

THE REPUBLIC OF AZERBAIJAN

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ABSTRACT

Of the dissertation for the degree of Doctor of Philosophy

**ASYMMETRY OF COSTS AND RESULTS IN THE
PROCESS OF FORMATION AND REALIZATION
OF HUMAN CAPITAL: INTERNATIONAL EXPERIENCE
AND NATIONAL SPECIFICATIONS**

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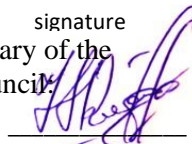
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GENERAL DESCRIPTION OF WORK.

Relevance and level of study of the topic. In the modern world, human capital acts as an effective and creative factor in socio-economic development. In this regard, the importance of economic assessments of human capital increases, primarily for identifying the most optimal parameters of its formation and effective ways of realization. One of the most important problems in this regard is the determination of the asymmetry of costs for human capital and their return as a result of using the potential of education, health and cultural and moral values inherent in the human personality.

A positive asymmetry, in which the welfare of society and incomes at all levels of economic life exceed the costs of accumulating human capital, becomes of fundamental importance for economic growth and ensuring the competitive advantages of each country. This requires close attention to the issue of human capital, which is relevant not only on an individual, but also on a corporate and national scale. It is, in essence, about the rationalization of the system for the formation of human capital in connection with its maximum return for the purpose of economic development. This problem is becoming increasingly important in all countries, although each of them has its own specifics in the forms of solution.

The dissertation, along with the world experience in solving asymmetry problems in the process of formation and realization of human capital, examines the characteristic features of institutional formation and the activation of the role of the human factor in the process of economic development of Azerbaijan. First, they are associated with the intensive efforts of the state towards the formation and fuller use of human capital through reforms in the social spheres and investments in the education system, health care, as well as the creation of new, high-tech jobs. All this happens thanks to the strategic vision of the prospects for the socio-economic progress of the country, in which, the President of the Republic of Azerbaijan Ilham Aliyev emphasizes: *“We give great importance to science, education, technological development, so that our youth, our society possess knowledge, so that Azerbaijan does not lag behind in terms of*

technological development. The material and technical base which strengthen the quality of education is improving. Investments are being made in this area, so human capital is being invested".¹

The strategic vision of President I. Aliyev, in which not oil, not gas, but human capital is assigned the main role in the development of society and the state, is confirmed in the country by the practice of systemic reforms and specific measures and, above all, by an increase in expenditures on the formation of human capital. The analysis of these points in the dissertation is accompanied by a study of the possibilities for the implementation of human capital and the disclosure of its potential in the national labour market.

The processes of formation and realization of human capital are organically interrelated, but often not correlated in structural and cost terms. The asymmetry in this case can be associated with many factors, the identification and regulation of which is especially important during the period of transformation of human capital into the main driving force of the economic development.

The dissertation presents the international aspect of asymmetry of costs and results in the process of investing in human capital. In doing so, we assume that asymmetry arises not only from differences in the inputs and outputs of human capital, but also from differences of the actors of inputs and outputs in different countries.

Man and his ability to work (labour force) was given an important place in the works of representatives of practically all directions and schools of economic thought. This explained by the fact that a person in the form of a resource, potential, factor has always been at the heart of the economic processes both as a producer and as a consumer of goods. Pythagoras, Aristotle, Tusi, Nizami also wrote about this. However, a systematic approach to man as a productive force and an integral part of national wealth dates back to the 19th century, when W. Petty, A. Smith, D. Riccardo, J. S. Mill, K. Marx included developed useful human

¹ Speech of the President I. Aliyev (Baku, 15 September, 2017)// Official web-site of President of Azerbaijan Republic, <https://en.president.az/articles/25232/print>

abilities, and above all ability to work, to characterize the concept of capital and the mechanisms of its reproduction.

The role and importance of the human factor in production increased with the growth of technological equipment and knowledge of the capacity of economic processes. The transition to a more intensive, industrial type of economic development in the late 19th and early 20th centuries led to an increase in scientific interest in human productive abilities, which was reflected in the works of A. Marshall, I. Fisher, J. Buchanan, A. Pigou, J. Keynes, L. Robbins.

An important role in the development of the theory of human capital is played by the institutional theory presented in the studies of T. Veblen, D. North, W. Mitchell, J. Gelbraith, J. Buchanan, G. Myrdal, R. Coase, O. Williamson. For the first time they drew attention to the growing uncertainty in economic life and formed the task of institutional ordering and coordination of economic interaction between various parameters of the economy. Thus, the institutional approach to the study of the asymmetry of economic processes, including those related to the formation and realization of human capital, was substantiated.

By the middle of the 20th century, when the fourth industrial revolution began to gain momentum, objective prerequisites were formed for the transformation not only of human labour, but also of all components of its potential into the most significant factor of economic growth and development. Human knowledge, its innovative abilities began to turn into a competitive advantage, in connection with which the problem of regulating the process of formation and the most effective use of human potential on a national scale was actualized. Thus, there were objective conditions for the emergence of the theory of human capital, which based on the idea of investing in a person.

At the origins of the theory of human capital were American economists, Nobel laureates Gary Becker and Theodore Schultz. From all consumer expenditures of a person, they distinguished some costs, which considered as investments. This meant that these costs do not disappear with consumption, but reproduced and returned in the form of income, and in an increased amount, as befits any investment. This means that these expenses act as a rejection of funds or sources of

consumption in the current period for the sake of receiving them in the future, moreover, in an increased amount. This kind of deferred income (deferred income) included, first, the cost of education and medicine. In addition, this also included the costs of finding a job, obtaining information about employment, and on-the-job training. It is proved that spending in these areas contributes to the advancement of the individual's capabilities along the steps of creating an increasing income.

The theory of human capital, as applied not only to the individual, but also to the micro and macro levels of the economy, was studied by such authors as J. Minzer, J. Ben-Poret, R. Lucas, J. Psharopoulos, L. Hansen, S. Fisher.

Various aspects (economic, demographic, social) of the formation and realization of human capital and its development were the object of research by Azerbaijani authors, in particular Sh. Muradov, T. Kuliev, R. Muradov, G. Imanov, M. Gulaliev, N. Imanova, G. Azizova, G. Shamilova, R. Kuliev, Y. Hasanli.

Among the Soviet and post-Soviet authors-researchers of human capital issues, one can note R. Nureyev, R. Kapelyushnikov, K. Khubiev, Y. Korchagin, M. Kritskiy, S. Dyatlov, A. Koritsky, A. I. Dobrynin.

Despite numerous publications on human capital issues, not all of those issues have been resolved at a theoretical level. In particular, the ratio (symmetry and asymmetry) of costs and results in the process of formation and realization of human capital remains completely unexplored, although the “capital” interpretation of the problem speaks of the obviousness of such a formulation in the scientific and practical sense. At the same time, posing the problem in terms of the capital essence of spending on education and health care requires in-depth scientific analysis, at various levels: individual, corporate, national and world economic. These levels are closely correlated with each other and indicate the entry of the process of formation and implementation of human capital into the global economy, representing one of the most pressing problems of our time.

The object and subject of the research. The object of the research is human capital, the processes of its formation and realization

at the individual, corporate and national levels of the economy. The subject of the research is the asymmetry that arises between the costs (investments) on human capital and the results (incomes) when it is used as well as methods for regulating various forms of asymmetry, which affect the areas of functional interaction of human capital with factors of the market, both internationally and in Azerbaijan.

Purpose and objectives of the research. The main goal of the dissertation is to study human capital in the context of the asymmetry of costs and results in the process of its formation and realization. Such a conceptual approach allows us to more fully reveal the essence of human capital as a factor in multi-level income security, and thereby determine the most important parameters of its effectiveness and the role in ensuring the competitiveness of the national economy.

The implementation of this goal involves the solution of the following tasks:

1. To identify the essential characteristics of human capital through the ratio (symmetry and asymmetry) of the costs of its formation and the results of implementation in multi-level economic system of interaction institutional and structural factors which form national economic models in different countries.
2. Identify the forms of asymmetry of costs for the formation and results of the realization of human capital in the form of its positive and negative indicators.
3. Show the influence of the asymmetry of human capital costs and their results on individual, corporate and macroeconomic and world economic indicators.
4. To determine the degree of impact of asymmetry in costs and results in the formation and realization of human capital on the results of the competitiveness of the national economy in the global economic space.
5. Consider the methods of state regulation of asymmetry in the process of formation and realization of human capital and ensuring its positive dynamics.
6. Carry out a comparative analysis of international experience and national characteristics of overcoming the asymmetry between the costs of the formation and realization of human capital.

7. Assess the specific methods for overcoming asymmetry in the process of formation and realization of human capital in Azerbaijan

Research methods. The theoretical prerequisites for the study were conceptual approaches to the problem of human capital that have established themselves in economic science. Based on the nature of the subject being studied, such research methods were used as dialectical, systemic, structural-functional, institutional. A significant role in the study played by the method of comparative analysis, which reveals the characteristic features of both international experience and the national specifics of the regulation of asymmetric phenomena in the process of formation and realization of human capital. When calculating asymmetry in a given perspective, the methods of economic and statistical (econometric) analysis, expert survey assessments and optimization model forecasting were also used.

Main provisions presented to defense.

-Characterization of human capital in the context of the asymmetry of costs and results in the process of its formation and realization.

-The analysis of the prerequisites for the structural-institutional and cost asymmetry of the expenditure on human capital and the results of its realization is carried out. The forms of asymmetry of costs for the formation and results of the realization of human capital in the form of positive and negative values are revealed

-Methods of state regulation of asymmetry in the process of formation and realization of human capital and ensuring its positive dynamics are considered.

-A comparative analysis of international experience and national characteristics of overcoming the asymmetry between the expenditure of the formation and realization of human capital is carried out. Here

-At all levels of human capital formation (individual, corporate, national), the main goal is income from investments, primarily in education and human health. In light of the above, we can turn to the issue of expectations of returns from human capital during the period of its formation.

Scientific novelty of the research:

1. A compositional (structural-multilevel) methodological approach to the study of the symmetry and asymmetry of costs and results in the

formation and realization of human capital at the individual, micro and macro levels was developed. It expands the range of the theory of human capital and connects it with national and international factors of socio-economic development.

2. The dissertation identifies forms of asymmetry, both positive and negative, which have multidirectional effects on the efficiency of human capital during its accumulation and implementation. It is shown that, by influencing the processes of realization of national economic interests, they significantly influence the economic growth and international competitiveness of countries.
3. Based on the application of the institutional approach, positive “external effects” from the use of human capital identified. Their integral property is the general social effect and national competitiveness, which underlies active state participation in the formation and development of human capital.
4. The phenomenon of corporate human capital revealed with the substantiation of its synergistic effect as an important factor in increasing competitiveness. In this regard, the forms and methods of personnel training, individual and corporate training are considered.
5. The costs of accumulating human capital considered as investments from different sources and in different areas, the asymmetry in which does not contribute to the full disclosure of human potential. A similar spectrum of analysis carried out in relation to the implementation of national human capital, where the asymmetry is mostly structural and institutional in nature.
6. State efforts aimed at the formation of high-quality human capital in Azerbaijan, according to the goals of implementing the strategic directions of the country's socio-economic development, are analysed.
7. A comparative analysis of international experience in solving the problems of asymmetry in the process of formation and realization of human capital, as well as the possibility of its use, taking into account national characteristics and achievements carried out.

The theoretical and practical significance of the research lies in the fact that the results of the study represent a new approach for the further development of the concept of human capital from the point of view of rationalizing the system of human capital formation and the

efficiency of its use. The formulation of the problem of the asymmetry of costs for the formation and results of the realization of human capital has both a methodological and applied aspects. First of them is associated with the disclosure of the functional dependence of individual, corporate and macroeconomic incomes from investments in the components of human capital formation. Asymmetry in this regard, which has many forms, significantly narrows the opportunities for economic growth and social development in all spheres of activity. This is because human capital acts as a strategic driving force of socio-economic development, which covers not only local production processes, but also connecting the national economy into a single whole. They are inherent in the entire production and often contain a program for its development. Therefore, identifying the causes and methods of regulation, and, ultimately, overcoming the above asymmetric phenomena in the formation and realization of human capital, is important for the practice of management focused on long-term success, both in the national and international competitive environment.

The provisions put forward in the dissertation can be applied in the preparation of programs and development projects at various levels of economic activity, in the work of career centres and structures for the coordination of education systems and the labour market.

Approbation and application. The results of the research were reported and discussed at: The international youth scientific forum "Lomonosov-2018" at the Moscow State University named after M.V. Lomonosov; IV St. Petersburg International Economic Congress (SPEC-2018); International Scientific Conference on Contemporary Problems in Natural and Economic Sciences (Ganja) in 2018; International conference "Prospects for the development of integration processes in the EAEU" in the city of Pyatigorsk in 2018; 55th International Scientific Conference on Economic and Social Development, Baku, 2020; Khessin-Pavlov readings, Moscow State University, 2021; VIII International congress "Production, science, education" in Institute named Y.Vitte, Saint-Petersburg, 2021.

The institution where the dissertation work has been implemented. Baku State University.

The structure and volume of the research. The dissertation consists of an introduction (16779 characters), 3 chapters (Chapter I – 70914 characters, Chapter II - 63876 characters, Chapter III - 66663 characters), conclusion (4908 characters), and a list of used literature (177), totaling 156 pages (223140 characters). 9 picture, 7 graphic and 16 tables were used in the work.

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- 2.1. Characteristic features of the asymmetry of costs for the formation and effectiveness of human capital
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- 3.2. Priorities for the development of human capital in Azerbaijan in the context of overcoming the asymmetry of its formation and realization

Conclusion

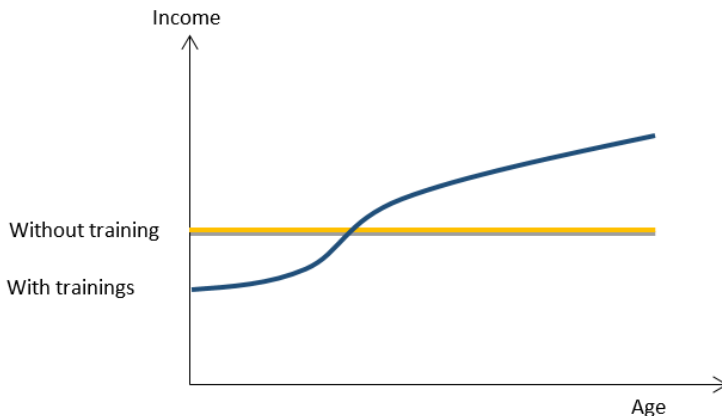
Bibliography

MAIN PROVISIONS PRESENTED TO DEFENSE.

1. The main point put forward in the dissertation is the characterization of human capital in the context of the asymmetry of costs and results in the process of its formation and realization.

The most significant is the approach to defining human capital through the prism of educational, health and cultural factors of economic development. Among them, the dominant place is occupied by human education, based on which the active participation of the state in the formation of knowledge-intensive human capital is substantiated. The quality of this human capital is the most important component of competitiveness.

According to data of international organisations, more than a half of the difference in people's incomes falls on the level of education, and remain part on all other factors (health, ability, morality). Thus, prolonged investment in education is a decisive factor in the formation of human capital and its effectiveness, which is reflected in the following graph:

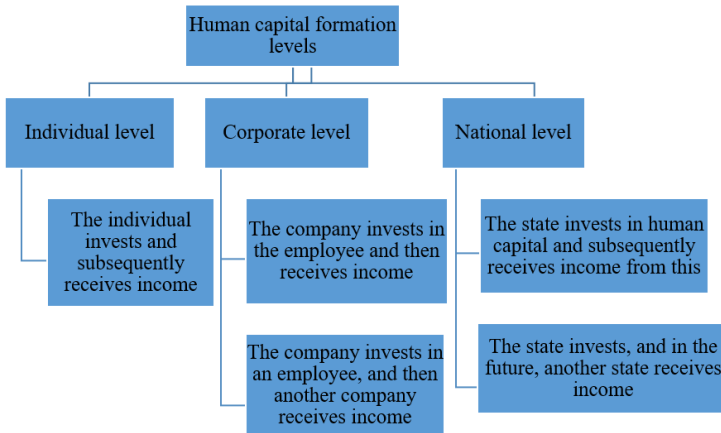


Graph. Relation of earning to age

Source: Becker, Gary. Human Capital: A theoretical and empirical analysis with special reference to Education.-3rded. University of Chicago Press.2009

At the same time, the income received from the realization of human capital will often be asymmetric in relation to the costs of their formation, depending on the capabilities of the object and the

behavioural characteristics of the actor of investment at the individual, corporate, and national levels. The dissertation proposes a multilevel analysis of asymmetry in the process of formation and realization of human capital, the combination of positive values of which forms a consolidated socio-economic effect. This is most clearly reflected in the educational segment of the formation of human capital, when preschool, primary, secondary vocational and higher education, only in a state of interconnection, can respond to the dynamics of market demands where human capital is realized. At the same time, there is a problem of investing in human capital at every stage of the educational process. In this case, identifying the amount of education costs is important not only for measuring human capital, but also for determining the mechanisms for financing these costs.



Pic. Levels of investment in human capital

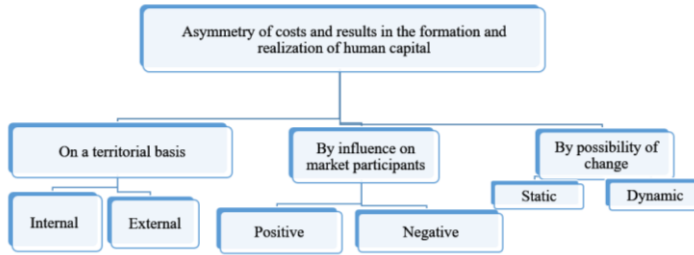
Source: Picture made by author

The individual level of human capital formation distinguished by the presence of symmetry in costs and results. In other words, an investor (in this case, a person) who spends funds on the formation of his own human capital, himself receives income from its implementation. The symmetry is obvious here, and it develops under any circumstances, regardless whether this capital used in private or public sector, as well as regardless of the country of residence.

A lot of researches are devoted to the problems related to individual choice, his or her demand for education, the correlation of corporate costs and income from human capital. However, the problem of asymmetry of costs and results is practically not studied at this level, and it becomes necessary to turn to the topic of the relation between the employee and the company.

At the firm level, it is indisputable that the level of professional education and qualifications, the creative and innovative abilities of employees act as the most important competitive advantage. Of course, firms are trying to attract skilled workers. However, today firms are looking for other ways to ensure the competitiveness of their personnel, and here corporate training is of great importance. It has become so widespread that large companies have established their own training centres and even universities. Corporate learning also has the advantage that it allows the formation and use of the synergistic effect of collective human potential. The costs of on-the-job training and corporate training are usually borne by the companies themselves. Professionally grown employees increase their income and, consequently, the profitability of the company. But in practice, it turned out that most countries do not have in the labour legislation means of responsibility of the employee for the funds spent by the firm, if the employee decided to go to work in another firm, and often even to a competitor. And here the problem of the asymmetry of costs and results at the micro level of the economy arises, and turning it into the positive values requires additional costs to stimulate personnel.

2. The analysis of the prerequisites for the structural-institutional and cost asymmetry of the expenditure on human capital and the results of its realization is carried out. The forms of asymmetry of costs for the formation and results of the realization of human capital in the form of positive and negative values are revealed. The asymmetry of costs and results in the formation and realization of human capital can be classified according to a number of characteristics. This classification can be illustrated as follows:

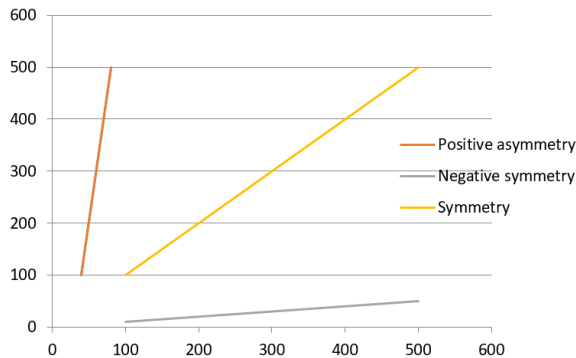


Pic. Forms of asymmetry of costs and results in the formation and realization of human capital

Source: Picture made by author

The very concept of "asymmetry" usually implies a negative assessment of a particular phenomenon. However, it is not for all market participants. It is important to consider here that the asymmetry in relation to costs and incomes also has another side, that is, the ability to provide a profitable result, to be positive.

Positive and negative asymmetries can be plotted as follows, where the X-axis shows costs, and the Y-axis, respectively, displays the results obtained from the costs of human capital formation.



Graph. Deviation of costs and results from a symmetrical position

Source: Graph made by author

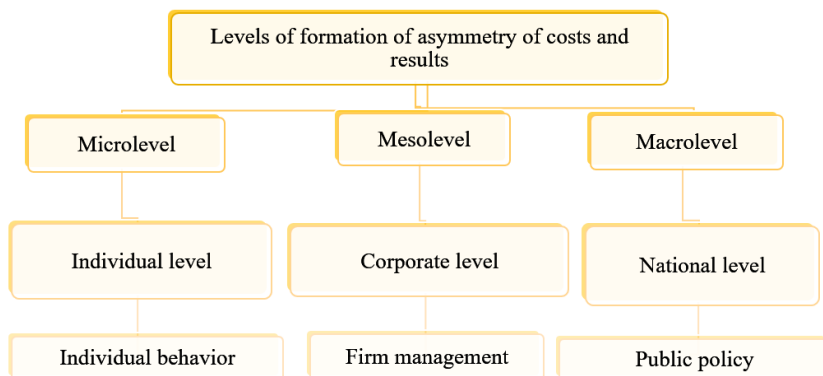
The line in the middle shows a symmetrical distribution of costs and results, where costs and results are in direct correlation with each other. With an increase in the disparity between costs and results, the

straight line deviates to the left or to the right, depending on the increase, either results or costs. The straight line displayed to the left of the line of symmetry shows a positive asymmetry, in which costs increase insignificantly, while results, on the contrary, increase at a faster pace. The straight line located on the right side of the symmetric distribution illustrates negative asymmetry. Here, in contrast to the positive asymmetry, the costs increase several times, while the results remain practically unchanged.

At the same time, it is necessary to highlight the asymmetry of costs and results on a cross-country scale, or internal and external asymmetries, covering the transition of human capital from one state to another. The last point relates to the fact that the formation of human capital is associated with both getting an education and getting a job, as well as choosing a place for work. In the latter case, the calculation of the costs of migration is inevitable, for example, associated with the search for information about labour markets, moving, during which a person gives up the earnings that he could receive during the same time. The latter can be characterized as the costs of migration, which may result in either a positive or negative asymmetry in the realization of national human capital relative to the costs of its formation.

The asymmetry at the corporate level (staff turnover) in such a situation is obvious; here companies are investing in raising the educational level and qualifications of employees with the expectation of increasing profits. However, if employees decide to change jobs, an asymmetry arises that has a detrimental effect on the company's income. Moreover, a company that has managed to attract already trained personnel wins in such a situation, receiving income without significant investments in its formation. Here, as in the external asymmetry, the problem of positive and negative asymmetry arises.

The possibility of losing valuable personnel made it necessary to create a system of incentives for employees in many firms, in particular in large high-tech corporations, where impressive costs are incurred in employees, and losing them means missing possible profits.



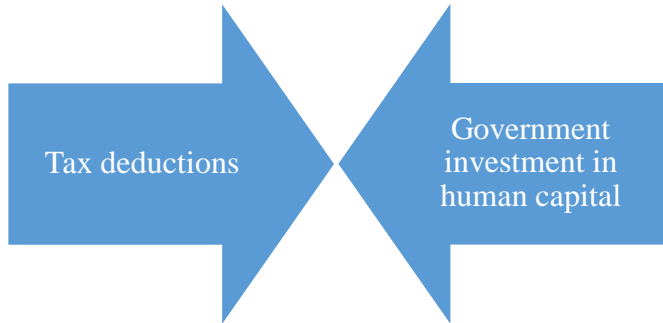
Pic. Dependence of the asymmetry of costs and results on factors that manifest themselves at different levels of its formation

Source: Picture made by author

3.Methods of state regulation of asymmetry in the process of formation and realization of human capital and ensuring its positive dynamics are considered. At the state level, the dynamics of the asymmetry of costs and results for human capital closely correlated with individual and corporate human capital. At the same time, it has its own specifics, since it bears the character of institutional asymmetry, which influenced by the fiscal policy of the state. Funds for investment in areas that form human capital come mainly from the state budget, and this already at the macroeconomic level means an asymmetry of costs and results. The fact is that the entire population of the country pays taxes to the government, and, for example, education does not cover all citizens to the same extent. Here we are talking mainly about higher and special education, since today in most of both developed and developing countries, primary and secondary education is compulsory and free.

Government investment in education brings returns in different forms, one of which is tax deductions. A person who has received a higher professional education for the entire period of his activity pays in the form of income tax and social payments by several times more than a person who has received a secondary education. Thus, a pattern formed according to which with an increase in tax deductions,

government investments in human capital increase, and with an increase in investment in human capital, tax deductions also increase.



Pic. The mutual influence of tax deductions and government investment in human capital.

Source: Picture made by author

The picture illustrated above reflects the fact that taxes constitute the investment base for the formation of human capital, and therefore, they ensure the development of the economy as a whole. At the same time, investments in human capital provide an increase in tax revenues to the state budget and, therefore, ensure the development of human capital. The level of development of non-economic spheres of society's life also depends on the level of tax payments and, accordingly, the opportunities for the formation of human capital through the institutions of education, health care and culture are expanding. Thus, positive institutional asymmetry builds up a positive macroeconomic multiplier effect.

In recent years, Azerbaijan government has been paying increasing attention to the formation, development and realization of human capital. In the decree of the President of the Republic of Azerbaijan about "Strategic roadmap for the development of vocational education and training in the Republic of Azerbaijan" human capital highlighted as a separate topic. It raises a problem that is urgent, not only for the professional, but also for the entire educational space of the country - the lack of correspondence (asymmetry) of specialists trained in educational institutions to the needs of the developing national economy and the labour market.

Along with this, in February 2021, the head of state signed a document of strategic importance - "National priorities for socio-economic development: Azerbaijan 2030", in which "competitive human capital" is one of the main 5 priorities of the country's development.

4. A comparative analysis of international experience and national characteristics of overcoming the asymmetry between the expenditure of the formation and realization of human capital is carried out. Here, first, the level of national expenditures on education considered. It is the total value, which is calculated as the total volume of public and private expenditures on education during a calendar year, including state budgets of all levels, private foundations, external borrowings, grants and donations from international institutions, and nongovernmental organizations as a percentage of gross domestic product (GDP) and looks as follows by country:

Table. Comparative analysis of education expenditures

Country	USA	Turkey	Russia	Azerbaijan	Georgia
Expenditure in % as of GDP	6,1	3,4	3,7	4,3	3,6

Source: <https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS> (2020)

Another important indicator of human capital related to healthcare is calculated as the total public and private spending on healthcare during a calendar year, including government budgets at all levels, health insurance funds, external borrowings, grants and donations from international agencies and nongovernmental organizations as a percentage from GDP.

Table. Comparative analysis of health care costs

Country name	USA	Turkey	Russia	Azerbaijan	Georgia
Expenditure in % as of GDP	18,8	4,6	7,6	4,6	7,6

Source: <https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS> (2020)

One of the important components of the formation of human capital is the scientific potential of the country, as well as spending on science (R&D). In this regard, the following comparison of costs in this area was carried out:

Table. Comparative analysis of spending on science

Country name	USA	Russia	Turkey	Azerbaijan	Georgia
Expenditure in % as of GDP	3,5	1,1	1,1	0,2	0,3

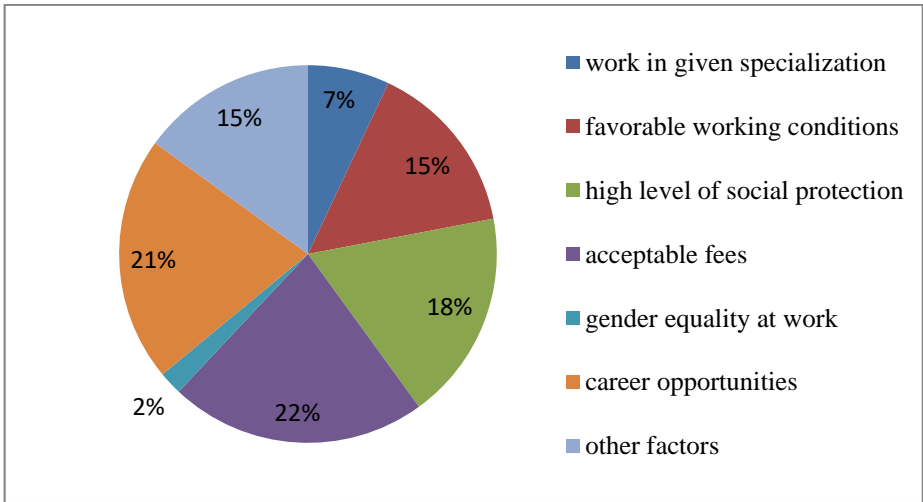
Source: <https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS> (2020)

According to the above data, investments in science in Azerbaijan make up an unsatisfactory percentage of the country's GDP. The leaders in the field of spending in science in the world are countries such as Israel or South Korea, which became developed thanks to investments in areas that form high-quality human capital. As in most countries of the world, in Azerbaijan there is an asymmetry between the formation and realization of human capital, which reflect itself in different forms. For example, in Azerbaijan there are a lot of university graduates that do not work in their specialty, which leads to significant losses in the costs of their education, which are borne by both the state and the individual himself, who lost time and money for unused educational resources. This aspect of asymmetry in the formation and realization of human capital can be compared with the free rider problem or the so-called “free rider effect”. It is associated with the provision by the state, often free of charge, of the population with public goods, when the free rider himself, without incurring any costs, or spending a very small amount, enjoys the benefit, like everyone else.

The external asymmetry associated with the migration of mainly highly qualified human capital from the country was quite high in the late years of the last century. Today, many developed countries, as well as firms, attract educated personnel, which negatively affects the further development of the country from which the personnel migrate. Despite the fact that migration from Azerbaijan decreased by several times, it does not have an even downward trend, there are recessions and rises.

The problem of brain drain, migration of highly qualified personnel, as well as students, is still on the agenda in Azerbaijan. One of the main tasks of the state is to identify methods of attracting these personnel back to the country. In order to determine the main reasons for migration and the circumstances that may affect the return of migrants to their homeland, a survey was conducted among Azerbaijanis

living abroad. The survey involved 100 respondents from different countries of the world, mainly USA, Canada, European countries, as well as Japan. The survey results are illustrated in the graph.



Pic. Reasons for the external asymmetry of costs and results in the formation and realization of human capital in Azerbaijan

Source: Survey mad by the author

An analysis of the above circumstances reveals the areas of efforts that need to be made both in order to involve emigrants in the socio-economic life of the country, and to prevent migration in the future.

5. At all levels of human capital formation (individual, corporate, national), the main goal is income from investments, primarily in education and human health. In light of the above, we can turn to the issue of expectations of returns from human capital during the period of its formation. The Mincer equation in its most general sense allows one to determine the return on investment in an individual's education. Here, an individual's earnings are determined by such factors as education, professional development, and work experience.

The basic Mincer equation is as follows:

$$\ln Y = \beta_0 + \beta_s S + \beta_1 \text{experience} + \beta_2 \text{experience}^2 + \varepsilon$$

where $\ln Y$ is the salary of an individual for a certain period of time;

β_0 - the salary of an individual, with no education;

S - years of education;

Experience- work experience of the individual;

ε - random component.

Based on the above Mincer equation, we can conclude that an individual's earnings increase with an increase in the number of years of education and work experience. Subsequently, various variations of the Mintzer model appeared, in which such parameters as the quality of education, the duration of study, the level of economic development of countries or regions, etc. were involved. However, the qualitative modification of this related with researches of Yoram Ben-Porat. In his works he presented the process of reproduction of human capital during the life of an individual, when he constantly invests in himself, acquiring more and more units of human capital in accordance with the results and costs of purchasing these units in the current period of life. Thus, investments are the result of using their own time in the production of human capital:

$$Q_t = (S_t K_t)^b, \quad 1 \geq b \geq 0$$

when, Q_t is the number of units of human capital produced in year t ;

S_t - the share of human capital invested in "production" ($0 \leq S_t \leq 1$);

K_t - human capital at the beginning of the period t ;

b - human ability parameter ($0 \leq b \leq 1$).

Based on these prerequisites, the Ben-Porat model consists of 3 parts:

1. $C_t = w S_t K_t$ – alternative costs (lost profits), $S_t K_t = Q_t^{1/b}$

2. costs $C = w Q_t^{1/b}$, $dC_t/dQ_t = (w/b) Q_t^{(1-b)/b}$

3. results: $B_t = PV(w, i) Q_t = (w/i) (1 - 1 / [(1+i)^{65-t}]) Q_t$

In Ben-Porat's model, a person continues to invest in his or her own human capital through a lifelong learning process. Subsequently, it became a whole concept - Education Throughout Life, in which the most important function of lifelong education is seen in the fact that it opens up an opportunity for a person to remain competent in the field

of his professional activity throughout his working life, passing on his knowledge and experience to the younger generation.

The impact of many factors on the formation of human capital makes it difficult to fully measure it. However, the Global Economic Forum conducts a similar calculation in the following areas: capacity, development, deployment, know-how in the form of the Global Human Capital Index. The index covers 130 countries depending on the level of human capital development in them. As an integral indicator, this index covers human capital in countries by 5 age groups of the population.

The Human Capital Index according to the World Bank methodology measures the volume of human capital according to the following indicators:

1. Will the children born today survive until the process of accumulating human capital through formal (school) education begins? This indicator is calculated using data on mortality of children under 5 years of age;
2. How many years will education continue under the age of 18 and what is its quality and the amount of knowledge sufficient for further successful education and work;
3. Component of health, which uses two indicators: the general state of health in the country and the expectation of productive life up to 60 years for 15-year-olds.

Human Capital Index (HCI) constructs the multiplication of the contributions of survival, education, and health to relative productivity in the following dimensions:

$$\text{HCI} = \text{survival rate} \times \text{education} \times \text{health}$$

According to the data for 2020, Azerbaijan ranks 69th in terms of the human capital index, which is 0.58.

The main conclusions and proposals in the dissertation.

1. The dissertation proposes an innovation of positive asymmetry between the costs and results of the formation and realization of human capital and concludes that it should be strived for using the advantages of modern technological progress. At the same time, it is not enough

to indicate the fact that the costs are less than the results. In this regard, a cost-effectiveness study as an investment in human capital is proposed. Here there is a need to highlight the asymmetry associated not so much with differences in costs and results, but also with differences of parties who make an investment and get results.

2. In dissertation, a multilevel analysis of asymmetry in the process of formation and realization of human capital is considered in the context of a consolidated socio-economic effect. This is reflected in the correlation indicators of the international competitiveness and human capital indices of different countries.

3. The study of the asymmetry between the costs of the formation and results of realization of human capital in the context of the migration of personnel from one country to another is defined in the work as external asymmetry. This international form of asymmetry has a significant impact on the potential for the realization of national human capital and the existing inequality between countries and regions of the world. In the dissertation, overcoming this problem is associated with the institutional policy of ensuring symmetry between supply and demand in the labour market.

4. Based on the experience of developed economies, in our country, as well as in many other developing countries and countries of the post-soviet space, it is necessary to use the practice of Life-long learning or Education Throughout life. Life-long learning helps to avoid asymmetries between market demand and supply of human capital. This requires close cooperation of production and education institutes. It can be proposed to found a clusters of this two institutes and to provide students to gain practice during the educational process.

5. Particular attention in the dissertation is given to the problems of national and cultural characteristics of human capital. Both the formation and realization of human capital is carried out in a certain environment, which has specific national and cultural characteristics. This actualizes attention to the non-economic, socio-cultural origins of a person, since the practical results of actions turn out to be largely dependent on not only knowledge, qualifications, skills, but also on traditions, values, and stereotypes of people's behaviour. The symmetry between them is especially important for countries where

family ties are traditionally strong and support a person throughout life. The most primary human capital is formed in the family, exerting a huge influence on the way of life and thinking, life scenario guidelines, decisions about education and choice of specialty.

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