Intellectual Capital: Theory and Approaches of its Assessment on Macro Level

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Abstract: In recent years and in the nearest future we can observe the increasing role of human capital in the development of modern economy. The main success factor is a human with its capabilities, knowledge and ability to solve the given problems in a creative way. This article suggests an author's approach to the following issues: intellectual capital and its structure, peculiarities of its use; theoretical aspects of intellectual capital and its assessment on the state level (macro level). Also authors suggest approaches to increase of effectiveness of transformation of intellectual potential into intellectual capital.

Key words: Intellectual Potential • Intellectual Capital • Labour Motivation • Self-Organization • Knowledge • National Wealth

INTRODUCTION

Under the modern conditions, under the conditions of high technology active development, science and technology development the knowledge is the main factor, resource and source of modern economic growth and competitive recovery of labour force. Exchange, use and spread of knowledge become the main direction of innovative development of the Russian economy.

The most important factor, the driving force of innovative development is human intellectual potential. From our viewpoint it is important not only to detect the existence of intellectual potential, but also to manage it correctly and purposefully, motivate it for its most effective use in economy. In this case intellectual potential is materialized in the form of intellectual capital. This article contains theoretical approaches to this issue and practical conclusions of the author concerning the problem of intellectual capital assessment on macro level.

Body: The concept that a human-his education, qualification and experience-is a very important and at the same time underused resource becomes more and more common for modern Russian economy. That's why in recent years a great attention is paid to the investigation of human capital on different levels: macro-micro-and mesolevels.

There is no only correct representation of the concept of "intellectual capitals" in the world economy. In order to understand the gist of the category of "intellectual capital", let us first of all dwell on the representation of the category of "capital".

Capital is the fundamental category of the market economy. Nevertheless, the term "capital" is characterised by the polysemy of interpretations.

According to the Russian economic encyclopaedia the capital is "something that can bring profits, or the resources, made by people for producing goods and services, invested source which is functioning in the form of production means". There are distinguished two forms of capital: material capital (cars, buildings, houses, raw materials etc.) and human capital (general and special knowledge, working skills and commercial experience).

The idea of capital has long had a strong materialistic bent that is evident in the dominance of material capital in economic thinking. The logical basis of an all-inclusive concept of capital, which includes human capital, was established by Irving Fisher (1906). This concept treats all sources of income streams as forms of capital. These sources include not only such material forms as natural resources and reproducible producer and consumer goods and commodities but also such human forms as the inherited and acquired abilities of producers and consumers [1].

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Intellectual capital is being formed and brings income not only for account of human potential, but also by using material potential (technology, equipment etc.). That means that intellectual capital synthesizes elements of human and material capital.

Let us distinguish the following variants of intellectual capital:

- "The knowledge that is present if organisation and can be used in order to get... competitive advantages" (H. McDonald, staff futurologist of one of the American companies of Fujitsu).
- «Human capital is similar to "physical means of production", e.g., factories and machines: one can invest in human capital (via education, training, medical treatment) and one's outputs depend partly on the rate of return on the human capital one owns. Thus, human capital is a means of production, into which additional investment yields additional output. Human capital is substitutable, but not transferable like land, labour, or fixed capital.» (Gary Becker) [2]
- "Intellectual capital is ability, embodied in a human, of bringing profits for the account of human intellectual activity".
- "Unmaterialized knowledge, which exists irrespective of the space and has the value which differs from economic one".
- "The basis of companies' economic activity, the hidden condition for development which appears as the result of consolidation of human and structural capital" [3].
- "Knowledge, information, experience, organizational capabilities, information paths which can be used for producing wealth" [4].
- According to the Penguin Dictionary of Economics, the capital is "skills, capabilities and abilities of a human, which allow him to gain income" [5, p. 36]

Intellectual capital has its peculiarities which should be taken into account for its analysis:

- Investments in intellectual capital are understood as expenses, aimed at support and development of intellectual abilities; these investments can be both material and intangible;
- Intellectual capital is inherent in its bearer, it is an integral part of a human personality but at the same time it can be possessed by the organisation in which the bearer of the capital is working, or by the state;
- Intellectual capital, as any immaterial goods, has no price, it is difficult to appraise its monetary value since the value of different workers may be different for an organisation, even if the expenses are equal and may depend not only on these expenses but on many other factors including personal ones; nonetheless the existing approaches to the assessment of intellectual capital will be given below;
- Intellectual capital is being accumulated during the whole life of a human and depends on socioeconomic and political situation in the country, socioeconomic conditions, professional status of a person and so on. It is important to notice that upon the end of labour activity intellectual capital doesn't fade into insignificance;
- Intellectual capital cannot bring profits (unearned income) without any intellectual activity. Thus, intellectual abilities transform into capital only under the influence of intellectual activity of an individual.

Intellectual capital in the narrow sense (from the point of view of its components) is the an ability, embodied in a human, of bringing profits for the account of use of knowledge, abilities, generating ideas, professional skills, creating of scientific and art works. Intellectual capital brings profit not only to its owner, a certain person, but also to the organisation in which he/she works, region and to the whole country. The intellectual capital of a separate person can be of global importance. As during the science development it is not only intellectual innovations are being created (on the basis of these innovations new production technologies and consumption methods are being formed), but also the development and transformation of people are taking place and, consequently, the development of intellectual potential of an organisation and the whole society. In this regard let us fix upon the category of intellectual potential and its interrelation with the category of intellectual capital.

The term "intellectual potential" was first mentioned in 1962 by Machlup and was used to underline the importance of general knowledge for growth and development [6].

Intellectual potential includes both the available resources and reserves. The implemented labour potential is represented by some researchers as a human capital, i.e. if we agree with this viewpoint we can conclude that if "intellectual potential" is all potential intellectual abilities of a human. Intellectual capital characterizes the part of the potential which is used in the process of labour activity and brings profits to the worker. In our opinion this representation of the category of intellectual capital is narrow.
Intellectual capital is heterogeneous. It is formed by such elements of intellectual potential as: from the one hand, inborn abilities, which are developed afterwards; from the other hand, it includes education, qualification, experience (professional and social), motivation.

Intellectual capital can be considered from different point of view. From the one hand, intellectual capital is an intellectual potential of one worker, which brings profits. From the other hand we can speak of intellectual capital of organization. In this case the category of intellectual capital also includes corporate intellectual capital (intellectual valuables of a company), i.e. intellectual capital of an organization in general, which brings profits, namely: technical support and software, patents, trademarks, organigram, organization culture etc.

Human capital is frequently the source of an organization's most important strengths—innovation, customer satisfaction, quality and productivity.

The stages of intellectual potential movement and its transformation into intellectual capital can be shown as follows:

**Stage 1:** formation of intellectual potential (formation and development of intellectual abilities in childhood, their further development: schooling, studying at a higher educational establishment, college, during the training at working place, on work experience etc.; this stage is a stage of investments in intellectual capital);

**Stage 2:** Distribution and exchange of intellectual potential (it is taking place on the labour market involving three subjects of social partnership institution - employers, employees and the state and on the shop floor, namely during hiring rotation, quit etc.)

**Stage 3:** The use of intellectual potential. The use of the potential is performed in the result of intellectual activity of an individual, it is accompanied by getting of material remuneration for the results of labour - on this stage intellectual potential can be transformed into intellectual capital provided that during the labour process all the possible reserves of intellectual potential are used). That means that the part of intellectual potential which is used in the labour process and brings profits, becomes the intellectual capital.

Let us study this stage in detail as from our viewpoint this stage is the most important.

In order to transform intellectual potential into intellectual capital of an enterprise of society in general, corresponding backgrounds are needed. This means that on the modern stage of development motivation of people for using their human potential is very important. Thus the process of transformation of intellectual potential into intellectual capital is as follows (Fig. 1).

**Stage 4:** assessment of effectiveness of investments in intellectual capital and making decision on the further investments.

In this article we shall fix on the assessment of intellectual capital in a broad sense (from the viewpoint of its components) on macro level. What criteria are used to assess it? It is quite a difficult case since different researchers understand this category differently and have different approaches to the assessment of intellectual capital.

To assess the intellectual capital of the state first of all it is necessary to define indices with the help of which it would be possible to assess the intellectual wealth of the state. In the late nineties of the last century the assessment of intellectual capital of Israel and Sweden was carried out; in 2004 upon an initiative of UN an attempt to calculate index of intellectual capital in Arabic region was taken. The theory of Edvinsson and Malone was the basis of this investigation [7]. National welfare is divided into financial welfare and intellectual capital and intellectual capital consists of human and structural capital which, in its turn, is divided into market and organizational capital having two constituents: renewable capital and process capital (Fig. 3).

Intellectual capital index is a composite index which consists of 4 indices: human capital index, process capital index, market capital index and renewable capital index.

Human capital is an intellectual wealth of people (knowledge of facts, laws, principles, possessing of special knowledge in certain issues, ability to work cooperatively, communication skills) (OECD report, 2001) [8]. National human capital index was calculated on the basis of seven markers: literacy rate; quantity of higher educational establishments per capita; percentage of teachers of the first stage of education, who comply with qualification requirements; quantity of students of higher educational establishments; percentage of woman-graduates; quantity of graduates from higher educational establishments. According to the assessment of Kapeljushnikov R.I. [9], which has aroused a discussion in academic community, the stock of human capital in Russia for 2010 amounts to more than 600 trillion roubles, or about 6 million roubles per capita. It was 13 times higher than GDP of the country and 5.5 times more than the value of physical capital. Calculations also suggest that according to the Purchasing Power Parity,
the human capital of Russia in 2010 amounted to about 40 trillion dollars, ad its level per capita was almost 400 thousand dollars. Over a period of 2002 - 2010 it doubled in real terms. Such factor as ageing of population had an adverse effect on the dynamics of human capital; positive effect was made by such factors as reduction of mortality index, positive movements in educational structure, strengthening of educational activity of the youth, improvement of the situation of employment of population and real salary growth. According to other data the value of human capital per capita was 14.5 thousand dollars in 2011 in Russia. This is 87 times less than American human capital, 39 times less than German one, 42 times less than Japanese one, 1.3 times less than Chinese human capital per capita [see, for instance, 3].

Process capital is the knowledge of a society, consisting in the system of information, technology, communication and represented by technical support and software, data bases, organization structure, which influence the development of human capital. National process capital index was calculated as an integral index which includes such markers as quantity of personal computers per capita, presence of telephone communication per capita, internet hosts per capita, internet users per capita, quantity of cell phones per capita, TV-sets per capita, radio-sets per capita, receiving of newspapers per capita.

Market capital is an intellectual capital which consists of national internal relationships. It represents the opportunities and abilities of a country to satisfy the requirements of foreign customers and partners and compete with other countries on this criterion. Attracting investments and new technologies to the country is to the great extend determined by the choice of trade policy and license policy for foreign technologies. Involvement of qualified experts to the country and flight of the said is also determined by the conditions of market capital in the state. National market capital index was calculated on the basis of three markers: export of high technologies in percentage to GDP, quantity of patents, accepted by the USPTO per capita, quantity of meetings (conventions, conferences) which takes part in the country. Unfortunately, Russia falls behind the mature economies in terms of the above listed markers.

Renewable capital (RC) is the future national wealth of the country, it includes the activity of the country in the sphere of investments, development of competitive strengths. RC determines the stability of economic growth of the country in the future. RC index was calculated on the basis of seven markers: amount of expenses for science and researches in GDP, import of books in % of GDP, import of periodicals in % of GDP, quantity of researches on the university level, quantity of researches on the state level, amount of expenses for higher education in grassroots fund raising of education.

Among the 15 countries that achieved the greatest success in reduction of arrears of HDI were Algeria, Brasilia and Mexico though over the period of 1990-2012 their average increase of income per capita was only 1-2%. Their experience shows another complex strategy which yield dividends in the sphere of human capital: priority of state investments in human capital, especially in their health, education and feeding and increase of social immunity to economic, ecological and other threats and convulsions. Thus we can draw a conclusion: countries cannot recline upon the growth alone. According to "The reports on human development" for 1993 and 1996 [9], the connection between the growth and human development doesn't reveal automatically. It should be formed by means of implementation of the policy on behalf of the poor and investing at the same time in healthcare and education, increasing the number of working places, preventing natural-resources depletion and their overexploitation, providing gender balance and equitable distribution of incomes and avoiding groundless resettlement of communities.
Human capital of a personality becomes the main resource of modern innovative and high-tech economy. There has come the time when the development of this resource becomes not only the absolute necessity, but the condition for subsistence of a human itself and civilization in general [10].

Thus, a human becomes a crucial economic resource in the broadest sense—from carrying out of practical investigations to rational use of their results in economy and national economy.

CONCLUSION

The problem of accumulating, preserving and development of intellectual potential should become a strategic task of high priority for the state, its solution should be properly provided, since the level of development of intellectual potential, which transforms into intellectual capital, determines the degree of development and level of competitive abilities of the state on the world market.

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REFERENCES