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Health Capital in the System of Regional Economic Security

The paper studies the problem of forming health capital in the system of regional economic security. It systematizes approaches to the research of human capital elements and determines the subject and principal terminology in the field of health capital. The authors study health capital through the prism of regional economic security, because the former appears to be an important indicator of the national wealth, efficiency of economy, achievements in innovation sphere. Content analysis enabled the authors to identify main components of economic damage resulting from loss of health including morbidity, disability and mortality. Having studied the indicators and methods of economic estimation of value of life, the authors put forward recommendations on creation of motivational mechanisms for retaining and enhancing health capital at regional level.

JEL classification: R23

Keywords: human capital; health capital; regional economic security; investments; economic damage.

Introduction

Existing sets of indicators for evaluating economic security are primarily oriented towards federal authorities. Maintenance of regional economic security requires developing a set of parameters that takes into account the specifics of a particular territory. The objects of regional economic security comprise territory of a constituent entity of a country, its resources and population.

As for Russia, the set of indicators of regional economic security must allow for the Executive Order of the President of the Russian Federation of December 31, 2015 no. 683 "On the

National Security Strategy of the Russian Federation" and "National Economic Security Strategy of the Russian Federation" (Executive Order of the President of April 29, 1996 no. 608). One of the main economic tasks of sustainable development of a region is to take the growth trajectory with a view to modernize production, enter the innovative stage of economic development and create corresponding infrastructure of post-industrial society. At the same time, along with modernization of physical infrastructure, it is necessary to ensure investments into human capital to multiply the country's production capacities.

The paper aims to formulate a scientifically justified concept of human capital development at regional level. In this regard, studying methodological approaches to the problems of investing into human capital, its role in forming regional economic security seems to be one of the relevant tasks.

Evolution of the approaches to the problem of investing into human capital

Political economy made first contributions to the theory of human capital in the 19th century. Well-known economists included useful skills of an individual into the concept of fixed capital. As a separate line of economic thought, the theory of human capital was born in 1960s [17; 21; 23; 24], yet some of its issues are still being discussed and rethought (see, for instance, [16; 25]).

In Russian scientific literature, the first studies in this field date back to the 1970s–1980s. The theory was further refined in 1990s by R. I. Kapelyushnikov, M. M. Kritskiy, A. I. Dobrynin, S. A. Dyatlov and others. In their works, the scientists examine peculiarities of human capital formation and functioning in Russia's economy under reforms and consider its cyclical nature.

Recently, the concept of "human capital" has begun to gain increasing importance not only in economic sphere, but also in other spheres of society [1; 4; 5; 6; 13]. The concept is the most often applied to refer to an individual's capability to participate in production process. A wide spectrum of research proves the impact of qualitative and other characteristics of company's human capital on its competitiveness [18; 19; 20].

The problems of studying regions as separate units motivate to adjust existing approaches to human capital formation and timely respond to the new problems arising in the course of economic transformations.

Human capital corresponds to any stock of knowledge, health, skills and experiences possessed and used by an individual to earn income. Sources of human capital development split up into internal (personal development) and external (family, company, the state). From this perspective, science, education, culture, health care, and other public institutions can lay foundation for human capital formation, and, therefore, shape the basis for maintenance of national security.

The value of human capital can be determined at different levels. At micro-level, it is an economic entity's costs of restoring human capital, including employee retraining, medical examination, payment of sick leave certificates and reimbursement for medical services, expenditure on occupational safety, voluntary health insurance, charitable assistance to social institutions, etc. The economic entity is motivated to ensure excess of the income received from these activities over the costs incurred.

At macro-level, the attention is focused on social transfers to population made in monetary and physical terms, preferential tax treatment, and household expenditure to preserve and restore human capital. V. M. Galperin [3] defines human capital as a sum of all expected incomes from labour calculated by the present moment using discounting. K. R. McConnell and S. L. Brue believe that investments into human capital are any actions that improve qualification and skills, and thereby increase productivity of workers. Costs that contribute to an increase in productivity can be regarded as investments, for the reason that operating expenses are done with the expectation that they will be many times compensated by the enlarged flow of revenues in the future [7].

Human capital, hence, corresponds to the accumulated expenditure on general education, special training, health care and labour force mobility.

The state of people's health is natural capital build of a hereditary part and a part acquired as a result of an individual and society's expenditure. M. Grossman was one of the first to interpret health capital as an asset, allowing its owner to put his/her human capital to good use as long as possible [22]. At the same time, he considers the capital of health as any other kind of capital from the viewpoint of individual rational choice and applies a neoclassical approach to its evaluation.

Health capital is the supporting structure of human capital and represents an investment into a person realized to form, maintain and improve his/her health and potential productivity. The principal result of investments into human health is a prolonged able-bodied life and, consequently, extended period of human capital functioning. From the standpoint of the state, health capital is a national treasure.

Methodological aspects of health capital evaluation

According to M. Grossman, health care and medicine are industries producing "health capital". Every society generates certain demand for health, determined by a combination of different factors. At this, health has a dual nature and can be viewed both as a consumer good and as a means of generating income. In the second instance, it represents a constituent part of human capital, which is an object of investments [22].

The value of life is determined on the basis of the balance of accumulated and consumed material goods and services and characterized by profitability of a generation, its capability to accumulate funds and create material basis for reproduction of future generations. In 1970s B. C. Urlanis, a demographer and a publicist, suggested an economic-demographic approach to this problem and developed a methodology for calculating the value of material goods consumed and accumulated for the whole life of a conditionally defined generation in units of the national income [12].

A. S. Milovidov refined this approach and justified a calculation of profitability of a generation, what brought the understanding of the theory of human capital closer to a fundamentally different demographic basis [8]. Later, the indicator of the economic equivalent of value of life (EEVL) based on the concept of human capital was introduced to assess social damage inflicted to person's life and health. In line with this concept, EEVL reflects not only the state, companies, households' investments into an individual, but also efficiency of these investments expressed through the indicator of norm of return, which may be, for example, gross domestic product per capita.

To evaluate the loss of health capital it is necessary to have the information concerning the levels of morbidity, disability and mortality, as well as to be aware of economic costs linked to these processes. Most part of the data can be found in official statistical publications. Expert estimates, characterizing economic aspects of public health, also can be used in calculations [2; 9; 14].

The first component of economic damage due to loss of health is connected with morbidity and includes health treatment expenses and social insurance payments, what leads to a loss of a certain part of GDP because of temporary disability. At this, it is important to take into consideration the structure of morbidity, types of illnesses, and age groups of the population.

The second component is linked with disability and characterized by expenditure on treatment of disabled people, their rehabilitation, pension payments, social security payments, as well as lost profits in GDP production. Citizens with the 1st and the 2nd groups of disability are not able-bodied or their ability to work is limited. Virtually not all workers recognized as disabled drop out of the production process, some of them change profession or switch to jobs requiring lower qualifications or continue to work after having reduced the workload. Disability results in expenditure on social support measures, pensions and medical treatment, yet the

volumes of this expenditure vary depending on the group of disability, nature of limitations, type of an illness and age.

The third component of economic damage due to loss of health is mortality. Here, along with lost profits in GDP production and volumes of social payments to families in connection with the loss of breadwinner, the value of life is taken into account. The value of life is calculated for the number of years, which a person did not survive until the age of the average life expectancy.

From the viewpoint of the "pure economics", population corresponds to labour resources, and economic benefits are linked only with actual and potential producers of GDP. Yet one should not forget that older people are bearers of knowledge and historical memory, and thereby affect the formation of human capital in the country.

Socioeconomic damage due to loss of life and health is also determined by the impact of man-made and environmental factors. It is calculated using an economic assessment of the value of statistical life (VSL) applying one of the four methods **[10; 11]**.

The "willingness to pay" method follows from the theory of consumer value and is applied to evaluate the cost (price) of a risk to life (health). There are several ways of determining "willingness to pay". In general, this involves the results of socioeconomic studies of various preferences focused on hypothetical improvement of health, while the economic measure is set by a sum of individual "willingnesses" to pay for a concrete improvement. In this case, to evaluate the cost of a risk to life (health) subjective methods of labour market research are adopted based on the balance between supply and demand. From the demand standpoint (in the labour market), the main postulation of assessment is the saying: "You worth the sum the others are willing to pay for your life". From the supply standpoint, the subjective assessment of the value of life relies on the method of direct interviewing of population and corresponds to the common notion of justice. For instance, since 2007 this method has been adopted by the Center for Strategic Research of "Rosgosstrakh", Russia's largest insurance company. According to the latest research held in 2011, the fair price of life amounts to 4.5 million rubles (150 thousand US dollars), and the median value of statistical life equals 1.7 million rubles (57 thousand US dollars).

Method for assessing the value of statistical life based on the theory of utility implies investigating economic and social utility of an individual. If an impact on health results in an increase in mortality, then the economic damage from premature death is evaluated. It is assumed that a person's social utility can be assessed using the population average annual incomes. In addition, economic utility can be assessed using the value of the gross domestic product per capita. The premature death is supposed to bring economic damage equal to an average per capita gross domestic product during the period of life expectancy of a person. According to the theory of utility, the value of statistical life for Russia falls within the range of 1.5–2.5 million rubles.

Sometimes, assessment of economic utility of an individual needs mathematical tools, which take into account accidental nature of death. This involves mortality tables by which prices for life insurances are set. Applying this method, the value of statistical life amounts to approximately 8–9 million rubles.

Income method is based on calculation of the total lifetime income of a person. Here also there are some options for assessment. For instance, a method of a simple arithmetical calculation uses the evaluation of a person's lifetime salary. As a rule, the total income is calculated using average values of salary, length of service, inflation rate for the country or industry. Employing this method, the value of life varies from 3.9 to 15 million rubles (130 to 150 thousand US dollars). Another option is discounting of future incomes. In addition, a technique developed in the USA and the United Kingdom can be applied, which is based on the ratio of an average per capita income to an average probability of death during a year.

Costs method assesses the value of life by taking into account material costs of preparation of labour resources to production or any other social activities. Principal costs that

characterize the utilization of resources are costs connected with the birth of a child, followed by upbringing, creating the right housing conditions, purchasing shoes, clothes and food, the costs of studying in a general education school and receiving vocational training. These costs can be calculated by both a direct statistical method and with the introduction of a standard. A subtype of the costs method is a widely applied in Russia compensation approach, which assumes that the value of life is equal to economic damage inflicted by an injury or death, and economic effect is equal to the prevented losses incurred by death.

Moreover, the methods for determining the components of damage can be divided into two groups:

1) integrated;

2) based on calculation of component parts of damage, including loss of ability to work, costs of delivering a victim to a medical institution and investigating an accident, payment of pensions to disabled members of a family, funeral expenses, losses due to machine downtime and repair of damaged equipment, material costs of medical treatment, rehabilitation, prostheses, costs of supporting the work of medical examination commissions, and other expenses.

In various economic sectors, the methods take into account the listed components with different completeness. Economic equivalent of value of life is the size of compensations paid to families of the deceased or to persons who lost their health as a result of accidents or disasters. This may be government payments or compensations awarded by a court decision. These estimates are in the range of 12 thousand to 9 million rubles.

Conclusion

The variety of methods for assessing human capital indicates the difficulty and multiplicity of criteria for assessing human life.

Many developed and developing countries are trying to introduce indicators of life satisfaction in main mechanisms of economic policy and criteria for assessing the performance of the government authorities. There are some examples in the practice of the constituent entities of the Russian Federation, but they are very rare. To make this practice widespread in Russia, it is necessary to build a diversified education system, which allows individual development trajectories and health care aimed at preventing diseases, but not just treating them. Creation of motivational mechanisms for retaining and enhancing health capital at regional level should be accompanied by implementation of the following:

- improving the equipment supply of medical and social institutions;
- introducing new information technologies, which allow improving the situation with timing and accuracy of diagnosing diseases. This way, introduction of electronic health card will make interaction between doctors and medical and social services institutions more efficient and foster a keener sense of responsibility;
- strengthening insurance companies' motivation to identify cases of excessive spending and poor quality treatment. It is advisable to gradually introduce "co-payments" in the treatment of patients with respect to whom the facts of evasion from preventive measures were reliably established;
- decreasing mortality rate of the able-bodied population. The average probability of dying at the age of 15–60 years in Russia is almost twice as high as in European countries: 269 versus 146 per 1,000 people (2009). According to the experts of the World Health Organization, the economic losses from mortality due to cardiological diseases, stroke and diabetes reached 1% of GDP in Russia (2005). In other BRIC countries, they amounted to less than 0.35% of GDP, and in developed countries such as the United Kindgdom and Canada are less than 0.1% of GDP;
- stimulating voluntary medical insurance, developing paid medical services market, which is able, supported by an increase in the population incomes, and under the condition of its effective regulation, to serve as an additional source of funding health care along with the

state guarantees, and also to play a key role in stimulating technical and organizational innovations, later spread to the system of free medical and social services.

Generally, taking into account the high social importance of the problem in question, it is necessary to develop a Program of regional investment policy for preserving and enhancing human capital, including health capital of citizens of a region, as well as to set up its in-depth discussion by stakeholders and use it as the base for efficient policy in the sphere under consideration [15].

Achieving these goals is impossible without transformation of the population's consciousness. It is important to continue to develop technologies changing people's attitudes toward their health, heighten their sense of personal responsibility and desire to independently invest money, time and energy in maintaining their health.

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Капитал здоровья в системе экономической безопасности региона

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Работа посвящена проблеме формирования капитала здоровья в системе экономической безопасности региона. Систематизированы подходы к исследованию элементов человеческого капитала. Определено предметно-терминологическое поле капитала здоровья. Капитал здоровья изучается через призму экономической безопасности региона, так как служит важным показателем благосостояния нации, эффективности экономики, достижений в области инноваций. В результате контент-анализа выявлены основные компоненты экономического ущерба из-из потери здоровья, включающие заболеваемость, инвалидность и смертность. Изучение показателей и методов экономической оценки стоимости среднестатистической жизни позволило предложить авторам рекомендации по созданию мотивационных механизмов по сохранению и приращению капитала здоровья на региональном уровне.

Ключевые слова: человеческий капитал; капитал здоровья; экономическая безопасность региона; инвестиции; экономический ущерб.

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Ссылка для цитирования:
Zlokazov A. V., Zueva K. A., Grushichev V. Yu. Health Capital in the System of Regional Economic Security // Известия Уральского государственного экономического университета. 2017. № 4 (72). С. 57–65.
For citation:
Zlokazov A. V., Zueva K. A., Grushichev V. Yu. Health Capital in the System of Regional Economic Security. *Izvestiya Uralskogo gosudarstvennogo ekonomicheskogo universiteta – Journal of the Ural State University of Economics*, 2017, no. 4 (72), pp. 57–65.