

# DIRECTIONS FOR THE OPTIMIZATION OF FINANCING INVESTMENTS IN THE EDUCATIONAL HUMAN CAPITAL IN THE PERSPECTIVE OF IMPROVING THE QUALITY OF LIFE IN THE REPUBLIC OF MOLDOVA

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**Abstract:** *The accessibility, the quality and the relevance of education determine, to a great extent, the quality of life, in all countries, including the Republic of Moldova (RM). The development of human capital ensures necessary conditions for the essential improvement of the quality of life, assuming, at the same time, important investments in public education system. Given the existence of an outdated model of funding of domestic higher education studies, the theme reflected in this article becomes extremely relevant.*

*Ensuring the innovation potential of modern societies, achieving high performances, capitalizing on the specific characteristics of the modern economy, based on knowledge and competition, occurs due to a high level of development of human educational capital. In this respect, the research of the directions for optimizing the educational human capital investments from the perspective of improving the quality of life in the Republic of Moldova expresses the goal underlying the researches reflected as follows.*

*This article focuses on: the evaluation of the quality of life in the Republic of Moldova, based on authors' systematized indicators; the research of the interdependence between investment in education and the development of human capital in the Republic of Moldova, based on econometric model; the rationalization of the public funding mechanism of the higher education institutions in the RM; the identification of the directions for improving the financing mechanism of the studies in the domestic higher education, based on alternative financing methods.*

**Keywords:** *Quality of life, investment in educational human capital, financial losses, human capital contract, social impact bond, public financing.*

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## 1. INTRODUCTION

Education is a national priority in the Republic of Moldova, being the basic factor in creating and transmitting new knowledge in the development of human capital, in promoting European integration aspirations, and plays a key role in creating the premises for sustainable human development and building a knowledge-based society. In this context, there is a direct correlation between investments in education, the development of human capital and the quality of life.

In order to identify: the correlation between the low quality of life and labor migration; the financial losses of the state as a result of non-employment of higher education (HE) institutions' graduates; the new methods of the domestic HE funding, which would contribute to the expansion of opportunities of access to study in

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domestic HE institutions; the development of educational human capital, which would lead to high qualification standards, followed by appropriate remuneration, thus contributing to the increase in the quality of life, different research methods have been applied. Among these are: the descriptive method used to define some innovative tools for financing HE studies; the synthesis method, applied to establish a connection of the researched phenomena; the method of quantitative and qualitative analysis, applied in the analysis and interpretation of the indicators etc.

## **2. THEORETICAL BACKGROUND**

The concept of human capital (HC) represents today an important direction of research, a proof for that being the World Bank studies (2018), according to which HC represents 64% of the global wealth. In this respect, such scientists like Naisbitt A. and Aburdene P., can be quoted, who state that in the new information society „human capital has replaced the financial one as a strategic source”. As a result of the research of the specialty literature in the domain of research, the authors note that the theoretical and methodological basis of the paper relies in the contemporary concepts of quality of life, investments in the educational human capital, financing investments in higher education. The research was based on an in-depth study of the scientific works of different authors, including those with world-renowned acclaim, such as Becker G., Kiker B. Schmutzler D., Naisbitt A., Aburdene P. and others.

## **3. DEPENDENCE BETWEEN THE ELEMENTS OF THE BINOMIAL „QUALITY OF LIFE – MIGRATION”**

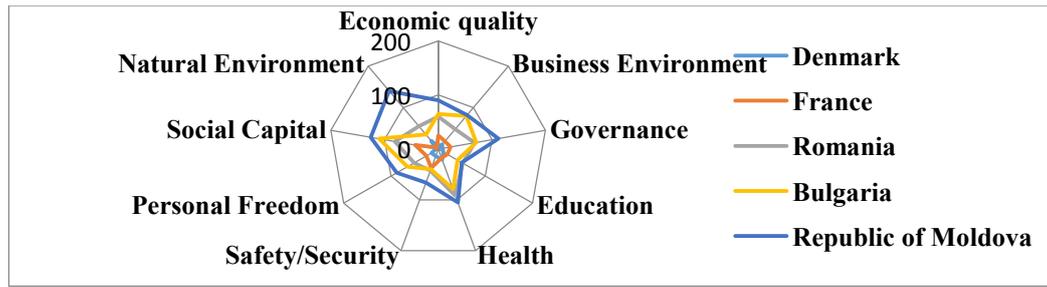
### **3.1. Assessment of the quality of life in the Republic of Moldova**

*The quality of life (QL)* in the Republic of Moldova, in the authors’ opinion, is presented evasively in national policy documents. However, the authors identify a series of documents that reflect the decision-makers’ concerns about the quality of life. Among these documents can be mentioned: Moldova 2020 Strategy; Government Activity Plan for 2016-2018; Moldova-EU Association Agreement; Education 2020 Strategy; Digital Moldova 2020 Strategy etc. The National Development Strategy "Moldova 2030", currently at its launch stage, is focused on enhancing people's quality of life, according to the priority objectives of the sustainable development agenda for the period up to 2030 and the provisions of the EU-Moldova Association Agreement. In the given context, in the authors’ opinion, it would be appropriate to elaborate, under the auspices of the Government of the Republic of Moldova, a *Human Capital Development Strategy* with a national, multi-annual character, rallied to the EU guidelines as one of the components of the Moldova 2030 Strategy, which would also reflect the social aspects of investments, including investments in educational human capital (EHC).

In the international practice, the following indicators are used in the assessment of the level of education and/or quality of life (respective rankings consider RM as well): the Quality of Life Index (QLI), the Human Development Index (HDI), the Prosperity Index (PI) etc.

According to the QLI, the Republic of Moldova, in 2015, occupies the 66th place among 86 countries worldwide and the 31st place among 34 European countries included in the ranking. It is worth mentioning that the RM occupies a midfield position between the neighboring countries, such as Ukraine (75th place) and Romania (48th

place). Countries with the highest QL remain, over the years, Switzerland and Germany. HDI values allow the characterization of the evolution of human development and the comparison of the experience of different countries or regions in the field of economic and social progress. Starting from these premises, the RM, in 2015, ranked 107th out of 188 countries and territories, with an average human development. According to the PI, in 2017 Moldova ranks 98th out of 149 countries and is considered the poorest country in Europe (according to GDP per capita). The comparative analysis of some European states based on the components that form the respective index is shown in Figure 1.



Source: developed by the authors based on Prosperity Index Ranking (2017)

**Figure 1.** Comparative analysis of the Republic of Moldova and some EU countries according to the components of the Prosperity Index, 2017

Concluding, the authors find a direct interdependence between quality of life and education. Respectively, education exerts a considerable influence on the formation of the educational human capital, then on the quality of life, and only then on the ability to use knowledge for the development of the economy.

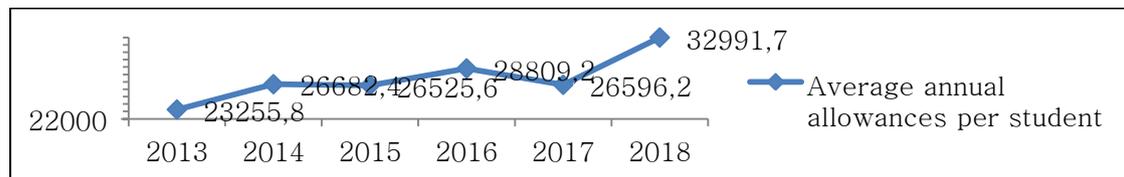
Considering the fundamental role of income for enhancing the quality of life, an important element of research is their analysis. In 2017, the available disposable income of the Republic of Moldova constituted, on average, 2244.9 lei (or approximately 130 US dollars), per person per month depending, greatly, on the level of training. Based on the analyzed data presented by National Bureau of Statistics of RM (2017), can be concluded that for persons with a higher level of education, the following are attained: maximum income levels (higher by 30%); a higher degree of employability in the workplace; lower social benefits compared to other categories, generating a certain budgetary relaxation. These arguments should encourage the government to promote incentives for investment in the respective sector.

### **3.2. Several aspects of educational human capital migration and the quality of life in the Republic of Moldova**

Should be mentioned that the discrepancy between the supply of the education system and the demand for labor force remains significant. In the ranking of the World Economic Forum 2017-2018, RM gained 3.9 points out of 7 or ranked 94th out of 137 states analyzed for the Labor Market Efficiency indicator, registering a downward trend over several consecutive years. In addition, the proportion of the employed population with higher qualifications than those required at the workplace has been decreasing the last few years, while the proportion of people with qualifications below those required at the workplace has been increasing. This fact reveals both educational deficiencies and labor market distortions that are incapable of attracting and retaining human capital. According to the World Economic Forum

indicators for 2017, "The ability to hold talented people in the country"/"The ability to attract talented people to the country", RM scores only 1.9 / 1.8 out of 7 or places 133/134 of the 137 countries included in the ranking, surpassing only Serbia, Bosnia and Herzegovina, Haiti and Venezuela.

The migration of the Moldovan population over the last three decades has resulted in a significant phenomenon of brain drain and waste. Statistical data show that there is a direct correlation between the migration flow and the level of education, while the latter influences the capacity of integration on the labor market abroad and the exodus of the domestic educational capital, respectively. The number of people with higher education, although only 13.3% of total migrants, is steadily increasing as compared to 2006, when this indicator was only 8.5%. From our point of view, due to migration, the RM files a net financial loss, which is also caused by the low capitalization of the costs related to the training of specialists in higher education institutions. We analyzed the impact of migration by estimating the state's financial losses per person (first cycle, license, 3 years of study, budget funding), who decided to leave abroad, immediately after graduation. To perform the calculation data presented in Figure 2 regarding annual public expenses per student were used.



Source: developed by the authors based on data provided by the Ministry of Finance of the RM

**Figure 2.** Evolution of average annual allowances per student from National Public Budget of RM, MDL

The *future value of the investments* (annual expenditures) of the state between 2015-2017, and in the case of migration and non-capitalization of the formed EHC, *the future value of the financial loss* ( $FV_{FL}$ ) were determined. Only the rate of inflation was considered in this calculation, as a variable of major influence on the future value of expenditures per student (financial losses), ignoring the other variables of the function  $a = f(r_i; r_d; r_r; e)$ , where  $r_i$  – inflation rate;  $r_d$  – interest rate;  $r_r$  – investment risk rate;  $e$  – average efficiency in the field of activity in which the investment is made. Starting from the formula for calculating the future value of the invested resource, the possible financial loss ( $FV_{FL}$ ) will be:

$$FV_{FL} = EX_{2015}(1 + a)^2 + EX_{2016}(1 + a)^1 + EX_{2017}(1 + a)^0, \quad (1)$$

where:  $EX$  are the expenditures per student for the respective year (2015, 2016, 2017).

Considering an average inflation rate of 7%, by substitution, the following were obtained:

$$FV_{FL} = 26525,6(1 + 0,07)^2 + 28809,2(1 + 0,07)^1 + 26596,2(1 + 0,07)^0 = 87791 \text{ MDL} \quad (2).$$

According to these calculations, can be concluded that the state's financial losses resulting from the direct investment related to the training of one single student, who is not employed as labor force, are approximately equal to 87,8 thousand MDL (almost 1.0 million MDL for 10 students). The losses would have been even higher if the benefits that the state would have obtained after the capitalization of the accumulated EHC were considered in the calculation.

Based on the given case, starting from 2010, in the RM the priority within the framework of the occupational policies relied on the inclusion of young graduates in the labor market. The following steps should be to improve the financing system of high-quality higher education based on performance indicators, the latter also aiming, in the authors' opinion, the level of professional employability (Hîncu et al., 2015).

#### **4. PROBLEMS AND SOLUTIONS FOR HIGHER EDUCATION FINANCING IN THE REPUBLIC OF MOLDOVA**

##### **4.1. Interdependence between investment in higher education and labor productivity**

It is well known, that individuals invest time and money in the process of acquiring professional education and skills to increase labor productivity. Therefore, they can expect higher wages, or these lead to a higher level of quality of life. According to the neo-classical theory of economic growth, a more qualified workforce adapts faster to new technologies, thus contributing to the growth of education returns. In this context, the expanded Solow-Swan model describes the relationship between economic growth and EHC from the perspective of the neoclassical economic growth theory. As a consequence, also considering the statistical indicators for the RM, we elaborated this econometric model to determine the interdependence between investments in human capital and labor productivity. Thus:

$$\ln \left[ \frac{PROD(t)}{PROD(t-1)} \right] = \alpha_0 + \alpha_1 \ln(P\_FC(t)) + \alpha_2 \ln(P\_CHS(t)) + \alpha_3 t, \quad (3)$$

where:  $\ln$  is the natural logarithm,  $PROD(t)/PROD(t-1)$  – rhythm of productivity growth;  $P\_FC$  – gross fixed capital formation as percentage of GDP;  $P\_CHS$  – expenditures on higher education as percentage of GDP;  $t$  – the fictitious variable for the description of time, elasticity coefficients  $\alpha_1$  and  $\alpha_2$ , which exert an influence on the rate of labor productivity growth. Empirical data on the influence of investments in human capital on labor productivity are presented in Table 1.

**Table 1.** The results of the model estimation of the influence of public expenditures on the domestic higher education on labor productivity

Explanatory variable	Coefficient / Significance
Gross fixed capital formation as percentage of GDP	0.06 (**)
Expenditures on higher education as percentage of GDP	0.02 (**)
t (time variable)	-0.005 (*)
Constant	0.232 (*)

	$R^2 = 0.75$ , F-statistic 9.5 (Prob=0.0, the equation is significant for the significance level 0,01)
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\* The coefficient is significant at the significance level of 0.01; \*\* the coefficient is significant at the significance level of 0.05; \*\*\* the coefficient is significant at the significance level of < 0,1.

Source: calculated by the authors applying the econometric software Eviews 7.0

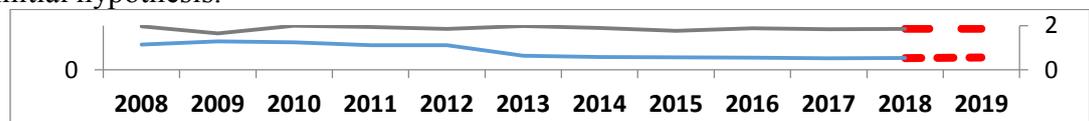
Based on estimations, the following results were obtained:  $\alpha_1 = 0.06$ ,  $\alpha_2 = 0.02$ ,  $\alpha_3 = -0.005$ . The *time* variable shows that the rhythm of growth of labor productivity, on average, has decreased. The elasticity coefficient  $\alpha_2$  (share of expenditures on higher education in GDP) indicates an increase in the *growth rate of labor productivity* with 0.02%. The value of elasticity is positive, which indicates the positive impact of public expenditures on HE on the *rate of productivity growth*. The statistical significance test shows that the factor of public expenditure on HE in GDP does not have a significant impact on the rate of labor productivity growth at the national level. Assuming that the share of public expenditures on higher education in GDP will not exceed the limit of 0,6% (as per official current statistics), certain values were predicted for the studied indicators (Table 2).

**Table 2.** Results of analyzed indicators' evolution forecast

Forecast year	Share of expenditures on higher education, %	Rate of labor productivity growth, %
2018	0,5298	102,294
2019	0,553	102,679

Source: developed by the authors based on forecasted estimations

Considering the forecasted results for the evolution of the indicators studied in table 2, figure 3 shows the dynamics and forecast of expenditures on HE and of the rate of labor productivity growth. According to the obtained results, the rate of labor productivity growth has a moderate growth trend, being also influenced by other macroeconomic indicators. Broadly speaking, the econometric model confirmed the initial hypothesis.



— the rate of labor productivity growth; — the expenditures on higher education as percentage of GDP

Source: developed by the authors

**Figure 3.** Dynamics and forecast of the share of expenditures on higher education and of the rate of labor productivity growth, %

#### 4.2. Identifying new financing methods of the domestic higher education studies

The need to improve the domestic HE studies' funding derives from several reasons: 1) outdated funding mechanism; 2) continuous underfinancing of higher education; 3) recent changes in the modern economy, where technology has become the decisive factor influencing economic growth, while knowledge, skills and competencies are essential for its use etc. Starting from the fact that in the RM the state still supports the financing of a competitive student, as well as that of a non-

performing student, and for the above-mentioned reasons, we consider it necessary to improve the mechanism of public funding of domestic HE. It is important that the new financing model contributes to overcoming the stated problems and assures the balance between stability and incentives; orientating towards inputs and outputs; promoting of national goals and institutional profiles; teaching and research as funding criteria; public and private funding sources; need-based and merit-based funding of students etc. Such a balanced approach does not currently exist in budgeting HE in the RM, but could be implemented with a new financing model. Public financing of the domestic education could be based on a three-component financing model: core (stable) financing combined with performance-based funding (based on performance indicators) and innovation-oriented funding (allotted through performance agreements). The policy objectives of the RM suggest a variety of performance indicators, which could become part of a new financing formula. The following indicators are worth being considered: number of graduates, to minimize university dropout; number of master students and PhD students, to incentivize the continuity of studies; student mobility, to meet the internationalization objective; rate of employment, to solve the issue related to migration, unemployment, and to recoup the investments made, gain economic and social benefits and ensure a better level of QL. The range of indicators can be expanded according to certain performances of the universities, such as Ranking Web of Universities, Eduniversal Masters Ranking etc.

An alternative method of financing domestic higher education studies, which could solve the financing problems it faces, implies the use of social impact bonds (SIB), as a form of social investment. These are considered in the European Union since the adoption of the Lisbon Agenda (2000). By social investments is understood that current social spending for education will be recovered at a certain point in the future, by a greater economic growth and employability. SIB presumes the use of private financial resources to fund activities that generate social benefits, accompanied by a certain financial return on previously made investments. Another alternative, revolutionary for the RM, implies the use of Human Capital Contracts (HCC), which offer the possibility for private markets to be more involved in financing higher education studies by means of financial instruments. These contracts exclude the marginalization of socially vulnerable individuals. The state can issue Government HCCs. In this case, the signers of the contract will not be students and investors, but the state and investors. This contract can be attractive to investors, as they will sign it with the state, which, with the utmost certainty, will honor its obligations. If a limitation of state involvement is desired, institutional HCCs can be applied. In this case, the use of HCCs will require the formation of an Educational Fund.

Currently, these financing methods are hard to implement in the RM, due to an inappropriate legal framework, a poorly developed capital market, a low investment culture etc. Taking into account that the domestic capital market is reformed according to the European model, the diversification of financial instruments and their use for the purpose of financing education, represents a solution for the development of the human capital and, implicitly, the improvement of the quality of life.

## **5. CONCLUSIONS**

- The mass migration of the young and skilled labor force is one of the phenomena stagnating the economic growth in the Republic of Moldova. The state's financial loss as the result of the non-employment of a higher education graduate is about 87 thousand MDL. Thus, taking urgent measures to stop the migration

phenomenon by promoting appropriate policies (social, investment, fiscal etc.) becomes the responsibility of the state structures.

- Investments in the EHC should be analyzed in the correlation with a series of other indicators, that characterize the quality of life. The identified indicators comprise, in their structure, the *education as their core component*. Observing the inferior level of Moldova's rankings according to these indicators can be concluded that the domestic EHC is modest, with a declining competitive potential. This situation shows the need to develop the binomial "investments in EHC and quality of life".
- As a result of the adaptation of econometric models to the domestic economic realities and testing of the hypotheses regarding the impact of investment in education on the labor productivity growth, we concluded that a 1% increase of the share of investments for HE in GDP indicates an increase in the productivity growth rate with 0.02%.
- In relation to the financing of the EHC and under the condition of creating the necessary premises, can be specified some innovative financial instruments and alternative methods of financing domestic HE studies, such as *Human Capital Contract* and *Social Impact Bonds*.

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