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The Impact of Government Spending Policy on the Human Development in the Context of Overcoming the "Middle Income Trap"

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ABSTRACT

The purpose of the article is to examine the impact of long-term factors affecting human development in emerging market countries, based on the "middle income trap" hypothesis. According to the research question, the radical liberal reforms implemented in the countries of the former Soviet Union, including the Republic of Armenia, in the 1990s have led to the emergence of a middle income trap, which requires large expenditures and new reforms in human capital development to overcome. As a basic methodological approach, the problem of the relationship between human development and the middle income trap has been studied in the context of the dynamics of income differentiation and inequality indicators. According to the results of the study, in the Republic of Armenia, along with the economic growth recorded as a result of liberal reforms and the increase in the human development index, there has been an increase in the level of inequality, while the main factors restraining the latter are the progressive growth of public spending in the education and healthcare sectors. Among the factors that have a decisive impact on long-term human development, the spread of digital technologies, investments in research and development programs, as well as the neutralization of the effects of negative institutional factors, in particular, the reduction of corruption, are of decisive importance. The main findings of the study demonstrate that in the long run, overcoming the "middle income trap" is conditioned not only by increasing costs for education and healthcare sectors and gradual steps towards improving living standards, but also by programs of significant investments in improving the institutional environment.

Keywords: human development index; "middle income trap"; inequality; economic growth; education expenditure; health expenditure; institutional factor

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INTRODUCTION

The issues of economic growth, development and income status are relevant both within the context of national economic policies, and in the context of problems of comparing the level and dynamics of development of countries and regions. The question of what are the main reasons for the divergence of the levels of development of different countries and regions is as relevant today as it was decades ago. In the economic literature, this issue has already been discussed from many perspectives, and in fact the main approaches in many cases have diametrically opposed interpretations. From this perspective, the most discussed conceptual context is a so-called "middle income trap" problem, which many countries with emerging markets have been facing in recent decades. The "middle income trap" is a situation where a developing country, on its the path to reforms and modernization, uses its main competitive advantage — the availability of cheap labor — to attract foreign investment at its expense in order to achieve rapid economic growth. This leads to an increase in per capita income. However, this has its limits, and economic growth gradually slows down, as foreign investment gradually decreases, debts increase, and the process of stagnation begins. This leads to the emergence of the "middle income trap".

This problem is particularly relevant for the countries that emerged as a result of the collapse of the former Soviet Union, such as the Republic of Armenia. It is obvious that the trend of fairly high rates of economic growth that lasted for decades has been changing significantly in recent times, and the

traditional factors of economic growth — economic growth drivers based on relatively low wages and the dominance of traditional industries — can no longer ensure the high growth rates as before. In this regard, the clarification of the relationship between economic growth and human development is becoming more relevant in these countries. In terms of methodology, there appears to be a general agreement among the international experts on how to assess the level of development in a country. In this regard, several widely used indices, particularly the UN Human Development Index, allow us to evaluate the level of development in a particular country and its progress. On the other hand, when considering the issues of development policy, in particular fiscal policy, of a particular country, it is essential to compare their vectors with global trends. This article discusses the impact and consequences of government spending policy on human development in the context of the emergence and dynamics of the "middle income trap".

LITERATURE REVIEW

In economic literature, the problem of the "middle income trap" is considered in the context of problems of ensuring stability and inclusiveness of economic growth. The problem of the middle income trap was first clearly formulated by World Bank experts Gill and Kharas, who argue that at a certain stage of development, developing countries can become trapped in a situation where their income levels remain middle income, due to several factors. On the one hand, due to rising prices and lack of competitiveness, on the other hand, there is a deficit in investment and a lack of human capital for the creation and implementation of innovations. Thus, after a period of high rates of economic growth, most emerging countries for a long time found themselves locked between countries with low per capita income, dominated mainly by industries of extraction and export of raw materials, and advanced economies producing high-tech products with high value added [1, p. 23].

These theorists Kharas and Gill [2, p.1–2] later addressing the problem of the "middle income trap", expressed the view that the Solow-Swan and Romer-Lucas theories of economic growth more comprehensively describe the development paradigms of low- and high-income countries. However, there is currently no functional theory of economic development on the economic growth of middleincome countries and, consequently, overcoming the "middle income trap". In particular, the Solow-Swan theory, accordingly, very well explains the circumstances of ensuring economic growth in low-income countries through capital accumulation, foreign investment, and exogenous technological change, while the Romer-Lucas model explains the circumstances of solving the problem of economic development in developed countries through innovations, endogenous technological change, and the export of capital to developing countries and ensuring a high standard of living. As an alternative, these authors propose considering Schumpeterian models of economic growth and development, particularly those proposed by Aghion, Akcigit and Howitt [3, p. 2–3].

The problem of the "middle income trap" has been discussed by some researchers in the context of the study of so-called "impoverishing economic growth" [4]. In particular, this link has been observed using the example of BRICS member countries [5]. This issue has also been discussed by several other researchers, using the example of Southeast Asian countries. They have noted that the "middle income trap" also emerges and is confirmed in the context of the increase in social and spatial inequality and the deepening of poverty in the countries under consideration [6]. Other group of researchers has developed the concept of average income with fixed thresholds [7, 8], another group has focused on the concept of average income with relative thresholds [9, 10].

Some researchers [11, pp. 3285–3286] have linked the problem of the "middle income trap" to the underutilization of the cutting edge of knowledge and technology and the presence of weak and inefficient institutions. This leads to a decline in the total productivity of production factors [12, p. 20–21]. Similar results were also obtained by Lee and Park [13], who argue that the factors of growth in the total productivity of production factors have had a dominant role in the economic growth of countries that have escaped the "middle income trap".

Comparative analysis of economic growth trajectories of low- and middle-income countries [14, p. 1039] shows that in such countries, proper control

of corruption and full financing of the sectors that determine the human development index (education and health) make it possible to ensure the transition to the group of countries with higher income status, while inflation and unjustified exchange rates have a negative impact on economic growth. Meanwhile, the study of the development experience of the Baltic countries [15, p. 39–40] indicates that the rapid development of the information technology sector is still not a sufficient guarantee for a sufficient increase in the total productivity of production factors and a final solution to the problem of the middle income trap. The main problem here lies in the difficulties in generating the capabilities for the formation of value chains, which constitute a large share of added value, typical of developed countries. On the other hand, analyses of the development experience of Latin American countries (Wu and Fang) show that if country falls into the "middle income trap", it is likely also to fall into the middle-technology trap. To avoid this issue, the researchers recommend investing heavily in education, research, and funding for development programs [16, p. 22–23].

It is widely believed among researchers that one of the main ways to overcome the problem of the "middle income trap" is to implement an effective redistribution of aggregate income using public policy levers. A group of researchers [17], studying the impact of government expenditure policies on human development in upper-middle and high-income countries per capita, concluded that in terms of welfare growth, increasing spending on education is more effective in upper-middle income countries, while in terms of welfare growth, the share of social spending on health care is more effective in terms of welfare growth in high-income countries.

As a result of evaluating a panel model developed on the basis of data from 55 low and middle-income countries [18, p. 392], concluded that in the mentioned sample of countries, increasing public spending has a positive impact on well-being indicators. However, the most significant impact is felt in the healthcare sector. In turn, Samir Saad [19, p. 1242], observing the effects on the integral index summarizing inclusive economic growth consisting of 4 main components (quality education, healthcare, environmental sustainability, income distribution) based on the ARDL model, concluded that the effectiveness of public expenditure policy has the most tangible results in the education and healthcare sectors. Another study [20, p.18–20], notes that although increased government spending on health can improve certain demographic indicators, it is not a sufficient condition for improving the human development index and inclusivity.Accordingly, good governance of the health sector and the availability of quality medical infrastructure are extremely important.

Some studies show that the policy of increasing public spending does not always lead to the desired level of economic growth, and it may not be the best way to overcome the problem of the "middle income trap". The vector autoregression (VAR) model developed by a group of Armenian researchers, Sandoyan et al., to identify the impact of public expenditures on economic growth showed the presence of a negative relationship in the case of the Republic of Armenia [21, p. 222–224]. The reason for this result is underdeveloped institutions, the presence of corruption, and an inefficient distribution of spending. Specifically, spending on education, science, human capital and infrastructure — all of which can ensure sustainable rates of economic growth, has been too small.

METHODOLOGY AND DATABASE

The main methodological starting point of this article is not only to assess the purely quantitative effects of public expenditure policy, in particular in terms of economic growth and income generation, but also to document the main impacts of these policies in the context of human capital accumulation, qualitative development, as well as the equitable distribution of benefits. In this regard, the Human Development Index (HDI) and its modification, the Inequality-Adjusted Human Development Index, have been selected as the main benchmarks for the study.[1]

In order to analyze the factors determining shifts and changes in the Human Development Index, as well as the inequality-adjusted HDI, two panel econometric models with the following specifications were considered within the framework of this study:

[1] Human Development Report 2023–2024: Breaking the gridlock: Reimagining cooperation in a polarized world. Technical notes, UNDP. New York. P. 3–6. 2024:1–16. URL: https://hdr.undp.org/sites/default/files/2023-24_HDR/hdr2023-24_technical_notes.pdf (accessed on 20.05.2025).

$$Y_{i,t} = \alpha_i + \sum_{k=1}^{i} \beta_k x_{i,t} + \varepsilon_{i,t},$$

where $Y_{i,t}$ — the dependent variable is the logarithmic value of the *i*-th country in the panel database at time *t*: the Human Development Index (HDI) in the first model, and the Inequality-Adjusted Human Development Index (IHDI) in the second model;

α_i — fixed effects specific to the *i*-th country, which do not change much over time (e.g., effects of geographical location, climate, informal institutions, values, culture, etc.);

$x_{i,t}$ — a vector of dependent variables that includes the ratio of government education spending to GDP ratio and the share of public healthcare spending in total healthcare spending, the share of Internet users in the total population and the share of school attendance among school-age children (all in logarithmic terms), the ratio of employed people to the total population, as well as a number of factors characterizing the country's institutional environment: the control of corruption index;

$\sum_{k=1}^{i} \beta_k$ – the elasticity of the dependent variable to a change in the *k*-th independent variable for *i*-th country;

$\varepsilon_{i,t}$ — idiosyncratic error term of the model.

The first model, in which the human development index was considered as the dependent variable, was estimated based on annual panel data from 2000 to 2021 for the upper-middle-income group countries, using the data obtained from the UN Human Development Report, as well as the World Bank databases. For the second model, the estimation time horizon was 2010 to 2021, taking into account the fact that the inequality-adjusted human development index which is published in the UN Human Development Report, began to be available in 2010. The limitation of the time horizon to 2021 is due to the availability of complete statistics for both the dependent and independent variables mentioned above for the majority of countries in the upper-middle income group as of 2021. This is because, in recent years, data has not been available for all countries.

ANALYSIS AND RESULTS

If we look at the long-term trend of the Human Development Index in Armenia, we can see that it has been steadily improving, both in terms of overall and component indicators. In particular, *Fig. 1* shows that compared to 1990, the HDI in Armenia in 2022 improved by about 19.5%, from 0.658 to 0.786. This places Armenia in the group of countries with high HDI scores, ranking it 76th out of 193 countries. By the way, the average annual growth was approximately 1% (see *Fig. 1*).

If we compare the HDI of Armenia in 2022 with the average value of this index of the included countries in the comparable upper middle income group,[2] equal to 0.739, the index of Armenia is higher than the above-mentioned by about 6.4% or 0.047 units (*Fig. 1*). As for the subcomponents of the index, we can say that in this regard, too the Republic of Armenia is in a good position compared to other countries. In particular, compared to 1990, the average life expectancy at birth in 2022 has increased by 6.6%, or 4.6 years, reaching 73 years in absolute terms, which is 1 year higher than the average in comparable countries. The expected duration of education has increased by about 28.6% or 3.2 years, in absolute terms to 14.4 years, which is also higher than the average for comparable countries, which is 13.8 years. The increase in the average actual duration of education amounted to 15.8% or 1.5 years, in absolute terms to 11.3 years (the average of comparable countries is 9.5 years), as well as the growth in gross national income per capita amounted to 196.6% or $ 10,205, in absolute terms to $ 15,388, adjusted to the constant purchasing power parity of 2017, the average of comparable countries was $ 14,065 (*Fig. 1*).

In parallel, it is important to consider the dynamics of the HDI through the prism of inequality. In particular, if we compare the dynamics of the HDI and the HDI adjusted for inequality, we can see that the loss of HDI due to the inequality factor has a decreasing trend over the past decade: the magnitude of the

[2] From here on in the article, all the countries included in the upper-middle income group, corresponding to the classification of the World Bank Atlas methodology, are considered as countries comparable to Armenia, as Armenia is also classified as a country with upper-middle income level. URL: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed on 20.05.2025).

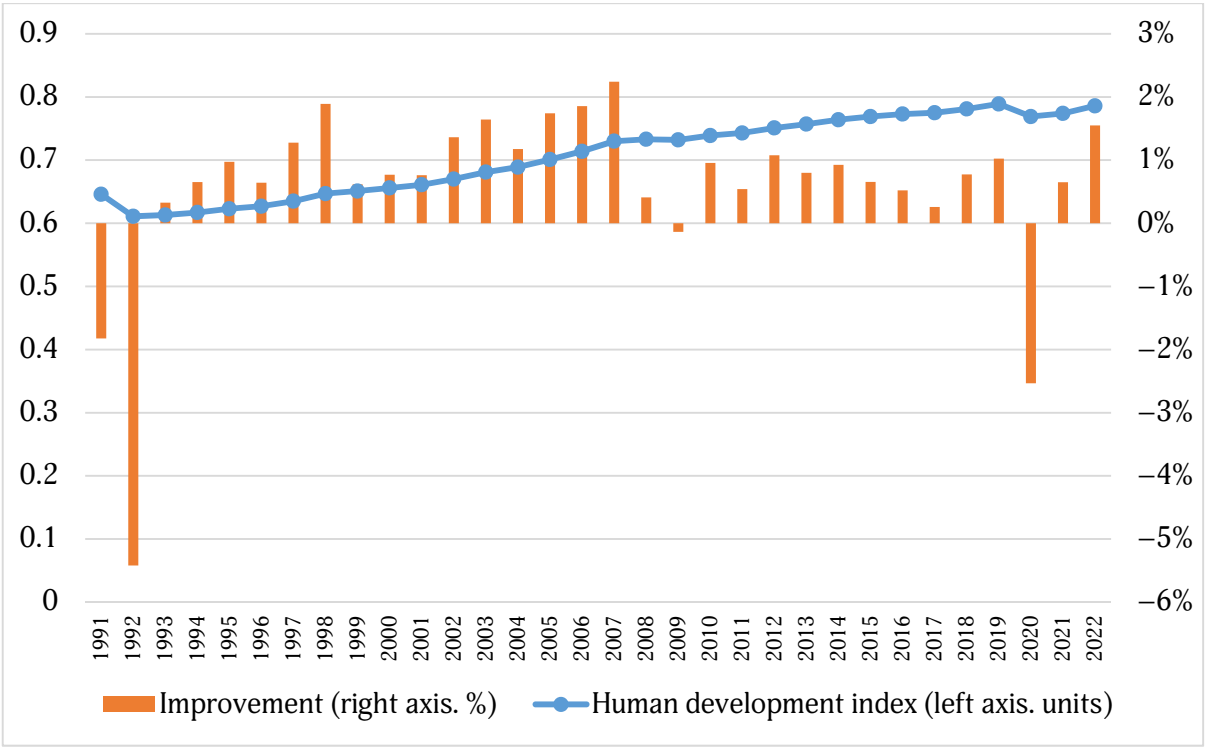

Fig. 1. **Human Development Index Trend in the Republic of Armenia in 1990–2022**

Source: The chart was compiled by the authors based on data from the UN "Human Development Report" database. URL: https://hdr.undp.org/data-center/human-development-index#/indicies/HDI (accessed on 20.05.2025).

loss has decreased by about 2 percentage points in the past decade, amounting to 8.3% or 0.065 units in 2022, which is significantly lower than the loss rate of comparable countries — 18.7%. If we consider the breakdown of the index by sub-indicators, we can see that the loss trends for all sub-indicators over the observed period are decreasing (*Fig. 2*).

In particular, during the observed period, the magnitude of the loss from the life expectancy coefficient due to inequality amounted to 8.6% on average, which decreased by 4.7 percentage points over the last decade, amounting to 6.3% in 2022 (in comparable countries, on average, 10.9% in 2022), the magnitude of the loss from the education expectancy coefficient amounted to 3.2% on average, which decreased by 0.8 percentage points in the last decade, amounting to 2.9% in 2022 (in comparable countries, on average, 15.7% in 2022), the magnitude of the loss from the income inequality coefficient amounted to 16.8% on average, which decreased by 1.2 percentage points in the last decade, amounting to 15.1% in 2022 (in comparable countries, on average, 27.4% in 2022) (*Fig. 3*). It is clear that the problem of inequality is significantly exacerbated in developing middle-income countries, and in Armenia's case, the losses caused by unequal distribution of health care and income are problematic, while in the case of education, the loss is significantly lower than in other comparable countries.

In this regard, it is important to balance the short-term and long-term goals of the government spending policy, as the development of education and health systems as well as the income level are often interdependent factors. On the one hand, the level of sufficient financial capabilities of the state determines the issue of fixing education and healthcare spending as a budgetary priority in the short term. On the other hand, the quality of education and health services and systems influences the income level of the country in the long run. In this context, it is relevant to examine the long-term shifts in the income level of countries and observe the so-called "middle income trap" which is manifested in the countries with middle-income levels.

Figure 4 shows the combination of gross national incomes of countries calculated using the World Bank's "ATLAS" methodology over a 30-year period, from 1993 to 2023, as well as the upper-

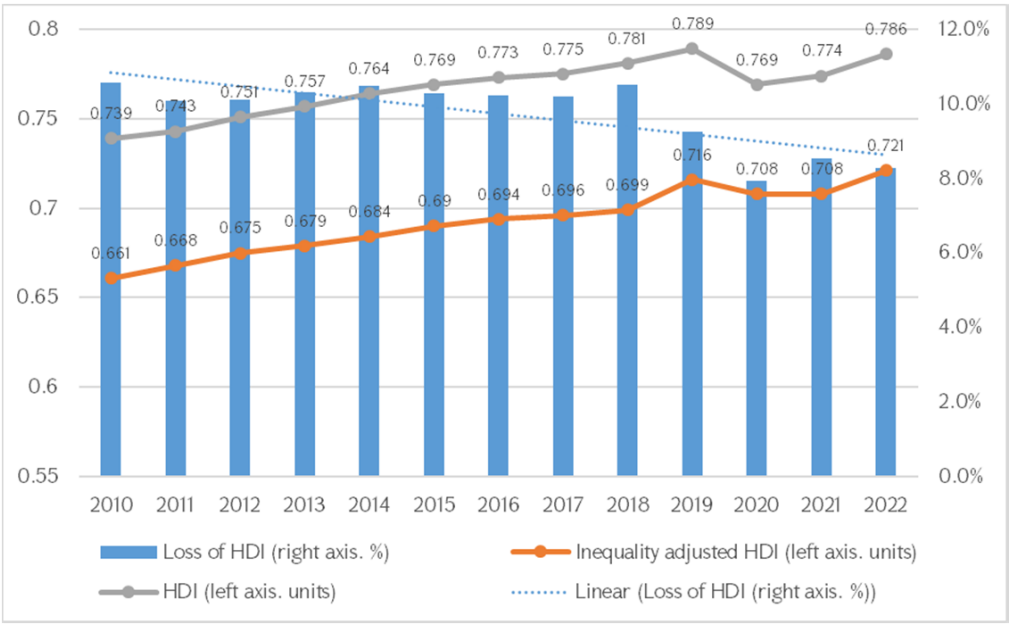

Fig. 2. **Human Development Index and Inequality-Adjusted Index Trends in the Republic of Armenia in 2010–2022**

Source: The chart was compiled by the authors based on data from the UN "Human Development Report" database. URL: https://hdr.undp.org/data-center/human-development-index#/indicies/HDI (accessed on 20.05.2025).

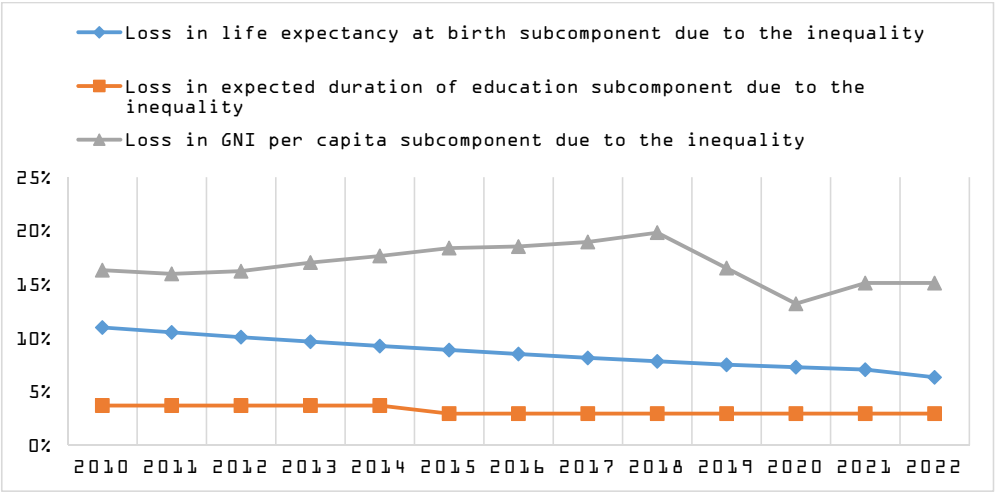

Fig. 3. **Trend of Loss of Subcomponents of the Human Development Index due to Inequality in the Republic of Armenia in 2010–2022**

Source: The chart was compiled by the authors based on data from the UN "Human Development Report" database. URL: https://hdr.undp.org/data-center/human-development-index#/indicies/HDI (accessed on 20.05.2025).

middle income income group thresholds for the corresponding years.[3] It can be noted that compared to 1993, as of 2023, only 20 of the upper-middle income group, (which in 2023 included Armenia and totally 54 countries), have overcome the "middle income trap". This category includes countries that were in the upper-middle income group in 1993, with a per capita income level in the range of 2,786–8,625$, and have already transited to the high-income group by 2023, with a per capita

[3] The chart was compiled by the author based on data from the World bank database. https://datahelpdesk.worldbank.org/knowledgebase/articles/378832-what-is-the-world-bank-atlas-method; https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed on 20.05.2025).

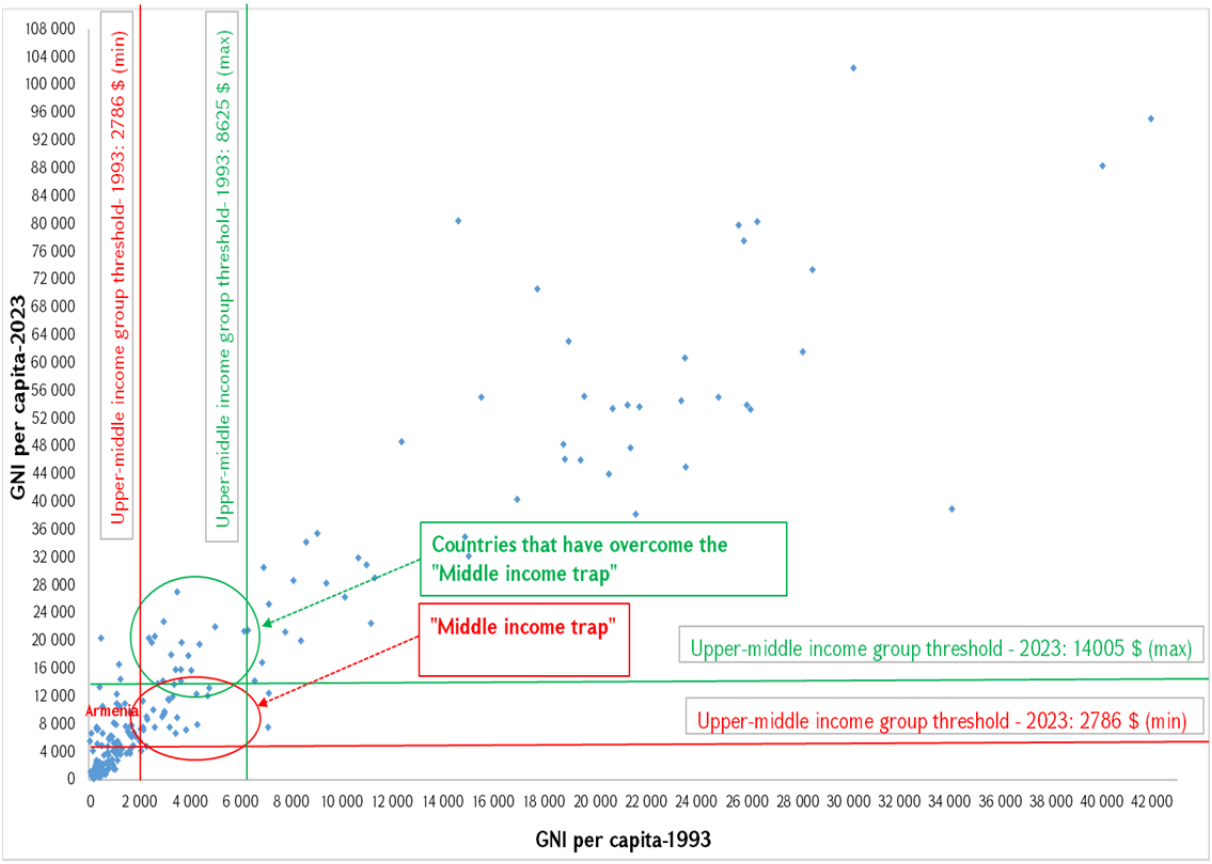

Fig. 4. **The Manifestation of the "Middle Income Trap" in 1993–2023 for Over 200 Countries**

Source: The chart was compiled by the authors based on data from the World bank database. URL: https://datahelpdesk.worldbank.org/knowledgebase/articles/378832-what-is-the-world-bank-atlas-method; https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed on 20.05.2025).

income level above 14,005$[4] (*Fig. 4*). If we examine the state's spending participation in education and healthcare in these countries, we can state that it is incomparably higher than the average level of Armenia and the countries included in the upper-middle income group. In particular, in the period considered in the modeling sample, 2000–2021, the weights of the observed variables — public financing of total health expenditures and public expenditures on education to GDP ratio — were recorded in Armenia at an average of 15.7% and 2.7%, respectively. For the upper middle income group these ratios were 54.1% and 4.1%, respectively. Among the countries that have managed to escape the "middle income trap", the Czech Republic has achieved an average of 85% and 4.2%. Slovakia has achieved 77.7% and 4%. Slovenia has achieved 72% and 5.3%. Chile has achieved 45.5% and 4.3%. Uruguay has achieved 59.3% and 3.7%. Hungary has achieved 68.3% and 4.8%. Russia has achieved 61.4% and 3.8%. In Malta, the figures are 66.1% and 5.4%. By the way, these countries stood out for their high level of the above indicators not only during the period under consideration, but also during the period of being included in the upper-middle income group. In particular, the Czech Republic crossed the threshold of the high-income group in 2006 and in 2000–2005 recorded an average of 87.4 and 3.9 for these indicators, respectively; Slovakia crossed the threshold in 2007, with previous records of 84.1% and 4%, respectively. Chile did so in 2012 with 41.2% and 3.8%. Uruguay followed in 2012 with 52.4% and 3.3%. Hungary crossed the line in 2007 with 69.3%

[4] The thresholds are consistent with the World Bank Atlas methodology and correspond to the threshold values for 1993 and 2023. URL: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed on 20.05.2025).

and 5.2%. Russia was in the upper-middle income group between 2004 and 2011, recording 61.6% and 3.9%. Malta did so in 2002 with 70.4% and 3.9%, according to the World Bank's.[5]

As mentioned, the aim of this study was to examine the effects of public education and health spending policies on both human development(HDI) and inequality-adjusted human development (IHDI) indices in upper-middle income countries. To this end, two panel regression models were estimated. The stationarity of the variables included in the models was confirmed using the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Levin-Lin-Chu (LLC) tests. Given the results of the Hausman test, as well as the fact that comparable upper-middleincome countries were included in the models, a randomeffects model was not considered and the models were estimated with fixed effects in order to take into account the idiosyncratic characteristics and differences inherent in the countries. In parallel, in order to exclude the phenomenon of heteroscedasticity in the model, the cross-section weights approach was used during the assessment (*Tables 1 and 2* in the *Appendix*).

The results of the model estimation are as follows:

- A one percent increase in public education spending as a share of GDP leads to a 0.009 percent increase in the Human Development Index and a 0.01 percent increase in inequality-adjusted Human Development Index.
- A one percent increase in government healthcare spending as a percentage of total healthcare spending in a society leads to a 0.027 percent increase in the Human Development Index (HDI) and a 0.031 percent increase in the Inequality-Adjusted HDI.
- A one percent increase in the number of internet users in the total population leads to a 0.03 percent increase in the Human Development Index.
- A one percent increase in the proportion of school enrollment among school-aged children leads to a 0.02 percent increase in the Human Development Index.
- A one percentage point increase in the employment-to-population ratio leads to a 0.1% increase in the Human Development Index.
- A 1-unit increase in the control over corruption index, one of the factors that characterize the institutional environment, leads to a 0.6% decrease in the Human Development Index.

DISCUSSION

- The results of the model assessment prove that financial injections from the state budget, while having significant social impacts in general, have a small quantitative impact on the Human Development Index. The limited impact of government spending on the education sector in the short term is probably due to the short time horizon. Given the nature of this sector, investments can take up to 5–10 years to produce tangible results. However, despite the low impact, the elasticities are statistically significant and demonstrate the positive relationship between government spending policies and the Human Development Index in the countries included in the upper-middle-income group. The results of the model show that in terms of the impact of health spending, although to some extent they are more tangible, in terms of the impact on the magnitude of the human development index, the impact of health spending is expected over a much longer period, in terms of the improvement of the demographic situation and especially the increase in average life expectancy. The long time lag effect is also present for other factors considered in the model (share of Internet users in the population, school attendance of school-age children, employment level).
- Overall, the results of the model assessment show that public investment in education, healthcare and social infrastructure are strategic in nature, generally ensuring the formation of high-quality and competitive human capital, which, over a given time horizon, contributes to improving the country's Human Development Index and solving the "middle income trap" problem. In this context, perhaps the most significant result of the model concerns the significant impact of institutional factors on the growth of the human

[5] URL: https://data.worldbank.org/indicator/SH.XPD.GHED.CH.ZS?locations=1W; https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS?name_desc=false; https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed on 20.05.2025).

development index, both in time and content. Institutional vulnerability and corruption are serious factors hindering development and limiting the inclusiveness of economic growth, especially in lower and upper-middle income countries. Therefore, further promotion of institutional reforms and improving the quality of public administration are crucial for bringing countries that have fallen into the "middle income trap" to a new, higher development trajectory.

- One of the main challenges on the development agenda for countries in the "middle income trap", including the Republic of Armenia, is the extremely uneven distribution of income and wealth, which inevitably affects the overall development trajectory. Taking this into account, the analysis conducted in the article assessed the impact of individual factors not only on the human development index, but also on the inequality-adjusted human development index. Their results show that as government spending increased, the "losses" in the Human Development Index due to inequality somewhat decreased.

CONCLUSIONS

The greater elasticity of the impact of the above-mentioned expenditure policies on the inequality-adjusted Human Development Index demonstrates the importance of these policies in the context of overcoming inequality in countries included in the upper-middle income group. In parallel, this phenomenon serves as a signal to policymakers that the effects of public spending policies in the education and healthcare sectors should be considered not only within the context of overall human development, but also within the context of redistributive phenomena, since the effects are significant and quantitatively evident in the results of both qualitative and quantitative assessments of this analysis.

Given the greater elasticity of education and healthcare spending policies on the inequality-adjusted human development index, the use of targeted public spending instruments may create highly probable opportunities in the future to minimize the loss of Human Development Index due to inequality in countries included in the upper-middle income group. Thus, given the cross-country analysis of the education and healthcare sector government spending policies of the countries that have overcome the "middle income trap", at least the long-term average indicators of these spending in these countries before they overcame the trap, can serve as a benchmark for policymakers in the group of upper-middle income countries.

It is also important to draw attention to the fact that the digitalization of society (the share of internet users in the overall population), access to education (the share of school attendance among school-age children), and participation in the labor market (the share of employed people in the total population) have a significant positive impact in the context of human development.

The situation is different in case of the impacts of control of corruption, as policymakers often face a difficult dilemma due to the fact that in developing countries with an underdeveloped institutional environments and markets in the "middle income trap", the process of preventing corruption can be very costly. This requires spending money that could be allocated to education, healthcare, and other social sectors, which are essential for human development. However, this is necessary to maintain public order and justice systems. This phenomenon largely determines the negative impact of controlling corruption on the human development index, as shown in the model's estimation results. Therefore, the elasticity estimates included in the results of this study are important in the context of balancing the proportions and redistributions of expenditure carried out for the control of corruption, which are extremely important from the point of view of human development and enhancement of the institutional environment.

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APPENDIX

Table 1

Estimation Output of the Model Describing the Relationships Between Factors Affecting the Human Development Index in Countries in the Upper-Middle Income Group

Dependent Variable: LOG_HDI				
Method: Panel EGLS (Cross-section weights)				
Date: 12/23/24 Time: 00:25				
Sample: 2000 2021				
Periods included: 22				
Cross-sections included: 45				
Total panel (unbalanced) observations: 956				
Linear estimation after one-step weighting matrix				
White cross-section standard errors & covariance (no d.f. correction)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_GEDU_EXP	0.009073	0.003077	2.948800	0.0033
LOG_GHEALTH_EXP	0.026974	0.003919	6.882441	0.0000
LOG_USAGE_OF_INT	0.032157	0.001119	28.74468	0.0000
LOG_SCHOOL_ENROLL	0.023426	0.006873	3.408347	0.0007
CONTROL_OF_CORRUPTION__ESTIMATE	–0.005972	0.001633	–3.657467	0.0003

EMPLOYMENT_TO_POPULATION_RATIO	0.001772	0.000166	10.69081	0.0000
C	–0.749013	0.034732	–21.56562	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
	Weighted Statistics			
R-squared	0.973609	Mean dependent var		–0.439647
Adjusted R-squared	0.972151	S.D. dependent var		0.199753
S.E. of regression	0.023266	Sum squared resid		0.489881
F-statistics	667.7387	Durbin-Watson stat		0.329852
Prob(F-statistics)	0.000000			
	Unweighted Statistics			
R-squared	0.916237	Mean dependent var		–0.333561
Sum squared resid	0.532020	Durbin-Watson stat		0.188171

Source: Compiled by the authors.

Table 2

Estimation Output of the Model Describing the Relationships Between Factors Affecting the Inequality-Adjusted Human Development Index in Countries in the Upper-Middle Income Group

Dependent Variable: LOG_IHDI				
Method: Panel EGLS (Cross-section weights)				
Date: 12/18/24 Time: 10:58				
Sample: 2010 2021				
Periods included: 12				
Cross-sections included: 38				
Total panel (unbalanced) observations: 445				
Linear estimation after one-step weighting matrix				
White cross-section standard errors and covariance (no d.f. correction)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_GEDU_EXP	0.010451	0.006279	1.664347	0.0968
LOG_GHEALTH_EXP	0.031964	0.007399	4.320162	0.0000
LOG_USAGE_OF_INT	0.044998	0.003167	14.20731	0.0000
LOG_SCHOLL_ENROLL	–0.073836	0.011431	–6.459533	0.0000

CONTROL_OF_CORRUPTION__ESTIMATE	–0.024428	0.004475	–5.459290	0.0000
EMPLOYMENT_TO_POPULATION_RATIO	0.003558	0.000313	11.37580	0.0000
C	–0.677988	0.067256	–10.08077	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
	Weighted Statistics			
R-squared	0.991956	Mean dependent var		–0.708597
Adjusted R-squared	0.991093	S.D. dependent var		0.421392
S.E. of regression	0.021698	Sum squared resid		0.188794
F-statistics	1150.002	Durbin-Watson stat		0.618628
Prob(F-statistics)	0.000000			
	Unweighted Statistics			
R-squared	0.979797	Mean dependent var		–0.504740
Sum squared resid	0.194422	Durbin-Watson stat		0.453574

Source: Compiled by the authors.

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