USM" Innovation Incubator
"Antreprenorul Inovativ" Innovation Incubator

Moldo-Lithuanian "Media Garaj" Innovation Incubator
"IT4BA" Innovation Incubator
Support hubs within universities
IT innovation center Tekwill Chisinau, Balti and Comrat
IT innovation Centre in IT "Inotek"
Fabrication and testing laboratory "FabLab"
IT innovation "IHub"
Finance and IT center "Fintech Hub"
Media and creative industries hub "Mediacor"
Artistic and cultural hub "Artcor"
GLIA Impact Hub
Cybercor

Source: Ministry of Education and Research data.

The efficiency of the organizations mentioned in Table 2, will increase only with the development of a state aid mechanism for research, development and innovation (in accordance with the European model), or through the connection of financial institutions and/or venture capital to these organizations (the Japanese or American model). Based on the size of Moldova's economy and its currently limited research capacities, the most suitable model for the Republic of Moldova is to connect Innovation Intermediaries to the implementation of the state aid scheme and to financial institutions and/or venture capital. In this regard, the aforementioned organizations should not merely serve as concretion and innovation spaces, but should be involved inter alia in the administration of the state aid scheme for research and innovation, and in initiating joint R&D projects with universities, research institutes, and companies, as well as launching knowledge-sharing activities.

Conclusions and recommendations

Research and innovation have largely determined the evolution of human civilization and are becoming crucial to economic growth and well-being in the 21st century, evidence that contemporary empirical studies validate the assumptions of endogenous theories of economic growth.

The Global Innovation Index data show a negative dynamic for the Republic of Moldova for the overall innovation score and for the Input and Output Indices, the GII dropped from position 59 in 2020 to position 74 in 2025.

Input indicators are generally lower compared to Output indicators in the Republic of Moldova, but the largest difference in relation to the economies of the European Union is in the case of one of the most important indicators, namely gross expenditure on R&D. The Republic of Moldova spends 0.22% of GDP on R&D, while the European Union member states had an average expenditure of 2.13% of GDP in 2023.

Research and innovation that increases factor efficiency are crucial for sustainable economic growth in the Republic of Moldova, in the context where gross fixed capital formation is insufficient and negative net emigration does not allow for substantial growth in employees.

Beyond the mandatory reforms necessary to stimulate research and innovation, implicitly reforms in the education system and the development of the capital market/venture capital, essential for increasing innovation and its commercialization in the Republic of Moldova is the stimulation of private investment – since public investment is insufficient and often does not translate into innovation outputs.

To stimulate private investment, it is necessary to develop a state aid scheme for research, development and innovation (RDI) and the development of Innovation Intermediaries.

Given the size of the Moldovan economy, as well as the currently reduced research capacities, the most appropriate model for the Republic of Moldova is to connect Innovation Intermediaries to the implementation of the state aid scheme and to financial institutions and/or venture capital.

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