



Analysis of human capital of Russia and China in the Context of the Mutual Competitiveness of Their Economies

Análisis del capital humano ruso y chino en el contexto de la competitividad mutua de sus economías

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ABSTRACT:

Using the opportunities, methodology and results of the calculation of the human capital index presented in the report "Global Report on the Human Capital 2017" allowed establishing the content and origin of the main mutual competitive advantages of the two leaders of the emerging market group in this area. The obvious superiority of Russia by volume of expenses on education was expressed in the best values of the potential and development sub-index. However, in China, the efficient use of available human capital is higher, as a result of which, this country overtook and even surpassed Russia on a number of important estimation indicators of human capital. Based on the current situation, the perspective direction of increasing the competitiveness of the Russian economy in relation to the Chinese economy is to intensify the accumulated human capital through the better use of richer potential of higher education in Russia.

Keywords: human capital index, education, incomes, competitive advantages.

RESUMEN:

El uso de las oportunidades, la metodología y los resultados del cálculo del índice de capital humano presentado en el informe "Informe global sobre el capital humano 2017" permitió establecer el contenido y el origen de las principales ventajas competitivas mutuas de los dos líderes del grupo de mercados emergentes en esta área. La superioridad obvia de Rusia por volumen de gastos en educación se expresó en los mejores valores del subíndice de potencial y desarrollo. Sin embargo, en China, el uso eficiente del capital humano disponible es mayor, como resultado de lo cual, este país superó e incluso superó a Rusia en una serie de importantes indicadores de estimación del capital humano. Sobre la base de la situación actual, la dirección en perspectiva de aumentar la competitividad de la economía rusa en relación con la economía china es intensificar el capital humano acumulado a través del mejor uso de un mayor potencial de la educación superior en Rusia.

Palabras clave: índice de capital humano, educación, ingresos, ventajas competitivas.

1. Introduction

The nature of the modern economic development confirms the relevance of the notion that the country's competitive advantages are not inherited, they are created by it as a result of a long-term purposeful activity to update the national economy (Porter, 1998; Hanafi et al., 2017; Chetyrkina, 2016). The key factor for success is the country's significant human capital, creating new knowledge, transforming it into advanced technologies and providing use in economic activities (Sorokina, Zakharov, Boronnikov, 2011; Halder, 2011). The link between the country's accumulated human capital and the level of its economic competitiveness was reflected in recent publications of Belinski (2016), Lenkovets (2014), Onyusheva (2014), Óhegyi (2014), Roopchund (2017).

Nowadays one of the actively discussed problems is the emphasis of the general and special when developing competitive advantages, applied to a group of countries with similar levels of socio-economic development (Perskaya & Eskinarov, 2015). The results of its decision are important for creating algorithms for constructing factor models of the international competitiveness that can develop foreign economic strategies of countries. Due to the lack of the unified approach to solve this problem, this study required the presentation of its authors' views on similarities and differences in some of determinants of competitive advantages of economies of the two leaders in the group of emerging markets.

The goal of this study is to assess human capital of Russia and China in the context of shaping competitive advantages of these economies relative to each other. To achieve this goal it is required to fulfill the following tasks:

- Study the estimation techniques of the human capital index, which is one of the main reasons for the formation of competitive advantages of the national economy in modern conditions;
 - Carry out a comparative analysis of the accumulated human capital in Russia and China;
 - Determine mutual competitive advantages of the two leaders of the emerging market group.
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2. Methodology

The initial data for comparing the results of accumulated human capital by countries of the world were taken from the report "Global Report on the Human Capital 2017. Preparing People for Future Work" by the Swiss non-governmental organization World Economic Forum (WEF). The methodological basis of the research was the index method, which allows overcoming the problems of the quantitative evaluation caused by the multifaceted content of human capital. The reference to the Human Capital Index, developed by the experts of the WEF, is explained by its inherent ability as a general index to be a relative value of the comparison of a complex aggregate and its individual elements that are not directly subject to summation. The main focus of the analysis was not on this general index, but on the underlying sub-indices and their indicators, reflecting the state of individual features of human capital. The statistical-factual method as a comparative quantitative analysis along with the index method and statistical groupings were used, which helped achieve a greater depth of the analysis and additional reliability of the results obtained.

3. Results

Comparison of socio-economic parameters of Russia and China allows finding, along with their common features (the vast territory of the country with uneven development of its regions, the historically established centralized system of state administration, absolutely and relatively high costs for the state apparatus and army, the transition period from command - administrative to a market economy, a high degree of concentration and centralization of capital in leading types of economic activity), a number of differences that have a fundamental importance for their economic competitiveness against each other:

The size of the economy. China skillfully benefits from economies of scale, thereby, it achieves a significant economy at a cost in the production of goods and services. Russia also has similar capabilities, but the potential for their implementation is objectively

less;

The population size. Savings in labor costs and living conditions in China

continue to be an important reason for maintaining high rates of economic growth. The fundamentally different demographic situation in Russia excludes the possibility of compensating for low productivity and quality of labor by its cheapness. The need to ensure sustainable expanded reproduction of labor, on the contrary, requires a substantial increase in subsidies to families for the maintenance and education of children;

The mentality of the population. Historically established psychology of a group behavior in China makes it relatively easy to unite the nation on the basis of intangible values, to seek the consent of the inhabitants of the country to restrictions in consumption to achieve strategic development goals. The mentality of the population of Russia is the result of a symbiosis of Western and Eastern values. The sixty-hour workweek and the absence of state pensions for all citizens correspond little to the views of Russians who are more attracted by socio-economic conditions of living in the countries of the united Europe;

The ecological situation. The industrial growth in China was accompanied

by a severe deterioration in the environmental situation: the forest area was reduced by half, the lack of clean water, the pollution of the air basin in the areas of industrial agglomerations, and in major cities reached critical levels. The widely spread "dirty" industries are largely oriented to markets of countries where environmental norms and the procedural aspect of their application to production activities are much more stringent. Possessing a larger territory, Russia is characterized by an extremely uneven distribution of the population: the smaller part of the European part of the country is inhabited by almost 90% of the population, while the Urals have a little more than 10%. Due to this, as well as greater urbanization, the problem of providing an environmentally safe in densely populated areas is one of the most important factors for Russian citizens, and their ability to fight for a healthy ecology in a more democratic society is objectively more significant;

The expat community. A huge number of ethnic Chinese live abroad (in particular, in the South-East Asia region and in the USA), continuing to maintain close ties with the historical homeland. The cohesive and numerous Chinese expat community has managed to accumulate considerable capital and actively promotes the inflow of foreign investment into the economy of China. Ethnically, socio-culturally, ideologically, the Russian foreign expat community is less united, therefore, its positive impact on Russia's foreign economic activity is much weaker;

The active and deep integration of the Chinese economy into world economic processes began decades earlier, the volumes aimed at achieving the planned foreign economic goals of material and financial resources were greater, just as there was more consistency in activities carried out. The shorter duration of the period of entry into the world economy, guided by market principles of economic activity, also largely determined the results obtained by the Russian economy.

In many ways Russia has a unique set of economic, institutional, natural-geographical and other features and it excludes the possibility of following even a very successful strategy of another country. Reforming competitive advantages of the Russian economy requires a scientific justification, including by human capital estimation in the context of its impact on the country's economic competitiveness. Since not all the components of human capital can be directly quantified, the indirect estimation method, based on the calculation of diverse indicators, is widely used and reduced to one generalizing one. The Human Capital Index (HCI), calculated on the basis of four sub-indices, which in turn covers a total of 21 indicators (World Economic Forum 2017, p. 6), was created and used in cross-country comparisons. Information sources are data from the International Labor Organization (ILO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), as well as the results of surveys conducted by order of the WEF. The study, carried out in 2017 by the order of the WEF, covered the population of 130 countries of the world divided into five age groups. They are home to 93% of the world's inhabitants and create 95% of the world's gross product, which is called a global index by the relevant WEF report.

Since the method to calculate the HCI is poorly reflected in Russian scientific publications, let us consider its main content. The HCI scores range from 0 to 100 points, and having equal weights (25% per HCI) the sub-indices estimate human capital by:

- Potential described through the existing level of formal education as a result of investments in education in the past. The significance of this sub-index is determined with the help of the following indicators: literacy and numeracy, expressed through the share of the population, able to read, write and perform simple arithmetic calculations; the proportion of people among the population of the country with different levels of education received, calculated on the basis of primary, secondary and higher education;
- Employment, estimated by the degree of the accumulated workforce in the economic activity. Indicators are used: the proportion of the working and actively searching population at working age; the gender gap in employment, estimated by the ratio of women to men among workers; the unemployment rate; the level of underemployment;
- Development, considered in the context of ongoing investments in education and development skills of children and young people under the age of 24 years old. The group of indicators of this sub-index is designed to reflect the accessibility of education, its quality and compliance with the needs of the economy. It includes indicators: the shares in the age groups under study in primary, secondary and higher education; the gender gap in secondary education, estimated by the ratio of girls and boys enrolled in secondary school; the variety of skills of graduates; the quality of primary schools, determined by the results of the survey; the quality of the education system, estimated through a survey of world business leaders on the extent to which students meet the skills required to form a competitive economy; the degree of staff training, according to the opinion of world business leaders on investments in training and development of employees;

Know-how, i.e. the use of special knowledge, skills and qualifications when performing the work. The following indicators are used here: the proportion of employed highly skilled workers whose jobs require higher education; the share of employed workers with secondary professional education, whose jobs require secondary or higher education; the availability of qualified personnel, determined on the basis of a survey of world business leaders regarding the difficulty of finding qualified employees in the country for doing business; the complexity of economic activity, estimated by the volume of production knowledge and skills presented in the level of the complexity of exported products.

The highest possible 100 points, the largest HCI in 2016 was reached by Norway (77.12), Finland (77.07), Switzerland (76.48), the USA (74.84) and Denmark (74.4), and the lowest had Yemen (35.48), Mauritania (41.19), Senegal (43.33), Ethiopia (44.44), Mali (46.02) [11, p. 8-9]. Among the top 25 countries in the world, only Russia (72.16) and Ukraine (71.27) do not belong to countries with high incomes, and this fact shows a strong direct link between wealth and human capital, according to the World Economic Forum experts. In particular, China, which is lagging behind Russia in terms of GDP per capita by almost 10 thousand US dollars (24026 US dollars against 14,401 US dollars), had 67.72 points.

Table 1
The human capital index and its sub-indices in Russia and China (2016)

Human asset index and its sub-indices	Russia		China	
	Value	Rating (place in the world)	Value	Rating (place in the world)
Human capital index	72,16	16	67,72	34
Potential sub-index	83,2	4	70,3	62

Employment sub-index	74,3	18	74,1	19
Development sub-index	73	33	68,5	47
Know-how sub-index	58,1	42	58	44

Source: compiled by the authors of the World Economic Forum (2017).

The high ratings of Russia on the potential sub-index (83.28 points, 4th place in the world) and the employment sub-index (74.3 points, 18th), presented in Table 1, confirm the fact of the long-term commitment of its inhabitants to values provided by education. The following values of the potential sub-index indicate about the availability of education throughout life: the literacy rate and the ability to count - 99.5% and higher in all age groups; 100 % of the population have primary education, and more than 98% of the population have secondary education; from 22.1% to 29.8% of the population in the age groups from 25 years old have higher (tertiary) education. In Russia, the spread in the values of the sub-indices, and the variability of places in the global ranking, is much wider: in this rating, the lowest level in the rating is indicated by the ratio of the working and actively seeking work population at the working age (from 24 to 100 places in different age categories) and the unemployment rate (from 55 to 89 places). The highest level in this group of indicators is observed in terms of underemployment (range from 2 to 9 places).

Taking into account the importance of the HCI, China occupies relatively high places in the global rating on the employment and know-how sub-indices. According to the employment sub-index, with 74.1 points, China stands after Russia (19th place), and with 58 points on the know-how sub-index lags behind it in only two positions (44th place). When estimating the employment sub-index through the proportion of the working and actively seeking work population, China is ahead of Russia in all population groups, except for the age range from 25 to 54 years old. However, an important reason for the greater involvement of the elderly and young people in working life is the lower level of their social protection in the Asian giant: in percent of GDP, the state's spending on social protection of people of retirement and working age is 2.9% and 1.9 % respectively in China, while in Russia - 6.8% and 2.9%. In addition, the average number of years of study in China is only 7.9 years, and in Russia is 12.4 years. Turning to the unemployment rate, whose value in China is 3.1%, in Russia - 5.5%, these circumstances should be taken into account. Unlike in Russia, the value of the gender gap in employment in China is the highest in the age group from 15 to 24 years old, and then it is steadily declining. It seems that one of the reasons for this is the greater participation of Russian girls in obtaining higher education, which allows them subsequently to work more actively and for longer. China has a significantly lower value of the share of highly skilled workers in total employment than the Russian one (11.9 points against 44.3 points). But on the other indicators of the know-how sub-index, China has obvious superiority. The Chinese values of the share in the total employment of medium-skill workers (91.8 points against 90.4 points), the employment of qualified personnel (60 points against 47 points) and the complexity of economic activity are higher than the Russian ones (68.4 points against 50.9 points).

The Russian positions are weaker in terms of the current state of the education and training of personnel, as well as the use of know-how in the work. The development sub-index score was 73 points at the 33rd place in the global ranking. The values of the indicators that give an evaluation to the phenomenon under study from the quantitative side are better than those intended for the disclosure of the qualitative features. So, Russia is among the leaders in almost all indicators of enrollment in education, and according to them, places in the world ranking of higher and vocational education are even higher than in primary education. However, if we look at qualitative indicators of primary schools (57.1 points, 46th in the world), the quality of the education system (45.3 points, 64th place), the diversity of graduates' skills (81.5 points, 96th), the degree of personnel training (46.7 points, 76th place), then the country reached only the world average level. The values of the know-how

sub-index (58.1 points, 42nd place) and its indicators make it possible to assert that in Russia the main problems of the accumulation and availability of the human capital are in the sphere described by them. According to indicators calculated on the basis of statistics on the formal education received by workers, the country is well provided with qualified personnel, especially with higher education: the share of highly skilled workers is close to half of total employment (44.3 points, 16th place in the global rating), the share of the middle-skilled 100% (90.4 points, 57th place). At the same time, opinion polls of the world's business leaders on the quality of personnel training at Russian enterprises form significantly lower values of available qualified personnel (47 points, 89th) and the complexity of economic activity (50.9 points, 47th). When estimating the quality of the Russian workforce, there is an obvious discrepancy between the statistically recorded, but largely formal reflection of the current situation and the views of the members of the international business elite about it. The objective basis for such presentations is confirmed by really small high-tech, innovative types of economic activity in Russia that largely depend on the ability of the personnel employed in them to develop special knowledge, skills and qualifications.

Scientists note serious problems with the accumulated human capital in China (Kondrashova, 2017; Huggins, Luo & Thomson, 2013), which is also evidenced by the importance of the potential sub-index (70.3 points, 62nd place in the world) and the development sub-index (68.5 points, 47th place). The main reason for this is the relatively low state spending on education, whose share in GDP is only 1.9%, while in Russia it is 3.9%, and in most developed countries - at least 5% (with the exception of Hong Kong, Greece, Spain, Italy, Luxembourg, Japan). As the level of education increases, the values of the potential sub-index are greatly reduced, reaching at the level of higher education unusual for the average developed country minimums. For the age groups considered here (25 years old and over), the enrollment ratio in higher education in China ranges from 3.1 points (97th place in the world) in the oldest age group to 8.4 points (94th place) in the younger age group. In terms of the development sub-index, China has good values of enrollment ratios in primary and secondary education, and the quality of primary schools, but the country has poor values in estimating the coverage of vocational education and comparatively poor values in enrollment in higher education (43.4 points against 78.7 points in Russia). Such uneven development of the Chinese education system has determined average estimations of its quality in general (54.4 points, 40 place in the world), as well as the degree of staff training (55.8 points, 40th place). In this regard, the authors of this article agree with Pillania (2009) that China needs to develop "knowledge resources", and Russia should focus on improving management and business performance.

4. Discussion

The hypothesis about the impact of the level of human capital accumulated by the country on the formation of mutual competitive advantages in the Russian and Chinese economies was confirmed in the results of the study. Thanks to a significant advantage in the share of education spending, Russia has a much greater potential for creating a "knowledge economy", as evidenced by the inter-country comparison of the values of the potential and development sub-indices. By allocating relatively less funds for education, China, moreover, distributes them less evenly between levels of the education system. As a consequence, at present higher education in Russia has much better indicators of the level of development, creating a more attractive image for the national economy and for foreign investors from high-tech industries. At the same time, human capital accumulated by the country is more effectively used in China: many know-how and employment sub-indices are better than those that Russia has. This largely compensates for the relatively modest specific spending on education, contributing to the maintenance of high rates of economic growth.

The Human Capital Index used in the survey, like most of the multilevel composite indices, is able to give only a general assessment. To a large extent, it is generalized, because such multifaceted phenomenon as human capital is estimated. At the same time, the appeal to sub-indices and their indicators leads to the study of particular features of human capital, which have complex and even contradictory connections. The resulting problems with obtaining an accurate quantitative estimate of the value of the country's human capital

impose limitations on the process of determining the actual strength of its influence on the competitiveness of the national economy.

An obvious practical recommendation on increasing the competitiveness of the Russian economy is to improve the management and financing of the education system, aimed at increasing its impact on the intensified accumulation of the human capital demanded by the labor market. The optimization of educational expenses is to set priorities in its development in accordance with the solution of the problem to achieve the country's higher levels of competitiveness. The macroeconomic competitiveness is also quite complex economic phenomenon and therefore has not received a universally accepted method of integral quantitative estimation yet. In the presence of the latter, the development of the mathematical model to estimate the influence of the country's human capital and its features on the national economic competitiveness is a promising area for further research.

5. Conclusions

The size of accumulated human capital in Russia is much larger, especially when estimating the potential and development sub-indices, whose indicators, however, mainly describe the formal results from investments in education. The resulting competitive advantage over China is reflected in the level of the annual product created per employee: in Russia it is \$ 45,760 at purchasing power parity, in China at \$ 23,845. The competitive advantage of China is the more effective use of human capital, as evidenced by the almost equal to Russian values of the potential and know-how sub-indices of this country with significantly lower government spending on education. From the point of view of foreign investors, China looks even more preferable, since the values of availability indicators of qualified personnel and the complexity of the economic activity calculated on the basis of these polls exceed the Russian ones, respectively, by more than a third and a quarter. Based on a comparative assessment of human capital, Russia has the superiority here primarily at the expense of higher education. However, the efficiency of human capital accumulated in it is not high, as a result of which Russia lags behind China in terms of the quality of the education system and the level of personnel training. High values of enrollment rates in higher education indicate a significant potential existing here, in case of better use of which, it is possible to expect progressive changes in the structure of the Russian economy growth due to the wide dissemination of high-tech industries that are intensively exploiting human capital. Such a diversification of the economy would become a reliable basis for a long-term progressive increase in the level of the competitiveness of the Russian economy, which would allow it to build foreign economic relations with its eastern neighbor more profitably.

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