

RRI 2016
International Conference «Responsible Research and Innovation»

THE IMPACT OF HUMAN CAPITAL ON ECONOMIC GROWTH

Vladimir A. Shabashev (a)*, Valentina V. Khaliulina (b), Svetlana V. Shabasheva (c), Dmitry A. Govorin (d)

* Corresponding author

- (a) Yurga Technological Institute, affiliated to Tomsk Polytechnic University, Yurga, Russia, shabashev@tpu.ru, bash_kemsu@mail.ru, +79039464298
(b) Kemerovo State University, Kemerovo, Russia, gulia710@mail.ru, +79069319230
(c) Kemerovo State University, Kemerovo, Russia, shabasheva_s@mail.ru, +79039094760
(d) Kemerovo State University, Kemerovo, Russia, govorindmitry711@gmail.com, +79234921147

Abstract

The article discusses the basic views of Russian and foreign authors on the human capital with the main focus on education and health. We discuss the relationship between the human capital and the concepts such as "workforce", "human potential", "labor potential" at the organization level. A possible version of the change of the components of labor potential of the organization is proposed in this article. The basic pathways of preservation and strengthening of health as a complete physical, social and mental well-being are also determined in the article.

The results of the author's research on the impact of health's capital on the growth of the gross regional product (GRP) in 77 regions of Russia for 11 years (2003-2013) are covered in the article. Considering this issue, we took into account regional differences at the level of economic development and the structure of GRP. With this purpose, all the regions were divided into four groups using the cluster analysis.

To assess the level of health of the population, life expectancy was used as the most adequate summarizing mortality characteristic. The inclusion of this indicator in the model and our calculations led us to the conclusion that the level of health of the population in the "extractive" regions has a significant impact on the aggregate productivity. The most significant factor in the growth of "mainly manufacturing" regions is investments in education. It is important to consider the management bodies in the financing of education and health regions and municipalities.

© 2017 Published by Future Academy www.FutureAcademy.org.uk

Keywords: Human capital; health capital; economic growth.

1. Introduction

Modern understanding of social development implies recognition of the high role of the human factor in the economy. Formation of human capital theory occurred in 1960 thanks to the work of the American scientists, winners of the Nobel Prize for Economics, T. Schultz and G. Becker. An important contribution to the development of this theory has been made by G. Mintzer, B. Weisbrod and L. Thurow who, based on the models that characterize the behavior of an individual in a variety of socio-economic conditions, analyzed questions of the advisability of investment in education and health.

An unambiguous interpretation of the concept of "human capital" is not yet available because the scientists associated different concepts of human capital with a human personality. G. Becker was one of the first scientists who transferred the concept of human capital to the micro level, defining it as a set of human skills, knowledge and expertise. As an investment in them, he took into account mainly the costs of education and training.

2. Problem statement

L. Thurow summarized the first study of human capital. He gave the following definition: "The human capital of people is their ability to produce goods and services" (Thurow, 1970). An individual's ability to work was defined as the main characteristic of human capital. This definition of human capital is very capacious, but does not reflect the structure and the way of accumulation. W. Bowen deepened the characteristic of the concept of human capital. He noted that he is "a member of the acquired knowledge, skills, motivation and energy, which are endowed with human beings, and this can be used within a certain period of time in order to produce goods and services" (Bowen, 1978).

I. Dobrynin, S., Dyatlov, V., Konnov and S. Kurgan consider human capital as "available in stock of human health, knowledge, skills, abilities and motivations that contribute to the growth of its productivity and contribute to the growth of income (earnings)" (Dobrynin, 1993). I. Ilyinsky identifies three main elements of human capital: health capital, capital of education and capital of culture (Ilyinsky, 1996). Health, in turn, has two components. The first is genetic, and the other is acquired as a result of investment in people. Investments are carried out both by the individuals and in the form of public expenditure in the health sector.

Good health increases the period of employment, productivity and overall efficiency, makes it possible to use the different components of the human capital effectively. There is a high economic return for both the employee and for the company where he works, as well as for the entire economic system. A healthy person develops the educational and professional level more successfully that allows him to manage his physical and psychological abilities better. Investments are related to the maintenance of a good physical condition of the person, health, slowing down the body's aging and tear processes and, therefore, increasing the quality of human capital and its service life.

Human capital is reflected in the employee's potential. There are several interpretations of the term "potential" of an employee: isolated labor potential, human potential, and qualification potentials. The very first concept, introduced for the determination of the employee potential was "workforce". It traditionally implies a set of physical and mental abilities to work. In the economic literature and in practice, the notion of "labor potential" is considered as a set of job opportunities of the specific

individual, collective or society as a whole. This concept is also relevant both to an individual and to the totality of workers' organizations. It applies to the regional level and to the society as a whole. The concept of "human potential", in our view, is the most appropriate to the level of an enterprise, the level of a company. The authors of this article are more interested in the relationship between the concepts of human, labor potential and human capital at the level of the organization.

3. Research questions

Works of many scientists are devoted to the issues of studying the labor potential at various levels. However currently, there is no single approach to the definition of this concept.

In particular, B. Genkin believes that the formation of labor potential of the individual influences the basic potential of the individual as a whole and, in particular, the level of education, training, health, human experience and aptitudes (Genkin, 2009). In our opinion, A. Kibanov has offered a more complete definition of the labor potential. The definition consisted of the following elements (Kibanov, 2004): qualifying; personality, including the motivation of the employee, his value orientations, social maturity etc.; socio-demographic; psychophysiological, state of health, performance, type of nervous system and others.

In this aspect, the term "labor potential" and "human capital" are close enough in terms of the content of the concepts. It should also be noted that the employment potential is not a static indicator. It varies depending on the ability to develop skills, on the new knowledge, health, etc. In this regard, the assessment of the labor potential is problematic. In practice, different methods of measurement of the employment potential of the employee and the team have used. However, no commonly accepted approach to this matter currently exists. We just note that the quantitative (point) assessment of the potential of a particular employee is amenable to such factors as the level of education, age, experience and health condition. These factors can be estimated by a 7-10 point scale.

One possible example of the relationship between the components of a labor potential is a factor "professional perceptiveness" (Kibanov, et al., 2000), which reflects the relationship and interaction between the important parameters such as assessment of the level of education (taken differentially, for example, 1 - for people with higher education, 0.75 - for people with secondary professional education, 0.6 - for the persons with secondary education), professional experience and age. In terms of the mutual experience and age, the indicators are divided by the values of "4" and "18", according to the recommendations of the Research Institute of Labour of Russia (studies 80-90-ies of XX century). Thus, the duration of the work experience has a 4-fold smaller impact on the work performance and the age has an 18 times weaker effect than the level of education.

Based on the material discussed above, from the point of view of the psychophysiological components, we propose to rely on this factor of prospectivity in combination with the factor "state of health" of the employee. We propose to perform the testing of possible scales of evaluation of the "coefficients" of health; and to link it with the above-mentioned components in the enterprises, where a variety of approaches to the assessment of staff is already in use. (Khaliulina, & Shabasheva, 2012). As a result, it is possible to make a decision based on the quantitative analysis of the impact of this important psychophysiological parameter.

The psycho-physiological component, in particular, health of the worker, plays an important role in the labor potential of an employee. Currently, most employers tend to extend the measures for prevention of morbidity and try to maintain the health of their employees because for the companies, especially for industry, health of the staff has become one of the key resources of their development.

The authors of this article use the definition given by the WHO Constitution (2003 ed.) as a basis of the interpretation of health care: "Health is a complete physical, social and spiritual well-being" (Kargin, et al., 2008). Physical health is the body ability to provide the motor activity of the person at the adequate level of behavior and activity. The spiritual and social well-being is the awareness of the person's role and place in the social world and adequate fulfillment of its mission in life. Social welfare implies the inclusion of the person in the structure of human social and economic activities, "an adequate potential of human capabilities and the level of physical and technological readiness" (Kargin, et al., 2008).

The questions arise on the assessment of the resource potential of the human body seeking to change its state and control of health. Thus, physiologists emphasize the coordinated interaction of the functional reserves of the organism as a system: 1) biochemical; 2) physiological; 3) motor; and 4) psychological reserves.

Nowadays, there is an increasing tendency for the majority of workers to take care of their own health, their activity and the desire to undergo preventive medical check-ups. However, this is still not enough. The decrease in the level of health can be caused not only by the economic, political, environmental and social factors. The personal factors are also of high importance in this respect. Some people exhibit inaction and indifference to the formation of a healthy lifestyle, which is the most important factor in maintaining and promoting their health. As shown by many studies of physiologists, most of the population does not possess the most elementary knowledge of disease prevention and creation of a healthy lifestyle.

The lack of physical activity, psycho-emotional stress, changes in work and leisure, rapid travel over the long distances, all these factors contribute to the disruption of natural biological rhythms of functioning of the organism. High population density, a significant increase in the number of social contacts lead to accelerated spread of respiratory viral disease resulting in the negative impact on the health indices and working capacity of the population. In the conditions of the contemporary manufacture, the workers are also exposed to a number of factors, such as adverse climate, interchangeable mode of work, high demands on the level of performance, the inadmissibility of the erroneous actions, causing considerable neuropsychological tension and disturbances in the regulation of the main functions of the organism. This brings about the difficulties in physiological adaptation of the body and causes health damage.

The capital of health is stored, multiplied and accumulated by investing in this area. According to the WHO experts, human health dependent on 20% from genetic factors, 52 - 53% on his behavior and living conditions, 20% on the state of the environment, and the remaining 7 - 8% belong to the health care system. For development and maintenance of the health capital, investments are made both by the individuals and by the government in the health care system from the budgets on different levels.

Constant monitoring of the health status, the introduction of socio-hygienic monitoring, search for various preventive means and methods of improvement of the population health has a high social importance nowadays. Two aspects can be distinguished among the main preventive measures: primary

measures of improvement of the working conditions (technical, economic, technological, sanitary and other solutions) and the palliative temporarily measures providing the increase in public resistance to environmental factors, including the governmental regulation, collective and individual behavior.

Each component of the physical state of the body (motor mode, breathing, nutrition, water and salt metabolism, personal hygiene, lifestyle, the endogenous and exogenous mechanisms of cleansing of the body) can be implemented by a variety of techniques and approaches. It is the task of each person to select the required components and put them into practice in accordance with his/her individuality. A qualitative use of any of these elements is already producing a partial and sometimes even complete healing of the human body, as evidenced by numerous facts.

The use of various kinds of physical activity represents an important preventive strategy in physiology. In order to preserve the total employability and to reduce the risk of cardiovascular diseases, experts recommend moderate physical exercises to adults for at least 30 minutes. In this regard, it is recommended to return to physical exercise breaks in the enterprises and institutions.

There is a clear need in optimization of the system of professional selection and prevention the morbidity of workers based on the biorhythmic principles of the work and rest regimentation. Thus, the problem of the temporal relations between the rhythm of external factors and the endogenous circadian cycles becomes of a particular importance. Thus, it is shown that the curve of daily human performance is far from universal and has significant individual variations. The nature of these oscillations should be analyzed in relation to the biorhythmic profile of the body.

In this regard, we would recommend to the employers to pay attention to the organization of the proper diet at work, regular checkups, especially for the employees of hazardous industries, such as workers of chemical industry, miners, metallurgists, manufacturers of building materials, etc. Individual health is supported by not only creative, interesting work, but also by recreation, compensating the daily the body expenditures in the course of employment. The business leaders and trade unionists who determine the intensity of labor, control the length of the working day, regulate the distribution of the funds for social, recreational programs must take into account this matter. The main cause of medical care seeking is the incidence of upper respiratory viral diseases, which account for 60-65% of all medical appointments of the adults. The trend of increasing non-specific morbidity, especially of the respiratory class, leads to the loss of the "labor" time in the population.

The health condition of the workers should be at the center of the attention of the employer. It is necessary to develop the social responsibility of the business towards the employees of enterprises and organizations, to invest more funds in the improvement of the employees' health and social programs. The Chairman of the Board of the Russian Union of Industrialists and Entrepreneurs (RSPP) Alexander Shokhin believes that corporate social activity should be encouraged. According to various studies, more than 90 % of the large, about 80 % of the medium and 50 % of the small companies in Russia implement social programs of development of the labor collectives. The percentage of deductions from profits of large companies for this purpose in Russia exceeds that of other countries. We need to create a more flexible system of incentives to improve the level of social responsibility of the companies. This system should be based on the principles of voluntariness, responsibility, mutuality and balance of obligations. A. Shokhin proposes to stimulate investment in education: to withdraw from taxation of all in-kind and monetary contributions of the employers investing in the professional education and training without

division into “friends and foes”, to provide with a number of other incentives (Shabashev, & Shorohov, 2015). Also, he proposes to expand the opportunities for employers to use financial funds for the voluntary medical insurance (from 6 to 10 %).

The impact of public health on economic growth is discussed in the framework of the concept of human capital (Becker, 1964). One of the first models of the demand for health based on this theory was proposed by M. Grossman, who emphasized the difference between the health of a consumer (consumption function of an individual and his satisfaction with the health status) and as investment goods (part of the human capital allowing the worker to earn) (Grossman, 1972). The value of Grossman's model is that "health can be regarded as a source, a long-term use product (health stock), which is required for the "production" of working time (Chubarova, 2009).

It should be emphasized that the issues of investments in health have been actively discussed after the report of the World Bank in 1993, dedicated to health. International organizations consider health as an important factor of economic development and poverty reduction. Spending on health care in this context can be interpreted "as investments that generate economic returns. However, investments in health and in the economy mutually reinforce their effects" (Chubarova, 2009).

Specialists of UNDP built an econometric regression model where the following exogenous variables were used: the average duration of training (a characteristic of the educational capital) and the life expectancy (a characteristic of the health capital). It has been found that prolongation of training by 1 year leads to a 9% growth rate in GDP in the first three years followed by a 4% growth rate. As for the health capital, the 10% increase in life expectancy leads to an increase in the average annual growth rate of GDP per capita by 1.1% (UNDP, 1996). Thus, the importance of health capital as a factor of the economic growth has been repeatedly confirmed empirically.

4. Results of research

We have conducted a study of the impact of the capital of education and health on the growth of gross regional product (GRP) in 77 regions of the Russian Federation (excluding Moscow and St. Petersburg) for 11 years (2003-2013). It appeared that inter-regional differences in the level of economic development in the structure of GRP influence the rate of the economic growth and the possibility of formation and utilization of the educational and health capital (Shabashev, & Shorohov, 2015). Such differences cannot be ignored while analyzing the factors of the economic growth. In order to account for these differences, we divided the regions into the separate groups according to the investigated parameters followed by the analysis within each group. As a result of the cluster analysis, all regions were divided into the following four groups:

- 1) regions with developed extracting and manufacturing industry (6 regions, typical representatives - Belgorod and Kemerovo region);
- 2) regions with predominantly developed extracting industry (10 regions, typical representatives - Magadan and Orenburg regions);
- 3) regions with predominantly developed manufacturing industry (27 regions, typical representatives - Sverdlovsk region and Krasnoyarsk region);

4) regions with relatively low presence of extracting and manufacturing industries (34 regions, typical representatives - the Republic of Altai and Dagestan).

Based on this classification, the assessment of the impact of investment in the general funds, health and education on the value of GRP was carried out. The analysis revealed that in the group of regions with predominantly developed manufacturing industry, the most significant growth was associated with the investments in education, whilst in the group of regions with the developed extracting industry, the level of health had the most notable impact. In demography, life expectancy is regarded as the most appropriate general characteristic of mortality and, hence, the level of public health. The inclusion of this indicator in our model led us to the conclusion that the level of health of the population in the "extractive" regions has a significant impact on the aggregate labour efficiency, i.e. on the total capital of health of this kind of the regional economic system (Shabashev, & Shorohov, 2015). Importantly, the conducted analysis has revealed that the economic efficiency of health capital also depends on the economic specialization of the region.

5. Conclusions

In modern conditions of the development innovative economy, the economy of knowledge, the role of human capital and its main components, capital of education and capital of health are significantly increased. A healthy person develops his educational and professional level more successfully, which enables him to utilize his physical and psychological abilities more effectively.

The enterprises and organizations are required to exercise a systematic approach to the preservation and strengthening of health. This may include the formation and monitoring of a healthy lifestyle, preventive medical checkups, determination of the ways to achieve the optimal use of the body's reserves (biochemical, physiological, motor and psychological), the use of the advanced medical technology, as well as the methods and means of treatment.

We have found an important role of the corporate social responsibility of a business in providing recreational measures and rehabilitation sports and ensuring the availability of active rest after a working day, a week, or a year. The organization of tourism and restoration of the workers' health by attending resort during the holiday season are also of high importance.

Our study of the impact of health capital on the GRP growth in the 77 regions of the Russian Federation revealed for the first time different patterns of this process in the regions with different structures of GDP and economic specialization. The group of regions with mainly extracting industry, the level of public health has the most significant impact on the growth of GDP. Consequently, the federal and regional authorities should give a priority to make the investment in healthcare in these regions.

References

- Becker, G. (1964). Human Capital: Theoretical and Empirical Analysis with Special Reference to Education. *University of Chicago Press*, 12-18
- Bowen, H. (1978). Investment in Learning. *San Francisco etc: Jossey-Bass*, 162-166
- Chubarova, T. (2009). The health care system in Russia: Economic theory and practice problems. *Questions of economy*, 4, 129-144.
- Dobrynin, A. (1993). The productive forces of man: the structure and forms of display of. *SPbUEF*, 43-45
- Genkin, B. (2009). Foundations of economic theory and methods of effective work. *Norma*, 97- 99.

- Grossman, M. (1972). On the Concept of Health Capital and the Demand for Health. *Journal of Political Economy*, 2(80), 223-255.
- Ilyinsky, I. (1996). Investing in the future: education in innovative production. *SPbUEF*, 30-32, 130 -134.
- Kargin, N., Didenko, V. & Sigida E. (2008). A systematic approach to the development of life-saving health concept. *Service plus*, 4, 31-36.
- Khaliulina, V. & Shabasheva, S. (2012). Health - the important component of the labor potential. *Bulletin of Kemerovo state university*, 4 (52), 338-342.
- Kibanov, A. (2004). Human Resource Management of organization. *INFRA-M*, 56-58.
- Kibanov, A., Dyatlov, V., Odegov, Y & Pihalo, V. (2000). *Human Resource Management*. Academy.
- Shabashev, V. & Shorohov, S. (2015). *The impact of human capital on economic growth in regions with different industrial structures*. Kemerovo. Kuzbassvuzizdat, ISBN 978-5-202-01332-4.
- Thurow, L. C. (1970). *Investment in Human Capital*. Belmont.
- United Nations Development Programme (UNDP) (1996). *Human Development Report 1996*. New York, NY: Oxford University Press.