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## Article

# Investment in Human Capital Within the Creative Economy Formation: Case of the Eastern and Central Europe Countries

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# Investment in Human Capital Within the Creative Economy Formation: Case of the Eastern and Central Europe Countries

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## Abstract

The purpose of the article is to determine the link between investing in human capital and the formation of the creative economy. Given that human capital is considered both a factor in the socio-economic development of countries and a prerequisite for the formation of the creative economy and consequently, for the modernization

changes in today's economy, there is a need to study the areas of investment in human capital.

The study is based on an analysis of a number of indicators in Eastern Europe (Ukraine and Moldova) and Central Europe (Poland, the Czech Republic, Romania, Hungary, and Lithuania): total expenditure on education, the analysis of which made it possible to determine the level of education funding in each country; the average cost per pupil/student, which allowed us to identify trends in spending by funding organizations; the share of total expenditure on education in GDP, depending on the level of education, which made it possible to determine the priority and sufficiency of education system funding; the cost allocation indicator by funding organizations; and the human development index, which measures living standards, literacy, education, and longevity. The study also focuses on analyzing data that determine the global innovation index, since its calculation is based on the assessment indicators of human capital and research (education, tertiary education, research, and development) and creative outputs (intangible assets, creative goods, and services, online creativity).

Based on the results of the research, it was concluded that human capital is the main factor that boosts the creative economy, and enhancing human capital depends on the level of education and scientific progress in a country. Empirical evidence shows that directing investment in human capital contributes to the formation of the creative economy, improving the competitiveness of countries, and at the same time, ensuring the appropriate rates of their socio-economic development.

**Keywords:** human capital, investment in human capital, education, education funding, creative economy, innovation economy

**JEL:** H52, I22, I23, I25

## Introduction

The term “creative economy” has a lot of meanings and is not straightforward, given that it emerges at the intersection of fields such as art, culture, business, and technology. The term itself was proposed by Howkins in 2001, and it meant that “the transactions of creative products that have an economic good or service that results from creativity and has economic value” (Howkins 2001, p. 8). However, this definition lacks the specificity that emerges if we clearly distinguish three parameters: types of creativity (scientific, cultural, technological, economic) (*The Creative Economy Report* 2008); creative industries, whose number varies depending on the model that underlies their division (according to the UK DCMS model: advertising, architecture, art and antiques market, design, fashion, film and video, music, performing arts, publishing, software, television and radio, and video and computer games); the creative class, according to Florida (2002). So, we get a triad that will have its specifics in each country.

Why is there such a focus on the creative economy today? The reason is obvious because, according to Howkins, “The creative economy deals in ideas and money.” Both ideas and money matter, especially within the multiplication of wealth that is made possible through the realization of ideas. Before the global financial crisis, the “inter-

national trade in creative goods and services experienced an unprecedented average annual growth rate of 8.7 percent” in 2000–2005 (*The Creative Economy Report* 2008) and an average growth rate exceeding 7 percent between 2002 and 2015 (Creative Economy Outlook 2018). The traditional goods and services trade, in particular, the commodities trade, has not been able to demonstrate such significant growth.

Another important factor that determines the specifics of the creative economy is developing countries’ ability to strengthen their position in international trade. In 2002, emerging economies together recorded 84.3 bln USD in trade in creative goods. By 2015, this number had climbed to 265 bln USD (Creative Economy Outlook 2018). It is irrelevant how rich in natural resources a country is; what is of great importance is how strong the nation’s creative skill is and in what way the creative class is supported by the economic agents, in particular by the government. This is especially true for Ukraine and Moldova. Their regions have been annexed, and in particular, they were areas where a large proportion of industry was concentrated. The formation of a new paradigm of economic development of society, in which creative human capital becomes the determining factor of production and economic growth, could be an important milestone in the economic growth of Ukraine and Moldova.

The purpose of this paper is to prove that the development of a creative economy depends on the quality of higher education and science in the analyzed countries. The next section shows the main approaches in the research on the role of human capital for the development of the creative economy. Section 3 characterizes the data set and main indicators, based on which, further analysis is performed. Section 4 summarizes the empirical evidence on the investments in education, depending on the level of education (pre-school education, primary education, the first stage of secondary education, the second stage of secondary education, post-secondary education, tertiary education, doctoral studies or equivalent) and provides some policy implications. Conclusions are given in Section 5.

## Literature review

First, attention is concentrated on the hypothesis that there is a link between investing in human capital and the development of the creative class and the creative economy, which results in economic growth. Therefore, research into the issues of the development and efficiency of investment in human capital has been the subject of interest since the 1960. Human capital, according to Becker – one of the creators of the theory of human capital – is a stock of knowledge, skills, and motivation that is available to each person (Becker 1964).

Fischer, Dornbusch, and Schmallensee believe that human capital reflects a person’s ability to generate income. Human capital includes innate ability and talent, as well as education and qualifications (Fischer et al. 1988). This definition stresses a very important complement – the ability to generate income. Also, human resources have

become a crucial point for achieving a competitive advantage in today's economies. The necessary amount of effective human capital is a key reference for scientific and technological progress and the transition to a new technological development model in a country (Kuznets 2001; Diebolt and Hippe 2019). By contrast, the poor quality and value of national human capital, the poor quality of life, the underdevelopment of state institutions, and so on, are factors that constrain the development of a creative economy (Bilan et al. 2019).

Creative human capital is a set of specific values that create new values in the form of original, unique ideas, and new knowledge (Salikhov 2017, p. 47). Thus, the formation and development of this creativity require not only an understanding of the growing role and importance of human capital in today's economy but also massive investments for its comprehensive and progressive development.

It is no accident that at the Davos Forum, the experts emphasized that creativity will be among the three most sought after trends in the labor market by 2020 (The World Economic Forum 2019).

According to Florida, the founder of "creative class" theory, creativity depends on the environment that supports it – a wide range of social, cultural, and economic factors. Creativity is associated with the emergence of new working conditions, lifestyles, forms of communication, and the environment, which, in turn, stimulate creativity. Florida defines the creative class in areas of employment that are associated with structuring new models and producing ideas. It includes actors, designers, architects, but also "thought leaders," scientists, engineers, and even the entertainment industry; in other words, people who, in their work, must constantly solve non-standard tasks, analyze circumstances and risks, and offer new ways of development (Florida 2002).

The creative class facilitates new principles being brought into both work and everyday life. Members of this class profess new values, i.e., self-expression, individuality, freedom of choice, and mobility. The young generations especially possess such values. According to Florida, members of the creative class are distinguished by mobility, flexibility, self-education, a "new" workplace, leisure as a job, social involvement and active leisure, and interest in street culture (Florida 2002).

Along with evaluating the contribution of the creative class to the development of the creative economy, there was also the issue of determining the contribution of the creative industries to GDP, which Throsby draws attention to since creative goods often have no monetary value, although they certainly represent an intangible value to society (Throsby 2014).

According to Harrison and Huntington, the reasons for the backwardness and prosperity of countries are the cultural differences of society. Some cultural features contribute to modernization, while others, by contrast, impede a country's economic development. Thus, to construct a creative economy, investments in culture and the arts should be channeled as a means of enhancing the country's human capital (Harrison and Huntington 2000).

One of the central aspects of human capital formation is the idea that human capital (including innate talent) develops through conscious investment. Schultz stresses that people's abilities evolve through activities that have attributes of investment (Schultz 1971, p. 32). These include activities such as school education, workplace training, and health promotion. He also notes that investing in human capital is a way of overcoming a country's poverty. According to Shkurupiy, the creative capabilities of the individual, and in particular, the features of a producer of scientific knowledge and his cognitive resources, are formed by investing in education, health care, mobility, and access to information. At first glance, the link between investments and human capital is obvious. However, another question arises: to what extent will an increase in funding of these areas result in the rise of the human capital capacity? (Shkurupiy 2007)

Recent studies show the main areas of investment in human capital in the creative economy: 1) health care (including disease prevention); 2) living (improving living conditions; ensuring affordable housing; maintaining environmental requirements for habitat; safety and economic freedom; information services; ecology and environmental protection; forming creative infrastructure); 3) culture and art; 4) streamlining labor migration (information on the economic conditions in different fields and localities; moving workers to jobs with better labor productivity and wages); 5) employee motivation (addressing human needs); 6) education (general and specialist (i.e., master's, bachelor's degrees); formal and non-formal (self-education) education; training and retraining (i.e., advanced training)); 7) science (fundamental and applied scientific development) (Posnova 2018).

## Methodology

In this research, investment in human capital is considered to be any actions that lead to an increase in a person's professional qualification and productive abilities, and the productivity of his work (Grachev et al. 2016). This definition is different from the above-mentioned definitions as it is difficult to determine someone's specialties (acquired through higher education institutions) belonging to the creative class since graduates can choose from a wide variety of professions nowadays. This means, for example, that graduates with a degree in finance can be employed as a marketing specialist and vice versa. At the same time, it becomes clear that quality and multifunctional higher education should be the basis for the formation of a creative class, regardless of the graduate specialties. That is why our research will focus on analyzing education expenditures by education level using indicators such as total expenditures, the average cost per student, the share of total spending on education in GDP, a breakdown of expenditures by funding organization, and the human development index.

The total expenditure on education is defined as the aggregate sum of expenditures of funding organizations, such as budget administrators (central and regional/local government agencies) and the private (non-government) sector, represented by house-

holds and firms. The analysis of this indicator in the dynamics allows us to determine the level of financing of education in the country.

The average cost per student is defined as the ratio of the total cost to the number of students. Such analysis is also important for identifying trends in spending by funders.

The total expenditure on education per GDP by education level (pre-school education are given as: ISCED 0, elementary education; ISCED 1, first stage of secondary education; ISCED 2, second stage of secondary education; ISCED 3, post-secondary, non-tertiary education; ISCED 4, higher education (short cycle, bachelor or equivalent, master's degree or equivalent) (ISCED 5–7), doctoral or equivalent (ISCED 8). These indicators are relevant for determining the priority and adequacy of funding of the education system.

The breakdown of expenditures by funding organization shows a balance in education funding between the state and the private sector.

The human development index is an integral indicator that is determined to measure living standards, literacy, education, and life expectancy.

The article is also based on data used to determine the global innovation index since the indicators to calculate are indicators of human capital and research (education, tertiary education, research, and development) and creative output (intangible assets, creative goods and services, online creativity).

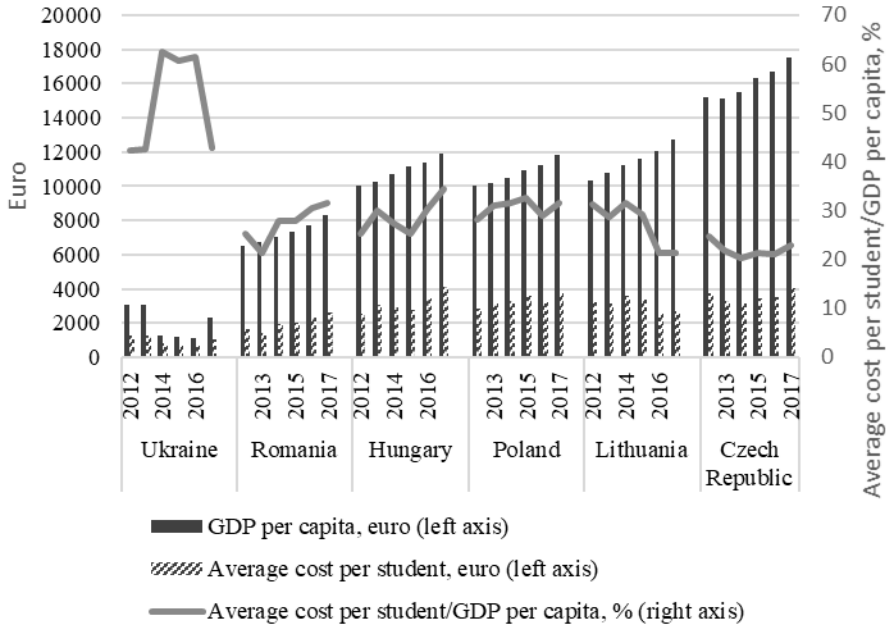
The analyzed period (2009–2018) covers crisis and post-crisis periods in Poland, the Czech Republic, Romania, Hungary, Lithuania, Ukraine, and Moldova. This period includes post-crisis development after the global financial crisis of 2007–2009, as well as a critical political, economic, and social crises in Ukraine due to the Russian Federation's aggression in the form of a hybrid war, which has begun in 2014.

## Results

First, it is necessary to analyze the average cost per student of GDP per capita. This indicator reflects the situation with education funding since it takes into account not only the volume of GDP but also the size of the population that produces it, and that actually uses it. Figure 1 presents a comparison of the indicator and its parts by country. By focusing on the indicator only, the analysis will give reasonable results for Ukraine: the average ratio for 2012–2017 is 52.1% versus 27.4% for Romania, 28.8% for Hungary, 30.6% for Poland, 27.3% for Lithuania, and 22.0% for the Czech Republic.

However, focusing on the parts of this indicator shows that education funding in Ukraine has become much worse, especially during political, economic and social crises 2014–2017, compared to countries from Central Europe. So, in 2012, the costs per student in Ukraine were on a par with the costs in Romania, in euro equivalent; then, in subsequent years, they substantially decreased due to the devaluation of the national currency. On the one hand, this can be seen as a positive aspect, as it

led to an enhancement of competitiveness in Ukrainian education, at least regarding price. On the other hand, the payment of teachers is an important component of the cost of education, which means that there will be an outflow of highly professional teachers to countries where salaries are higher. And, as a result, there will not be a significant increase in the competitiveness of Ukrainian education unless effective action is taken to reform the country's educational system.



**Figure 1.** GDP per capita and average cost per student in Poland, the Czech Republic, Romania, Hungary, Lithuania, Ukraine between 2012 and 2017

Source: authors' own calculations based on data from Eurostat and the State Statistics Service of Ukraine – [https://ec.europa.eu/eurostat/web/products-datasets/-/sdg\\_08\\_10](https://ec.europa.eu/eurostat/web/products-datasets/-/sdg_08_10) (accessed: 23.08.2020), <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do> (accessed: 23.08.2020), <http://www.ukrstat.gov.ua/?fbclid=IwAR2jnDdnfXFtUi718jc-oMd1z3NYQNIQAKJvMNmnGiwLDzJA9drsY7bXZHy> (accessed: 23.08.2020)

Table 1 presents data in the local currency of Ukraine for a better understanding of the real situation with education funding because, during the analyzed period, the local currency was devalued by more than 70%. In addition, it would be desirable to evaluate the structure of spending, given that a large proportion of the costs of schools are for utilities, not for logistics and human resources.

Total spending on education had an upward trend in Ukraine between 2009 and 2018. Thus, if total expenditures for education amounted to 77.41 bln UAH in 2009, then in 2018, it reached 214.0 bln UAH. One can observe an almost three-fold increase, despite the fact that this period covers two crisis periods in Ukraine (2008–2010 – the influence of the global financial crisis, and 2014–present – the annexation of Crimea



by the Russian Federation and war in the eastern part of Ukraine). The average total expenditures on education amounted to 84.25 bln UAH in 2009–2010, 108.23 bln UAH in 2011–2013, 125.53 bln UAH during the most difficult period in Ukraine – 2014–2016, and 198.45 bln UAH in 2017–2018. The indicator of the average cost per student has the same trend: 9,850 UAH in 2009–2010, 13,170 UAH in 2011–2013, and 17,900 UAH in 2014–2016, and 28,050 UAH in 2017–2018. In general, the average cost per student increased 3.4 times. Analyzing these indicators in comparison with GDP shows a negative trend, since the share of total education expenditure in GDP constantly declined, from 8.48% in 2009 to only 6.01% in 2018 (Table 1).

**Table 1.** National Accounts in Education in Ukraine, 2009–2018

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population (million people)	46.0	45.8	45.6	45.6	45.4	42.9	42.8	42.6	42.5	42.3
Gross Domestic Product at Actual Prices (GDP), UAH billion	913.4	1120.6	1349.2	1459.1	1522.7	1586.9	1988.5	2383.2	2983.9	3560.6
Total expenditure on education, UAH billion	77.4	91.1	97.6	111.2	115.9	109.5	127.1	140.0	182.9	214.0
The average cost per student, UAH thousand	8.9	10.8	11.7	13.5	14.3	15.5	18.2	20.0	26.0	30.1
Total expenditure on education as a % of GDP	8.48	8.13	7.23	7.26	7.62	6.9	6.39	5.87	6.12	6.01
Preschool education (ISCED 0), %*	11.2	11.7	12.6	13.6	14.0	14.4	14.9	15.0	15.9	15.4
Primary education (ISCED 1), %	13.0	13.6	13.8	15.1	15.6	16.2	16.8	17.6	19.8	20.9

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	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
The first stage of Secondary Education (ISCED 2), %	19.2	18.3	17.3	17.8	17.7	18.1	18.0	18.7	21.2	22.3
The second stage of secondary education (ISCED 3), %	7.1	7.2	7.9	8.0	7.5	6.9	6.5	6.3	6.8	5.7
Post-secondary non-tertiary education (ISCED 4), %	6.0	6.2	6.1	6.0	6.3	6.0	5.5	5.0	4.9	5.2
Higher Education (short cycle, bachelor or equivalent, master's degree or equivalent) (ISCED 5–7), %	42.0	41.4	40.7	38.0	37.2	36.8	36.8	35.8	29.6	28.6
Doctoral studies or equivalent (ISCED 8), %	1.5	1.6	1.6	1.5	1.7	1.6	1.5	1.6	1.8	1.9

Note. \*the share of funding for each of the segments of the education system (ISCED 0–8) in total funding.

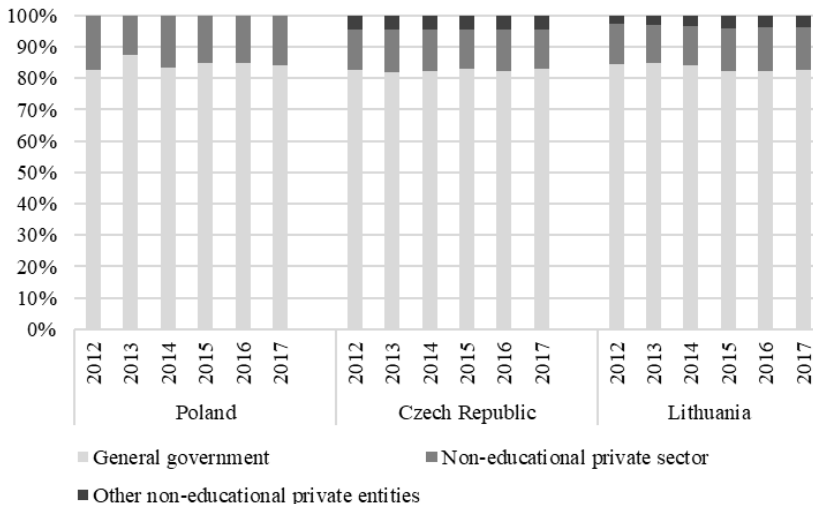
Source: State Statistics Service of Ukraine, <http://www.ukrstat.gov.ua/?fbclid=IwAR2jnDdnfXFtUi718jc-oMd1z3NYQNIQAKJvMNmnGiwLDzJA9drsY7bXZhY> (accessed: 23.08.2020).

The share of public spending on education was 5.94% of GDP in 2017, 5.9% in 2018, and 6% in 2019, which is equivalent to the same share in EU countries. However, it is not possible to compare the GDP of the European countries with that of Ukraine since they differ in values. In the context of the Eastern Partnership (EaP) countries, as of 2014, the share of public spending on education in Moldova was 8.6%, in Georgia – 3.8%,

in Armenia – 2.8%, in Azerbaijan – 3%, in Belarus – 5%, and in Ukraine – 5.9%. Therefore, it is obvious that there is a lack of funding for education in Ukraine compared to the EU countries, but in the context of the EaP countries, Ukraine is one of the leaders in education funding.

It is also worth paying attention to the ratio of costs of pre-school, school, and vocational and higher education, where different trends can be noted, and such trends are controversial: there is a redistribution of costs from vocational and higher education in favor of pre-school and school education. Such trends are difficult to assess positively, as today there is a lack in the segment of working professions in Ukraine. At the same time, the costs of specialist training for working professionals are high due to the increase in the technological component under the training process.

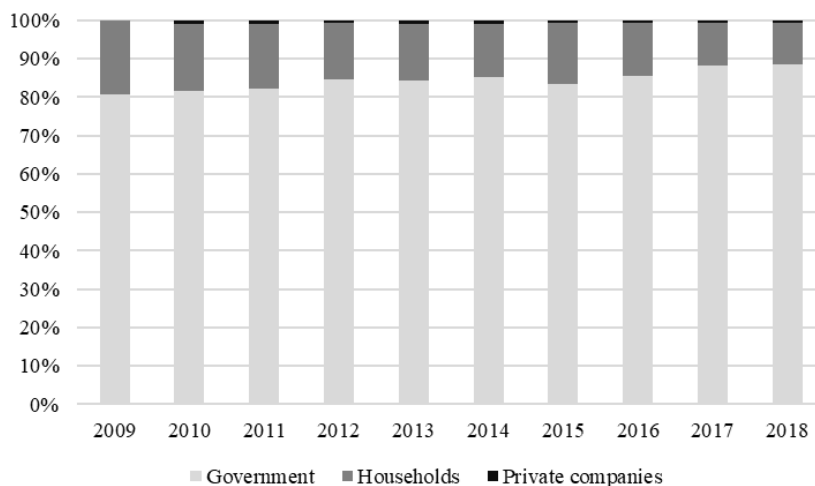
The distribution of costs as a percentage by the source of funding is shown in Figure 2 for Poland, the Czech Republic, and Lithuania, and in Figure 3 for Ukraine. It is evident that government funding plays a crucial role both in Central and Eastern European countries, and the share of this type of funding has not changed significantly in recent years, and the trend is for a slight increase.



**Figure 2.** Distribution of total costs by funding source in Poland, the Czech Republic, and Lithuania, 2012–2017, %

Source: authors' own calculations based on data from Eurostat, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=educ\\_uae\\_fine01&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=educ_uae_fine01&lang=en) (accessed: 23.08.2020).

The Ukraine government's share in education funding increased from 80% to 88.5% between 2009 and 2018. This trend can be assessed either positively or negatively.



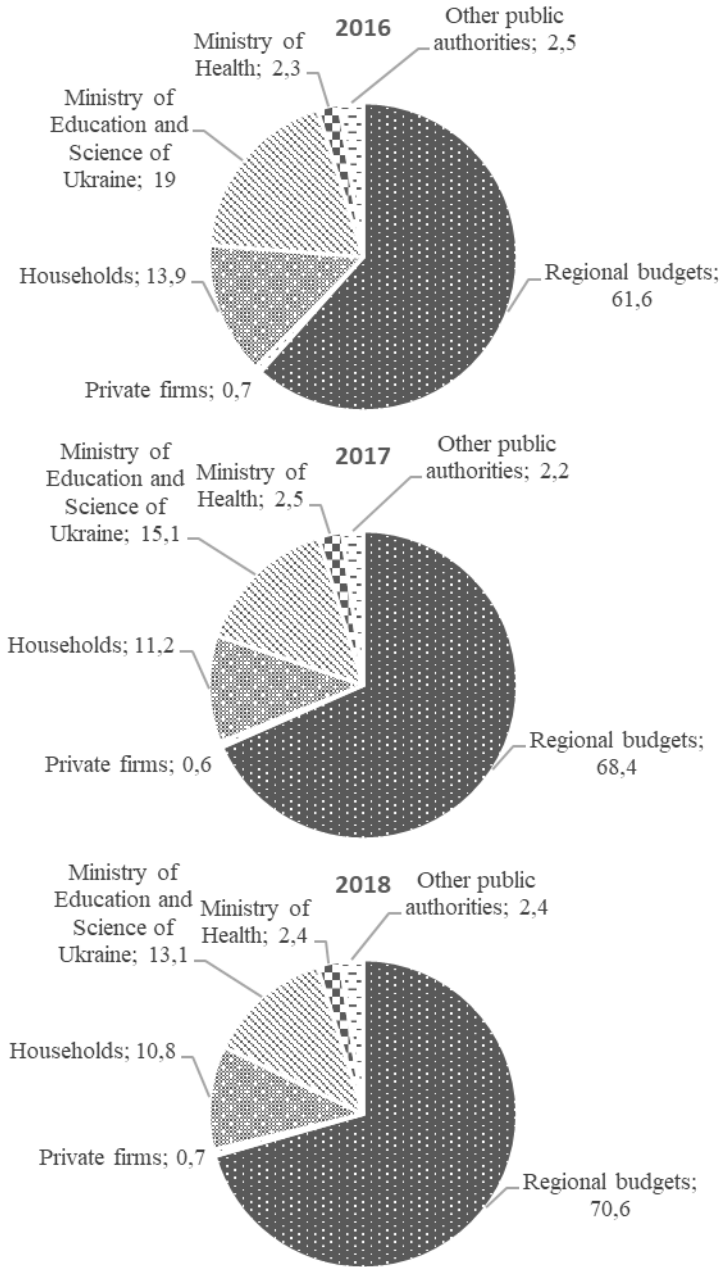
**Figure 3.** Distribution of total costs by funding source in Ukraine, 2009–2018, %

Source: authors' own calculations based on data from the State Statistics Service of Ukraine, <http://www.ukrstat.gov.ua/?fbclid=IwAR2jnDdnfXFtUi718jc-oMd1z3NYQNIQAKJvMNmnGiwLDzJA9dr sY7bXZhy> (accessed: 23.08.2020).

It can be viewed positively, as government support is the main resource in providing quality education to disadvantaged segments of the population. This is especially true when entrance admission barriers to elementary school and higher education are being lifted. Nevertheless, it might be regarded as negative because the increase in the share of government spending is being implemented amid a reduction in the share of private companies financing education. Thus, in Ukraine, the share of private companies in education funding has fallen from 1% in 2010 to 0.7% in 2018, and this is against the backdrop of growing business needs for highly qualified specialists, in particular, for graduates of vocational schools. These private funds should be the basis for reforming vocational education to meet the requirements of the business, in particular, through the modernization of training facilities and dual education development.

There has also been a decline in the share of household funds in education, which is a negative trend as well. This reduction is caused not so much by the decline in household incomes but by the reorientation of households to finance an education abroad.

A detailed structure of total expenditures on education by funding organization is presented in Figure 4. In this case, it is worth paying attention to the structuring of government expenditures. Thus, in 2016, 61.6% of total spending on education was financed through regional budgets, and in 2018 it increased to 70.6%. Meanwhile, the share of the Ministry of Education and Science of Ukraine decreased from 19% in 2016 to 13.1% in 2018. The changes in shares of other government authorities were not so significant.

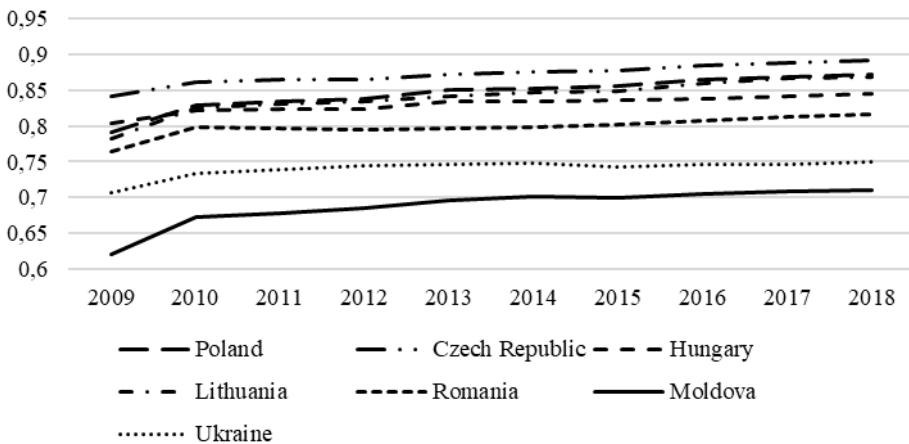


**Figure 4.** Structure of total expenditures on education by funding organization in Ukraine in 2016–2018, %

Source: authors' own calculations based on data from the state Statistics Service of Ukraine, <http://www.ukrstat.gov.ua/?fbclid=IwAR2jnDdnfXFtUi718jc-oMd1z3NYQNIQAKJvMNmnGiwLDzJA9drsY7bXZHy> (accessed: 29.07.2020).

The share of education funding from private firms is very low (0.7% in 2018). At the same time, private firms should be interested in financing the training of highly professional staff. One of the targets for the development of the education system is the introduction of a continuous integrated professional education system based on the integration of educational, scientific, and industrial activities. In turn, the preparation of a scientific, technical, or professional specialist is carried out at the basic stages of a person's life cycle: student (school) – student (higher education institution/vocational school) – specialist (enterprise). Integrated programs begin to be implemented in the upper classes of general education institutions. In this system, three stages of investments in human capital should be distinguished. The first stage should be funded by local government institutions and partly by households; the second stage – by central government, households, and enterprises; and the third stage – by employees and enterprises. However, the best way is for the retraining and training of employees to be funded by enterprises (Dubik and Mityakov 2013).

Financial support for education affects the quality of specialist training and, as a result, the development of human capital. Figure 5 shows the trends in the human development index (HDI) in the analyzed countries.



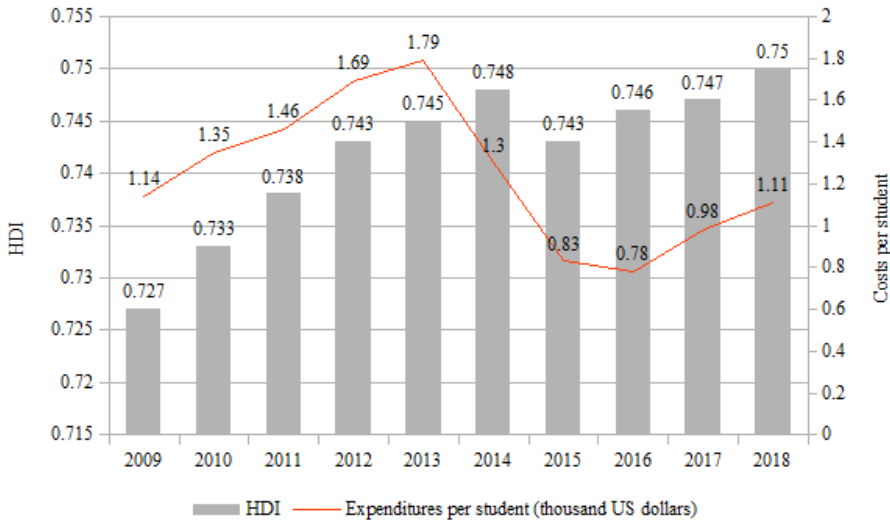
**Figure 5.** Trends in human development index, 2009–2018

Source: Human Development Data (1990–2018), <http://hdr.undp.org/en/data> (accessed: 29.07.2020).

In general, the countries of Central Europe show a high level of HDI. The development trends are also almost the same, with steady growth. It is also worth noting the leap that occurred after the global financial crisis in all countries, both in Central Europe and especially in Eastern Europe. Comparing the indices of Ukraine and Moldova shows that the situation in Ukraine, despite the higher values of HDI, is worse for growth trends. This is especially evident in the recent crisis years in Ukraine.

Considering the correlation between the cost per student and HDI in Ukraine shows its high level during the analyzed period (Figure 6), except for the period 2014–2016 when the country faced the most severe stage of the hybrid war with the Russian

Federation, which caused the financial, economic and socio-political crisis. However, generally, it did not significantly affect the development of human capital of Ukraine. There is great potential for development, including creative economy capabilities.

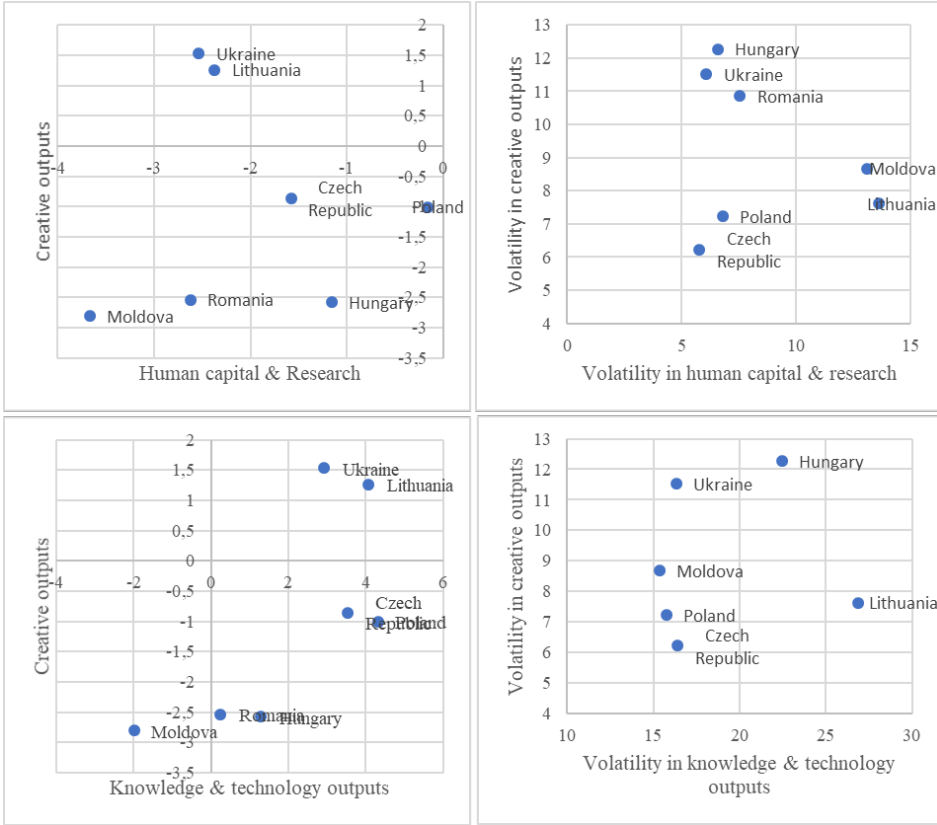


**Figure 6.** Human development index (left axis) and costs per student (right axis) in Ukraine, 2009–2018

Source: State Statistics Service of Ukraine; Human Development Data (1990–2018), <http://hdr.undp.org/en/data> (accessed: 22.08.2020).

Considering the components of the global innovation index, the three most important blocks should be distinguished: human capital & research, knowledge & technology outputs, and creative outputs. Figure 7 shows the average annual growth of these blocks between 2011 and 2019 in the analyzed countries and the volatility of growth. There is a direct correlation between creative outputs and human capital & research, and between creative outputs and knowledge & technology outputs: the better the situation with the human capital & research and the development of knowledge & technology, the more the creative outputs.

The leaders in creative output average growth during 2012–2019 are Ukraine and Lithuania. Evaluating creative output volatility shows that the most variable countries are Hungary, Ukraine, and Romania. This could be explained by the more active development of these countries and the search for new opportunities. Looking at the human capital & research volatility shows that the Czech Republic, Poland, Hungary, and Ukraine are more stable, than other countries; however, the least stable in their development are Lithuania and Moldova. The volatility of knowledge & technology outputs is much higher than human capital & research volatility, and this is quite logical. The least volatile countries are Romania and Moldova, followed by Poland, Ukraine, the Czech Republic, and Hungary, while the most volatile country is Lithuania.

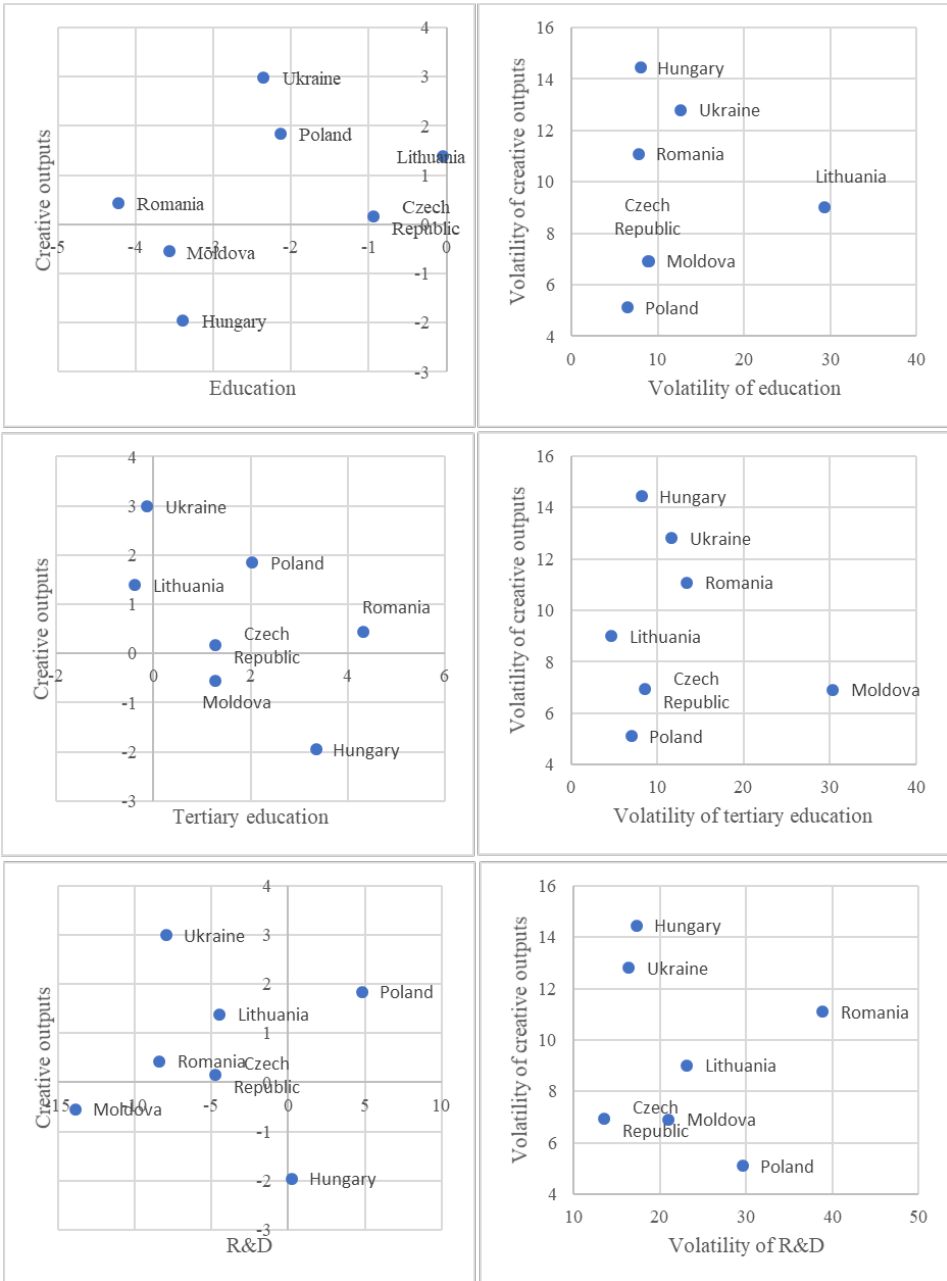


**Figure 7.** The average growth of human capital & research, knowledge & technology outputs, creative outputs, and growth volatility in Poland, Czech Republic, Romania, Hungary, Lithuania, Ukraine, and Moldova in 2011–2019

Source: authors' own calculation based on data from The Global Innovation Index Reports 2011–2019, <https://www.wipo.int> (accessed: 23.08.2020).

Given the fact that the article paid special attention to education and its impact on the formation of a creative economy, we consider the components of this block: education, tertiary education, and research & development (R&D). First, it is obvious that the greatest importance in the formation of a general assessment of human capital is that education and tertiary education play a key role, as shown in Fig. 8. The volatility of education and tertiary education in most countries is at approximately the same level, except for two countries – Lithuania and Moldova.





**Figure 8.** The average growth of education, tertiary education, R&D creative outputs, and growth volatility in Poland, the Czech Republic, Romania, Hungary, Lithuania, Ukraine, and Moldova between 2011 and 2019

Source: authors' own calculation based on data from The Global Innovation Index Reports 2011–2019, <https://www.wipo.int> (accessed: 23.08.2020).

So, the progress of the creative economy depends to a large extent on the development of education and science. Investments in science, technology, and innovation are an integral part of the effective creative economy. The study shows that the countries of Central and Eastern Europe have significant potential in the development of a creative economy, especially due to the existing strong basis – education. Of course, there are issues that affect the quality of education, in particular, funding, which is not sufficient in Eastern European countries.

## Conclusions

In the creative economy, the main determinants of production and economic development are innovation and creative human capital. Human capital has its own peculiarities of functioning. In turn, the basis of any innovation is unique, extraordinary ideas, and knowledge, which are a function of the relevant competencies of creative people, whose ability to think and produce new, original ideas is called creativity.

Education is the basis for long-term effective realization of knowledge, and human abilities play one of the key roles in managing the development of creative capital. The leading function of education in the creative economy is determined by the fact that progress is not achieved through two-step education (i.e., school and further education) but is based on lifelong learning.

Thus, it was determined that today, as society is developing, the main factor in the creative economy is human capital, and the development of human capital depends on the level of development of education and science in the country. Empirical data show that directing investment in human capital contributes to the strengthening of a creative economy, improving the competitiveness of the country, and at the same time, guaranteeing the appropriate rates of socio-economic development.

The analysis conducted in the study, on the example of Poland, Lithuania, Romania, Hungary, the Czech Republic, Ukraine, and Moldova, revealed several points. First, the differences in funding sources are insignificant, and the main role is played by public funding – more than 80% of education spending comes from the government. Secondly, there are differences between the human development index in Central Europe and Eastern Europe. In Eastern Europe, it is not higher than 0.75, while the maximum values in Central Europe are more than 0.85. It should be emphasized that the example of Ukraine shows that the human development index does not always correlate with the average cost per student, which decreased significantly in Ukraine due to the sharp devaluation of the national currency. Third, the analysis of the components of the global innovation index (human capital & research, knowledge & technology outputs, creative outputs) showed that it is difficult to differentiate between the countries of Central and Eastern Europe, as in all countries there is significant volatility in all indicators, and it is impossible to distinguish patterns. At the same time,

there are two countries – Poland and the Czech Republic – where the volatility of the analyzed indicators is not too high.

In order to develop human capital – one of the main factors in strengthening a creative economy – especially professional competencies and talents, it is necessary to ensure appropriate investments, increasing the level of education funding at three levels: central government funding, local government funding, and funding from households.

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## Streszczenie

### Inwestycje w kapitał ludzki jako element kształtowania gospodarki kreatywnej: przypadek Europy Środkowo-Wschodniej

Celem niniejszego artykułu jest określenie wpływu inwestycji w kapitał ludzki na kształtowanie gospodarki kreatywnej. Biorąc pod uwagę fakt, że kapitał ludzki jest dziś uważany zarówno za czynnik rozwoju potencjału społeczno-gospodarczego krajów, jak i za warunek tworzenia gospodarki kreatywnej, a w konsekwencji zmian modernizacyjnych we współczesnej gospodarce, konieczne jest dokonanie analizy obszaru inwestycji w kapitał ludzki.

Niniejsze badanie opierało się na analizie szeregu wskaźników dla krajów Europy wschodniej (Ukraina i Mołdawia) i środkowej (Polska, Czechy, Rumunia, Węgry i Litwa): *całkowite wydatki na edukację*, którego analiza umożliwiła określenie poziomu finansowania edukacji w kraju; *średni koszt na ucznia/studenta*, który pozwolił autorom zidentyfikować trendy w wydatkach według organizacji finansujących; *udział całkowitych wydatków na edukację w PKB w zależności od poziomu wykształcenia*, co umożliwiło określenie priorytetów i wystarczalności finansowania systemu edukacji; *wskaźnik alokacji kosztów według organizacji finansujących*; *wskaźnik rozwoju społecznego*, który mierzy poziom życia, umiejętności czytania, wykształcenie i długość życia. Analizie poddano również dane determinujące poziom globalnego wskaźnika innowacyjności, ponieważ podstawą jego obliczeń są w szczególności wskaźniki oceny kapitału ludzkiego i działalności badawczo-rozwojowej (edukacja, szkolnictwo wyższe, badania i rozwój) oraz dóbr kreatywnych (wartości niematerialne i prawne, produkty i usługi kreatywne, kreatywność online).

Wyniki badań pozwoliły na stwierdzenie, że we współczesnych warunkach rozwoju społeczeństwa głównym czynnikiem rozwoju gospodarki kreatywnej jest kapitał ludzki, a rozwój kapitału ludzkiego zależy od poziomu wykształcenia i rozwoju nauki w kraju. Zidentyfikowano główne obszary inwestycji w kapitał ludzki, w tym koszty edukacji i nauki. Dane empiryczne pokazują, że ukierunkowanie inwestycji na rozwój kapitału ludzkiego przyczynia się do tworzenia gospodarki kreatywnej, poprawia konkurencyjność kraju, a jednocześnie zapewnia odpowiednie tempo rozwoju społeczno-gospodarczego.

Dla rozwoju kapitału ludzkiego jako czynnika tworzenia kreatywnej gospodarki konieczne jest zapewnienie odpowiednich inwestycji – podniesienie poziomu wydatków na edukację, rozwój kompetencji zawodowych i talentów ludzkich. Tworzenie gospodarki kreatywnej wymaga dalszej reformy ukraińskiego systemu edukacji, która będzie w stanie zapewnić odpowiedni poziom specjalistycznego szkolenia.

**Słowa kluczowe:** kapitał ludzki, inwestycje w kapitał ludzki, edukacja, finansowanie edukacji, gospodarka kreatywna, innowacyjna gospodarka