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Economics

The Models of Matching Financial Development and Human Capital in National Economy

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(Presented by Academy Member Vladimer Papava)

Financial development and human capital are considered as key drivers in determining the economic growth, especially in the age of new economy, technical revolution with digitalization and AI implementation. Both these spheres are experienced new technologic challenges. Interdependency between human capital, financial development and economic growth can lead to positive as well as negative vicious cycle for many countries. The present study explores the matchings between development of human capital and financial factor based on the data of low and lower middle income countries. Our findings identified four models of these 52 countries: 1) the model of unsustainable and catch-up growth; 2) the unrealized growth model; 3) the pushing out model of human capital; 4) the model of vicious cycle of low growth and low rates of human development improvement without adequate financial support. Most of the countries (60%) is belonging to the fourth group. These are typical representatives of negative vicious cycle, when financial constraints form a negative direct and indirect impact on economic and human potential, and vice versa. Given the significant lag of payback period of investments in human development compared to other types of capital, and, consequently, low policy initiatives for relevant investments, this situation is an extremely difficult task. The findings of our research corroborate the importance of policy impact on efficiency of educational and health measures. Such measures should be accompanied with development of financial sector through widening access to capital financial services, improving financial literacy.
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Financial development, human capital, human capital development, economic growth

The problem of activating drivers of economic growth, both poverty reduction and increasing of economic efficiency as well as investment returns and adapting to the new challenges of technical development is desperately relevant, especially for countries with unsustainable economic development. Such countries fall into a vicious circle of weak drivers – weak growth, which in some cases and under certain conditions causes degradation of all types of capital, high risks and

uncertainty of investment and asset recovery, backset of potential and its inconsistency with modern challenges and needs.

The key drivers of economic growth in the 21st century for all countries at the macro level, as well as for the success of individual companies at the micro level are the factors of the country's financial development and investment in human capital. Both of these components have gained considerable weight in terms of research and concepts.

At the same time, it should be noted that as the level of economic growth it is worth relying on the growth of GDP per capita or national income per capita, since the GDP growth rate itself does not give an adequate idea of the level of economic development [1].

The concept of human capital is based on the idea that hard work, education and skills development lead to increase in productivity. The idea about the importance of human capital in the process of economic growth has gained wide support since the new theory of growth has emerged (the theory of endogenous growth) [2]. Endogenous growth theory [3,4] deposes that per capita productivity may increase over time through endogenous forces in the economy, such as human capital and the intelligent database. In this theory, human capital generates both new forms of technology and efficient production that promote economic growth. In an era of technological changes, the investment in human capital is becoming increasingly important as the nature of labor changes dramatically. On a long-term horizon the investment return in human capital is extremely high for the economy – countries become richer as far as they accumulate more human capital. Human capital accelerates the demographic transition and reduces poverty by generating higher incomes.

The Organization for Economic Cooperation and Development defines human capital as skills in groups of persons [5]. Human capital includes both knowledge and skills accumulated through education, health and nutrition [6]. In the literature, education, health care, education, migration, and other human investments are widely used as terms to define human capital. In the era of digitalization it is important to develop social and behavioral skills which increases one`s human capital, such as the ability of teamwork, empathy, conflicts resolution and relationship management.

In this context it is needed to develop new management technologies, including talent management. The World Economic Forum considers talent management as a vital component for economic growth throughout the world and believes that business must play an important role in its development, and that`s requires fundamental rethinking over the value chain of the human capital.

Financial markets promote growth through the efficient allocation of resources. Since the nineteenth century, much of the scientific literature emphasizes synergies between financial development and economic growth [7]). Researchers have identified various channels through which the financial system influences economic growth over time [8,9]. Financial systems promote trade, hedging, diversification and risk pooling; resources allocation; investment control and corporate control; mobilization, facilitating the exchange of goods and services [10].

It should be noted that in general early researches focused on financial development and economic growth and did not notice the connection between financial development and human capital [11]. However, human capital can also be closely linked to financial development as well as economic growth. A well-developed financial market mobilizes resources that increase investment in human capital through spending on education, health care and social assistance more effectively [7]. Access to financial services increases level of prosperity and productivity of both consumers and producers, so that more efficient institutions facilitate restrictions on borrowing and promote individual investment in education and health care [12].

The joint effect of human capital and financial development on economic growth is evidenced by other studies that prove the insignificant impact of only one separate human capital on the economy [13]. At the same time, its improvement will contribute to higher economic growth, as a 1% increase in financial development that interacts with human capital will increase economic growth by 0.688%.

With low public spending on education, the access to borrowed capital is essential. In particular, credit constraints play a major role in the limited choice of human capital investment in developing countries. For example, the low level of education in Latin America is explained by the presence of mandatory restrictions that prevent access to credit for higher education [13].

Health care and education tend to be the largest expenditures on households (after meals) and represent a significant burden on household spending, especially for low-income households. In this context, there are obvious opportunities for financial institutions to play a role in shaping human capital. Savings accounts can help people to plan health and education spending; access to credit can help families to manage these costs; insurance can help to mitigate unexpected shocks that can lead people to incapability of meeting their children's health and education needs; so payment services can help to smooth access to health and education services. In this regard, the growth of digital financial services is an important opportunity to appeal to most households at lower cost.

And otherwise, human capital can affect financial development, whereas qualified and well-educated staff (with a high level of human capital) tend to have better access to information and are less dangerous [14]. In addition, education allows people to move from the informal sector to the opportunities of the formal sector, which simplifies access to formal financial services [15-18]. Human capital can create the financial innovations needed for financial development, which in turn facilitates new human capital acquisition [2]. Thus, we can conclude that in any case there may be a causal situation.

The system of direct and feedback ties between financial development, level and volume of human capital together with its investment, and also economic growth, increasing or limited to certain conditions, creates a certain economic condition of a country and its development prospects (Fig. 1).

In the short term the positioning of countries in the prism of this model is stable, as it covers more or less stable relations. Countries with low and lower middle income, which determine the first

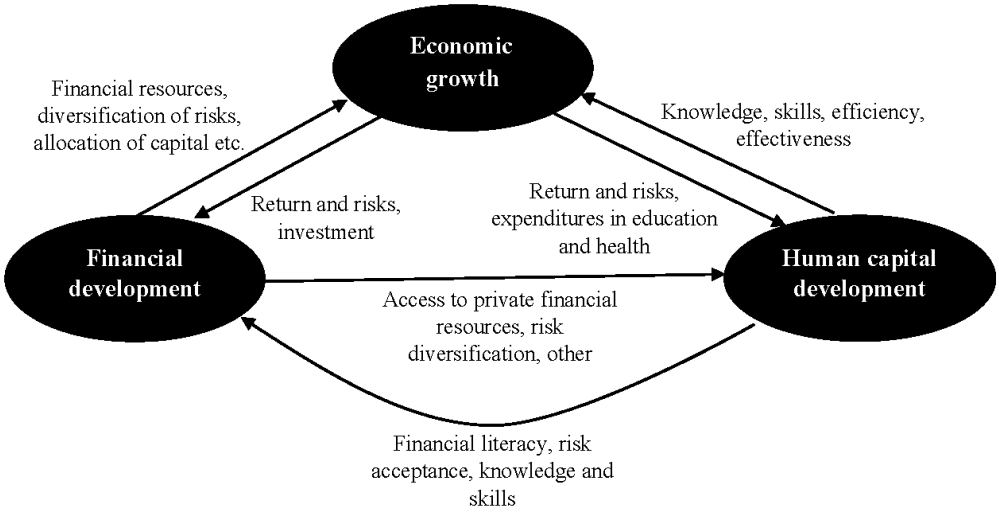

Fig. 1. The system of synergies between financial development, human capital and economic growth of the country.

component in this model, were taken to study the prevalence of economy`s situational model in accordance with these three characteristics. Consequently, the positioning will take place in relation to two other factors that potentially shape 4 different situations with the level of human and financial development.

The level of financial development was determined for 144 countries for which data are available in the World Bank database. This index is calculated by us on the basis of information [19,20], which covers the characteristics of only financial institutions (access, depth, efficiency and stability) – an area that is used in empirical research as a driver of economic growth more often. In addition, countries that are the focus of this study, namely low-income and lower-middle-income countries, mostly have bank-centric financial system. At the same time, today the World Bank's human capital index is calculated only for 131 countries out of 144 taken earlier, which became the basis for the selection of the final sample.

The arithmetic mean was chosen to determine the Financial Development Index and so the deviation of each component from the minimum for the entire sample compared with the gap between the maximum and the minimum for the sample was determined to normalize the individual components. Thus, the Financial Development Index is limited to the interval [0; 1]. The value of the Human Development Index is also limited by a similar interval and according to the World Bank indicates one`s possibility to realize his or her potential during the life compared to the one with the best level of education and health [19]. The latter reflects such characteristics as survival of children under 5 years; education – duration of studying and its quality; health and accordingly life expectancy [20].

The positioning of the entire sample of countries simultaneously in terms of financial and human development indicates a positive relationship between them – the growth of financial security and its efficiency correlates with an increase of the human potential level as a whole (Fig. 2). Of course, there are exceptions to this trend: Luxembourg had the highest level of financial development in 2017, but lagged far behind many countries. Libya has almost the lowest level of financial development along with medium financial development. Kazakhstan is characterized by a high level of human capital as well as Poland, Italy, New Zealand and Israel even against the background of extremely limited financial capabilities of the financial sector.

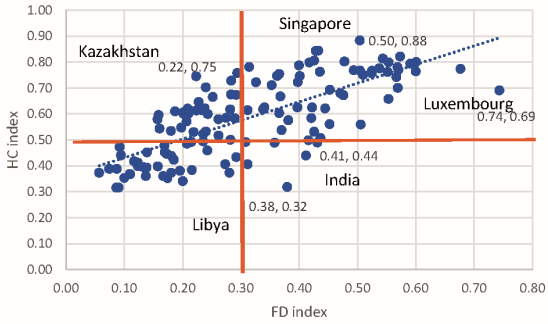

Fig. 2. Financial development (FD index) and Human capital (HC index) indexes for full group of countries.

The vast majority or 80% of the 131 countries have a level of financial development that does not exceed 0.46. The other 20% with negligible exceptions are high-income countries (23 out of 27) (Fig. 3). However, the inclusion of 23 high-income countries in countries with medium or low financial development will not always indicate a loss of sustainability or efficiency. Such countries often have a developed stock market as an adequate complement to the banking sector. It should be noted that no country with low incomes and lower middle income level has entered the countries with a high financial rating. One of the reasons for this is the level of the shadow economy in these countries, as the informal sector does not provide an opportunity to attract credit resources transparently, as well as to enter the open stock market.

For the ease of convenience, we used a rate of 0.4 for the financial development index as a distinction between four groups of low- and middle-income countries. Thus, 4 such countries

have a financial development index that exceeds 0.4 but is less than 0.46 (Fig. 3). The pattern of low financial suport and consequently the level of financial services, confirms that 88% of the 52 countries in the focus group have an index that does not exceed 0.34 (Fig. 3B).

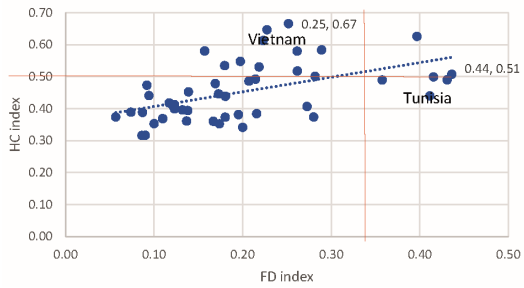

Fig. 3. Financial development and Human capital indexes for low and lower middle income countries.

The analysis of histograms which describe distribution of these indices points to a high probability of confirming the existence of a vicious circle between low levels of economic and financial development (or high vice versa), and weakness between economic development and human capital development. Thus, 16 or 31% of low- and lower middle income countries fell into the category of countries that have a human capital index above 0.5 (Fig. 4D). A significant factor here is not only the existence of a certain historical inertia of such capital accumulation, a certain lag from the moment of investment resources and its implementation – throughout life, but also cultural and national traditions.

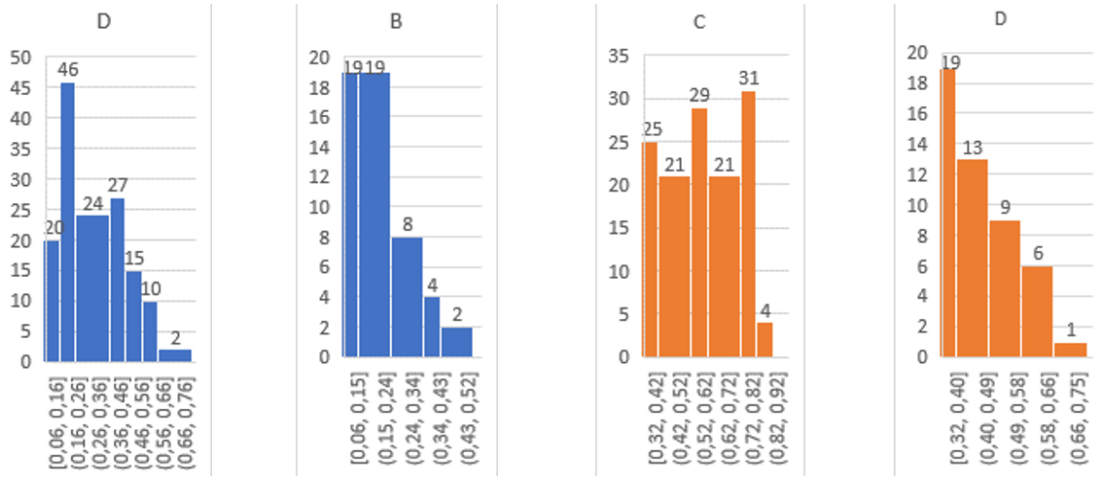

Fig. 4. Histograms of financial and human development indexes: histogram of financial development indexes for the whole sample of countries (A) and countries with low and lower middle income (B); histogram of human development indexes for the whole sample of countries (C) and countries with low and below average income (D).

Table. Applying the models of human capital development and financial development matching to low and lower middle countries

Conditions	Countries	Model
High FD index (FD>0,4) and Low HC index (HC<0,5)	India, Nepal	The model of unsustainable and catch-up growth
High FD index (FD>0,4) and High HC index (HC>0,5)	Morocco, Mongolia, Tunisia	The unrealized growth model
Low FD index (FD < 0,4) and High HC index (HC>0,5)	Indonesia, Georgia, Kyrgyz Republic, Moldova, Nicaragua, Philippines, Sri Lanka, Ukraine, Vietnam, El Salvador	The pushing out model of human capital
Low FD index (FD < 0,4) and Low HC index (HC<0,5)	Afghanistan, Angola, Bangladesh, Benin, Burkina Faso, Cambodia, Cameroon, Congo, Côte d'Ivoire, Egypt, Ethiopia, Georgia, Ghana, Guinea, Haiti, Honduras, Kenya, Lao PDR, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Niger, Nigeria, Pakistan, Rwanda, Senegal, Tanzania, Togo, Uganda, Zambia, Zimbabwe	The model of vicious cycle of low growth and low rates of human development improvement without adequate financial support

Due to the established criteria for clustering according to the level of financial development and human capital development (FD index – 0.4; HC index – 0.5), we distinguish 4 groups of countries with certain models of long-term development (Table). At the same time, all these countries have an initial low or lower average level of economic development. As we can see, only three countries or 6% managed to fall into the category of high indexes – Morocco (due to high financial stability, financial depth and life expectancy), Mongolia (access to capital) and Tunisia (financial depth and stability). This model which has a fairly high level and so the potential for financial and human development but low economic growth can be associated with the model of unrealized growth.

The situation with high financial development but low human capital is rare – it is typical for the smallest share of countries – two countries or 4%. It is a model with unsustainable development and catching up. These countries need significant investment in education and healthcare, the access to education and often financial services should be raised.

In this aspect, it should be noted that this situation is natural for post-communist countries, in which scientific and technological development and the use of its potential are not yet sufficient, which, in turn, makes it impossible or difficult to use effectively the intellectual human potential [21].

The situation according to which the country has a significant potential of human capital, but low financial development is a sign that the latter is not used effectively for economic growth. Gradually, such model tends to the vicious circle of low economic growth and low financial development when it becomes a negative pattern in the long run. Another sign may be the migration of human resources in those countries where there is an unrealized demand for qualified staff (for example Moldova, Ukraine).

Conclusions

One of the problems concerning the low transmission power of the human resources channel is the low efficiency of investment in higher education (not taken into account when calculating the World Bank's human capital index), which does not meet the needs and challenges of modern labor market. This model is typical for 20% of the sampled countries.

The largest number of countries fell into the fourth group with low indicators of human and financial development – 37 or 60%. These are typical representatives of consistent negative patterns, when financial constraints form a negative direct and indirect impact on economic and human potential, and vice versa. Given the significant lag in the return of human resources development compared to other types of capital and consequently low policy initiatives for relevant investments, correcting of this situation is an extremely difficult task, which has its own particular qualities in each certain country.

ეკონომიკა

ფინანსური განვითარების შესატყვისი მოდელები და ადამიანისეული კაპიტალი ეროვნულ ეკონომიკაში

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(წარმოდგენილია აკადემიის წევრის ვ. პაპავას მიერ)

ფინანსური განვითარება და ადამიანისეული კაპიტალი განიხილება, როგორც ძირითადი მამოძრავებელი ფაქტორი ეკონომიკური ზრდის განსაზღვრისთვის, განსაკუთრებით ახალი ეკონომიკის ხანაში, ტექნიკური რევოლუცია ციფრული გზით და ხელოვნური ინტელექტის AI-ს განხორციელება. ორივე ეს სფერო ახალი ტექნოლოგიური გამოწვევების წინაშე დგას. ადამიანისეულ კაპიტალს, ფინანსურ განვითარებასა და ეკონომიკურ ზრდას შორის ურთიერთდამოკიდებულებამ მრავალი ქვეყნისთვის შეიძლება გამოიწვიოს პოზიტიური, ასევე უარყოფითი მანკიერი ციკლი. წინამდებარე კვლევა შეისწავლის ადამიანისეული კაპიტალის განვითარებასა და ფინანსურ ფაქტორს შორის შესაბამისობას დაბალი და საშუალო შემოსავლის ქვეყნების მონაცემებზე დაყრდნობით. ჩვენს დასკვნებში გამოვლენილია ამ 52 ქვეყნის ოთხი მოდელი: 1) არამდგრადი და მზარდი ზრდის მოდელი; 2) არარეალიზებული ზრდის მოდელი; 3) ადამიანისეული კაპიტალის ამოღების მოდელი; 4) დაბალი ზრდის მანკიერი ციკლის მოდელი და ადამიანის განვითარების გაუმჯობესების დაბალი ტემპები, სათანადო ფინანსური მხარდაჭერის გარეშე. ქვეყნების უმეტესობა (60%) მეოთხე ჯგუფს მიეკუთვნება. ეს არის უარყოფითი მანკიერი ციკლის ტიპური წარმომადგენლები, როდესაც ფინანსური შეზღუდვები ახდენს უარყოფით პირდაპირ და არაპირდაპირ გავლენას ეკონომიკურ და ადამიანისეულ პოტენციალზე და პირიქით. იმის გათვალისწინებით, რომ კაპიტალი სხვა ტიპის კაპიტალთან შედარებით ინვესტიციების დაფარვის პერიოდის მნიშვნელოვანი ჩამორჩენაა და, შესაბამისად, დაბალი ინვესტიციის პოლიტიკის ინიციატივები, ეს მდგომარეობა უკიდურესად რთული ამოცანაა. ჩვენი კვლევის შედეგები ამყარებს პოლიტიკის გავლენის მნიშვნელობას საგანმანათლებლო და ჯანმრთელობის ზომების ეფექტაინობაზე. ასეთ ზომებს უნდა დაერთოს ფინანსური სექტორის განვითარება კაპიტალური ფინანსური მომსახურების ხელმისაწვდომობის გაფართოებით, ფინანსური ცოდნის გაუმჯობესებით.

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