EDUCATION FINANCING AND THE EFFICIENCY OF EDUCATIONAL SYSTEMS

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Abstract: *This article explores the dynamics of education financing in Romania and its impact on the efficiency of the national educational system. Using recent statistical data and empirical insights, it analyzes systemic challenges related to underfunding, regional disparities, and governance. It also examines policy initiatives such as the 'Educated Romania' strategy and proposes reform measures aimed at aligning Romanian education with EU standards. Education represents a fundamental element in the development of modern societies, and its financing is essential to ensure both quality and equity within educational systems. Funding models—whether public, mixed, or private—play an important role in shaping educational outcomes, and the use of quantitative assessment methods, such as data envelopment analysis (DEA) or value-added models, allows for an objective evaluation of performance. At the same time, a systemic reform is needed, one that focuses on teacher professionalization, infrastructure modernization, continuous training expansion, and the balanced, efficient implementation of educational technology.*

Keywords*: education financing, Romania, educational efficiency, education policy, public investment*
JEL Classification*: I21, I22, I28.*

1. Introduction

Education is a key pillar of sustainable development and the way it is funded directly impacts the efficiency of the educational system. In the current European context, marked by budgetary pressures and demographic changes, it is essential to analyze the relationship between financial allocations and educational outcomes. Romania faces significant challenges in this area, consistently ranking below the EU average in terms of GDP percentage allocated to education. Spending does not automatically lead to performance; teaching quality is key. Inputs include student, family, school, and community characteristics. This study explores the complex relationship between education financing and the efficiency of educational systems, beginning with a theoretical overview and continuing with an empirical evaluation based on European data and the specific case of Romania. In academic literature, education funding is addressed not only as an economic concern but also as a reflection of political priorities and social responsibility. Various models of education financing exist, reflecting ideological, cultural, and institutional differences among countries. Public, mixed, and predominantly private models each carry distinct implications for equity, accessibility, and the sustainability of educational systems. Recent scholarship supports the notion that balanced funding, aligned with performance indicators, can improve educational outcomes. The analysis includes data on public spending as a share of GDP and total government expenditure over a ten-year period (2014–2023), complemented by a critical assessment of Romania's institutional framework. Persistent urban-rural disparities and implementation challenges in education policy are highlighted. The conclusions call for an integrated strategy involving sustainable investment, evidence-based policy, and coherent educational governance aimed at enhancing efficiency and reducing structural inequalities in access to education. Outputs are measured through graduation rates, test scores, and job integration. Regional and socio-economic disparities significantly influence outcomes. Parental background and socio-economic status are key performance drivers.

2. Theoretical Framework and Literature Review

The literature explores multiple methods for analyzing efficiency: production functions, DEA, and value-added models. Becker (1997) highlighted the role of human capital in economic development, while De Witte & López-Torres (2017) emphasized the use of efficiency indicators in education policy. Recent studies (Akresh et al., 2023) show that only 10–20% of school performance variation can be explained by direct spending, with the rest influenced by social and institutional factors.

3. Methodology

This article uses a quantitative-comparative approach, analyzing Eurostat and OECD data from 2010 to 2023. It compares the percentage of GDP allocated to education with PISA scores and analyzes relative efficiency based on funding models (public, mixed, private).

The analysis integrates descriptive statistics and visual correlation methods to identify trends and disparities among EU countries, with a specific focus on Romania's performance relative to regional peers. By using cross-sectional data alongside time-series observations, the study aims to capture both structural patterns and dynamic changes in education financing and outcomes.

4. Data Analysis and Results

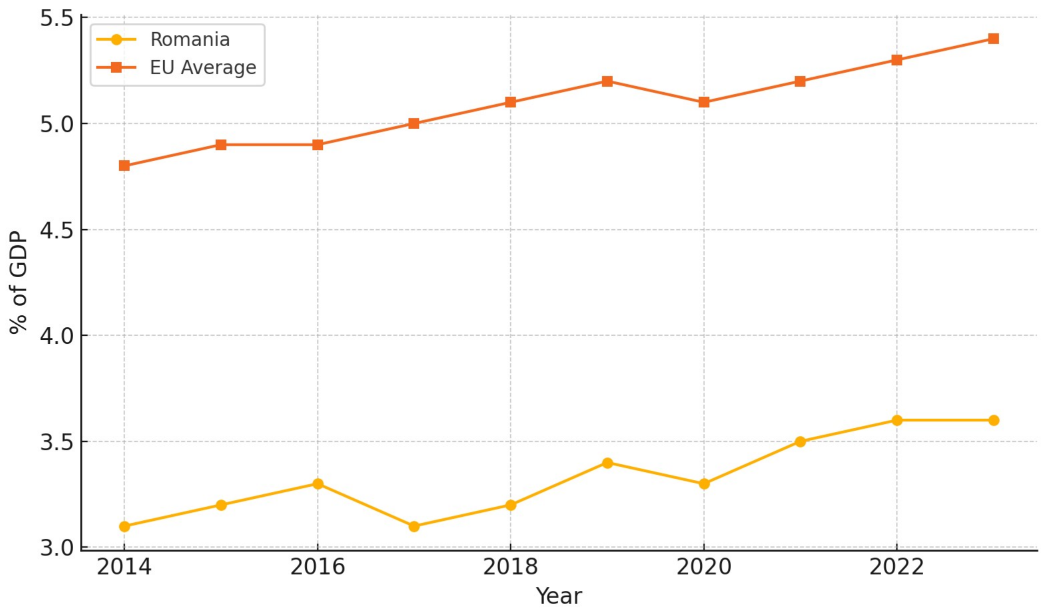
4.1. Comparative Perspective: Central and Eastern Europe

While Romania allocates approximately 3.6% of its GDP to education, other Central and Eastern European (CEE) countries have followed more ambitious trajectories. For instance, Poland and Estonia consistently exceed 5% of GDP in educational spending, correlating with better outcomes in the PISA rankings. Hungary and Bulgaria, although closer to Romania in terms of GDP allocations, have implemented more centralized education quality monitoring systems and better digital integration. These examples indicate that efficiency is not solely a function of investment level but of strategic policy direction, transparency, and stakeholder accountability.

A longitudinal analysis of education expenditure as a percentage of GDP over the period 2014–2023 (Figure 1) reveals that Romania consistently underperforms compared to the EU average, maintaining values below 3.7%, while the EU trend demonstrates a gradual increase toward the 5.4% benchmark, indicating a structural funding gap that correlates with lower educational efficiency in the Romanian system.

In the context of the United Nations 2030 Agenda for Sustainable Development, education financing must be seen not just as an economic tool but as a sustainability imperative. Goal 4 (Quality Education) calls for inclusive and equitable education and the promotion of lifelong learning. Romania's current trajectory shows partial alignment with these objectives, but more targeted investments are needed in environmental education, green campus initiatives, and sustainability-centered teacher training. Integrating sustainability into school management and curricula would enhance Romania's ability to develop resilient, informed future generations.

Figure 1. Education Expenditure as % of GDP (2014-2023)



Source: made by the author based on Eurostat data

Romania maintains a consistently low level, while the EU average shows a slight upward trend.

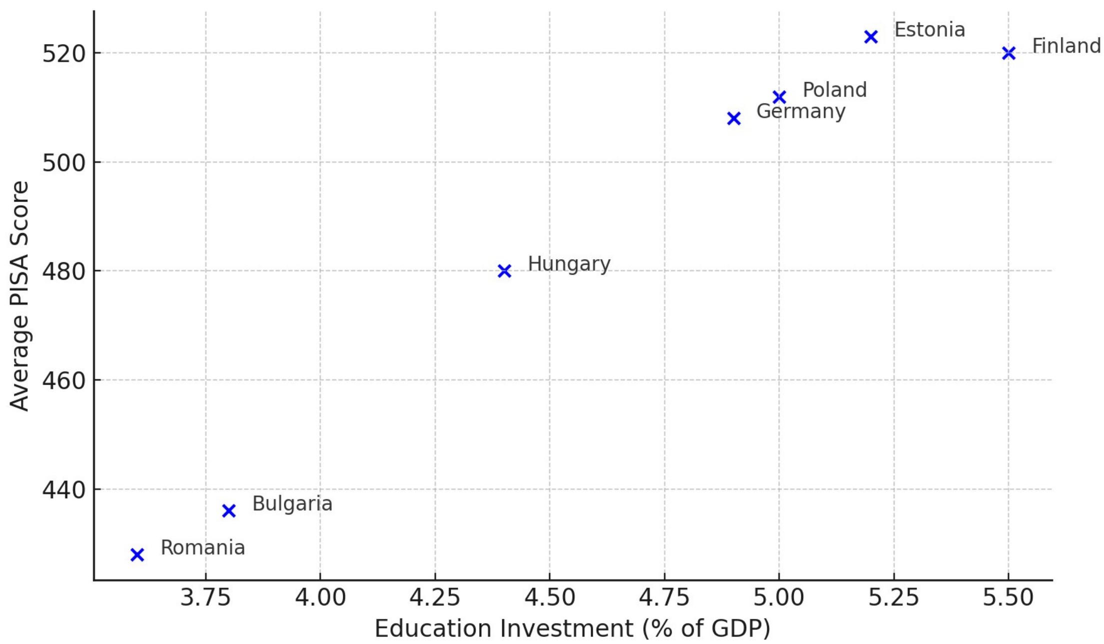
4.2. Human Capital Development and Economic Growth

Education financing plays a pivotal role in shaping human capital, which in turn drives economic competitiveness. Empirical studies underline that nations investing in high-quality education experience long-term growth through increased productivity and innovation. The correlation between tertiary education expansion and GDP per capita is especially evident in knowledge-based economies. In Romania's case, however, brain drain and mismatches between education and labor market needs reduce returns on investment. Thus, aligning educational policies with labor market trends and entrepreneurship initiatives is critical to maximizing the benefits of public spending.

The PISA assessments, administered by the OECD, serve not only as a benchmark for student performance in reading, mathematics, and science, but also as an indirect indicator of a country's capacity to develop human capital. High scores generally reflect the presence of robust cognitive skills essential for innovation, adaptability, and productivity in a knowledge-driven economy. Countries with strong PISA performance—such as Estonia or Finland—have consistently aligned educational content, teaching quality, and systemic support mechanisms to produce graduates equipped for both academic success and labor market integration.

In contrast, Romania's PISA results highlight persistent weaknesses in functional literacy and problem-solving, especially among students from disadvantaged backgrounds. These shortcomings undermine the formation of a competitive and resilient workforce, reinforcing the link between educational inequality and economic vulnerability. Addressing these gaps requires more than funding; it calls for targeted investment in early education, differentiated teaching strategies, and inclusive curricular reforms. Therefore, improving Romania's human capital stock begins with a measurable uplift in foundational skills as captured by standardized international evaluations like PISA.

Figure 2. PISA Scores vs Education Investment (as % of GDP)



Source: made by the author based on Eurostat data

Figure 2 illustrates a positive correlation between the percentage of GDP allocated to education and average PISA scores across selected European countries, suggesting that while financial inputs alone do not guarantee performance, underinvestment—as observed in Romania and Bulgaria—tends to coincide with systematically lower educational outcomes.
Countries with higher investment tend to achieve better PISA scores, indicating a positive correlation.

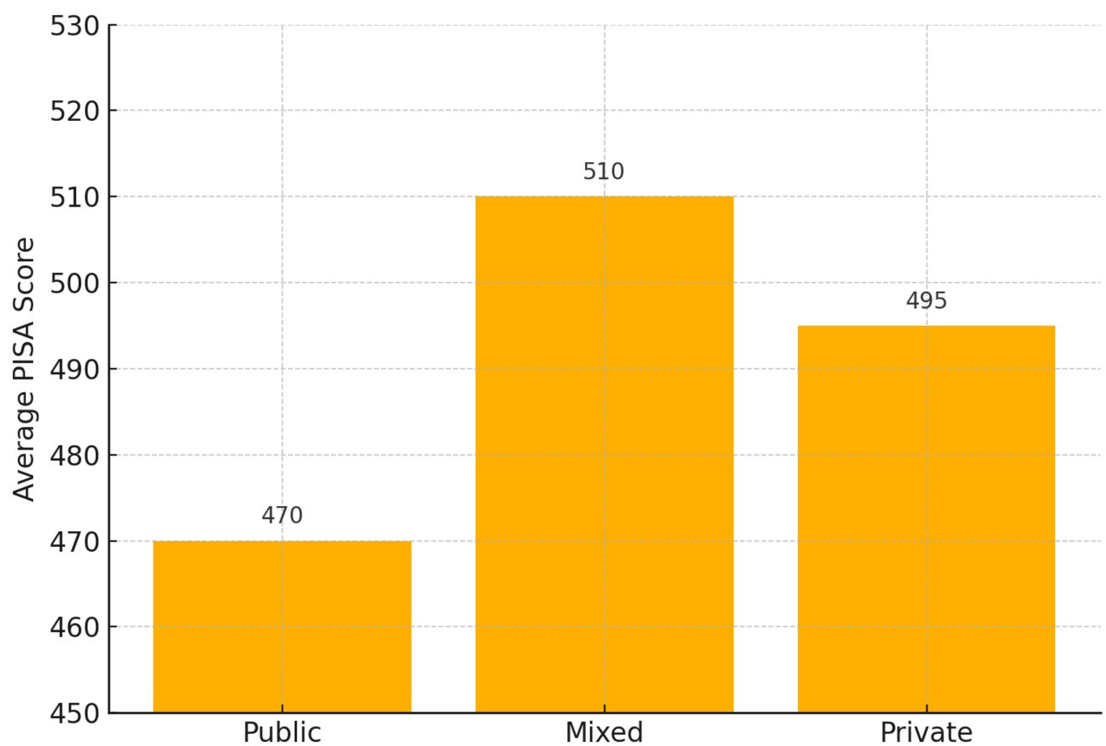
4.3. Digitalization and Educational Technology Integration

One of the key pillars of modern educational efficiency is digital transformation. Countries that have invested heavily in infrastructure, e-learning platforms, and teacher digital training—such as Finland or the Netherlands—demonstrate significant improvements in both student engagement and learning outcomes. In Romania, the COVID-19 pandemic exposed major gaps in digital readiness, especially in rural and marginalized areas. A comprehensive digital education strategy must address access disparities, ensure curriculum adaptation, and provide continuous professional development to educators to ensure long-term effectiveness and inclusiveness.

4.4. Local Budget Allocation and Administrative Efficiency

Another dimension of educational efficiency relates to how funds are distributed at the local level. In Romania, school units under the authority of local councils often face fragmented budgeting and inconsistent resource availability. The lack of fiscal decentralization and capacity building within local administrations hinders the equitable distribution of educational opportunities. Introducing performance-based funding mechanisms at the county and municipal levels—linked to student outcomes, attendance, and graduation rates—could significantly improve resource targeting and institutional accountability.

Figure 3. Average Educational Performance by Financing Model



Source: made by the author based on Eurostat data

As shown in Figure 3, educational systems operating under mixed financing models—where public funds are supplemented by private contributions—tend to achieve the highest average PISA scores, highlighting the potential benefits of diversified funding strategies in enhancing educational efficiency and resource responsiveness.

Mixed models show the highest performance, effectively combining public and private resources.

5. Discussion

The results highlight the need for systemic reform and strategic investment in education. High-performing models integrate equity, digitalization, and teacher professionalism. Romania must overcome chronic underfunding and address structural inequalities.

A comparative reading of the data shows that Romania's structural underinvestment in education has long-term implications not only for learning outcomes, but also for national development. Despite marginal annual increases in education spending, the gap with EU averages remains significant, reflecting insufficient political prioritization. The lack of correlation between existing inputs and desired outputs indicates systemic inefficiencies in fund allocation and usage.

Moreover, public policies have not consistently targeted the foundational drivers of educational quality—such as early childhood education, teacher support, or equitable digital access. The current governance framework remains fragmented, with overlapping responsibilities between central and local authorities, leading to delays in reform implementation and uneven results across regions.

Maintaining the status quo in funding and administration risks exacerbating socio-economic inequalities and perpetuating a cycle of low productivity and limited innovation. Therefore, the Romanian government must shift toward a long-term, strategic vision of education as an engine of inclusive and sustainable development, aligning budgetary decisions with measurable performance indicators and demographic needs

6. Conclusions and Recommendations

Education must be treated as a priority investment. It is recommended to progressively increase the education budget, reform salary structures, expand digital infrastructure, and support vulnerable students. Educational efficiency depends not only on resources but also on how they are managed.

An effective education financing strategy must go beyond increasing the budget in absolute terms; it should focus on optimizing allocations based on evidence and outcome-based criteria. This includes funding programs with demonstrated impact, particularly in rural and underserved communities, and incentivizing schools and educators to pursue innovation and quality improvement.

Furthermore, educational reform should be guided by a participatory approach, involving local stakeholders, school leaders, and civil society, to ensure that policy implementation reflects real-world needs and reduces institutional inertia. Transparent monitoring and evaluation mechanisms must be embedded in the funding process to promote accountability and continuous learning.

Romania stands at a crossroads where modest improvements are no longer sufficient. A paradigm shift is needed—one that views education as a strategic sector interconnected with economic growth, technological progress, and democratic resilience. Aligning Romanian education policy with European best practices and SDG benchmarks is not merely desirable, but imperative.

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