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Socioeconomic Conditions of Human Capital Development in Russia and China

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Abstract. The author analyzes the development of human capital in Russia and China and traces the evolution of public institutions with due account for the basic socioeconomic indices and figures of the UN Human Development Report 2019. The comparison reveals the strong and weak sides of the human capital development models of both countries; the slight prevalence of the RF in the GDP level, per capita disposable income, inequality index, gender gap, and educational level. The author highlights certain important specifics of China's development that give Chinese society advantages where the accumulation and correct use of human capital are concerned, viz. fast growth of incomes, active efforts to eliminate poverty and illiteracy, and improve the educational level and life expectancy. The main development problems have been identified: the age and gender disbalance; natural population decline; a fairly wide gap in living standards; the gradually increasing burden of the health care system; plummeting real incomes; and the inadequate funding of science and education. Today, the gap between Russia and China where the human development index is concerned is 34 points. The trends of changes of the basic indices in the last 30 years suggest that China might catch up with Russia fairly soon. This means that strategic long-term partnership with China with respect to the accumulation and use of human capital requires a more balanced policy.

Keywords: human capital, human development index, education level, Russian-Chinese relations, per capita GDP, social inequality.

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In the early 21st century, Russia's relationships with its traditional Western partners noticeably worsened, hence the fairly logical geopolitical turn to the East that began in the 2010s, mainly in the form of unprecedentedly close foreign policy and economic relations with China. Despite persistent declarations of diplomatic successes, close friendship, and profound trust between the two countries, analysts invariably mention certain weak points in the relationships between the two neighbors – namely, China's active immigration policy in the Far East, Russia's resource-orientated export, and the weak realization of joint investment projects. Today, Russia relies on natural rather than human resources in relations with its main strategic partner. This means that over time, it might become China's raw-material appendage that rents hectares of arable land to Chinese farmers who will raise soya on them, with no equal partnership in sight.

While talking about Russia's relations with its main political and economic partner, we should be fully aware of the prospects of Russia's economy in the innovational and high tech segments as a possible strong side of Russia's exports. A correctly functioning economy accumulates human capital and uses it wisely. An analysis of the process of the accumulation of human capital as the main wealth of the contemporary world might answer, at least partially, the question about the parity of future relationships. Here I have compared the levels of human development of the PRC and the RF based on an analysis of their socioeconomic situation and the UN Human Development Report (HDR) 2019 that dealt with the unequal progress of states in the 21st century. The results revealed the strong and weak sides of shaping human capital in Russia and China.

Human Capital and the Human Development Index

The human capital concept was described in detail in the 1960s by economists Theodore Schultz and Gary Becker, two Nobel Prize winners. Their works have been accepted as classics of economics. Human capital is actively studied in the 21st century: Scientists are aware of the huge and rising role of this component in economic development. At first, human capital was interpreted as investments in people that improve the productivity of their labor. Becker was the first to calculate the economic efficiency of education and production training. Today, human capital in a wide sense is perceived as the sum-total of knowledge and skills that individuals acquire during their lifetimes to meet their needs, achieve social well-being, and support and improve their working capacities and health. The quality of work and common standard of living depend on the development level of human capital directly responsible for any country's social and economic development. In the last century, the share of human capital in the structure of the national wealth of states was increasing to reach, by the end of the 20th century, 80% in the developed countries. In simpler terms: Knowledge and its use are directly related to a country's well-being.

How can we measure human capital? Knowledge, skills, and adequate living standards are relative rather than absolute values. Today, two methods of measurement are used – the Human Development Index (HDI) and the Human Capital Index (HCI). The first version of the HCI was published in the course of an annual meeting of the IMF and the World Bank group. The HCI measures the human capital of the next generation defined as the volume of human capital that the newly-born may hope to accumulate taking into account the risks caused by the low quality of health care and education. The HCI includes three components: survivability, expected length of school education and its results, and the state of health. The results are spread between 0 to 1. Russia, with an index of 0.73, is 34th among 157 countries; China is the 46th, with an index of 0.67 [7, p. 32].

A combination of indices used by the WB speaks of their contribution to the productivity level of any worker. The HDI looks at future results: the accumulated capital of a newly-born between the day of birth and their eighteenth birthday with due regard for the present conditions of society's development and the mechanisms of state policies. The methodology used in the process allows us to connect the index with the forecasts of per capita incomes and economic growth. According to those who calculate the HDI, human capital per se creates differences from 10% to 30% between countries in per capita GDP level [7, pp. 20, 15].

The Human Development Index proposed by the UN several decades ago is more comprehensive: It makes it possible to assess the level of health services, education, and social insurance in any given country at any given moment. It is calculated as an arithmetic mean of three indices: the per capita GDP calculated by Purchasing Power Parity (PPP), the PPP of currencies, an index of average life expectancy and the educational index. Many years of calculations of the HDI allow us to analyze the dynamics of changes in any country.

According to the latest (2019) Report of Human Development, Norway, Switzerland, Ireland, Germany, Hong Kong, Australia, Iceland, Sweden, Singapore, and the Netherlands occupy the top positions in the ratings based on the sum-total of calculation of longevity, material well-being, and education [19]. The rating is based on the development of 189 countries and territories that are divided into four groups with a very high (over 0.800); high (over 0.700), middle, and low (below 0.550) human development level.

Russia's 0.824 index ensured it the 49th place in the first group of 62 states with a very high development level. Its HDI is higher than the average index of the European and Central Asian countries (0.779) [18, p. 4]. China with its 0.758 human development index occupies the 85th place and belongs, together with Ecuador, to the second group of countries with a high development level. In the last few years, both countries consolidated their positions in the rating. In the last six years, the RF and the PRC climbed by three and seven positions, respectively [19, p. 301], even if the process was very different. Between 1990 and 2018, the HDI of Russia rose by 12.3% (an average annual growth of 0.411%) [18, pp. 2-3]. This on the whole high index is three times lower than that demonstrated by China in the same period. It increased its HDI by 51.1%; its per capita GDP rose by over 10 times (see Table 2) [17, p. 2]. It should be said that in the first post-Soviet decade, Russia demonstrated a negative growth of -0.18%. Similar trends could be seen only in three out of the top 100 countries: Slovenia, Kazakhstan, and Ukraine, an echo of the collapsed Soviet system. In the last two years, Russia managed to return to the old figures and even improve them. China demonstrated much more targeted and intensive progress: In 30 years, the average annual growth of HDI was about 1.5%. The progress was especially impressive between 2000 and 2010, when the index was growing by 1.74% every year. None of the 116 countries in the groups with a high or very high HDI level could boast the same.

Russia owes its high place in the world rating to a very high interest in education among its citizens. Indeed, not all Western countries can boast of the number of years that Russians spend on education. Unfortunately, many Russians "spend" time instead of learning, which explains the weak realization of the acquired potential. Russia's 0.832 educational index occupies the 33rd place in the common rating of countries, while China, with an index of 0.49, occupies the 110th place (out of 189). From the standpoint of equal access to education, the RF is one of the leaders (27th in the world.)

The expected duration of education in Russia is 15.5 years, the actual length of education of the adult population is 12 years [19, p. 300]. In China, these figures are lower: They are 14 and eight years, respectively (see Table 1). This can be expected in the state with the world's biggest population that recently was coping with the illiteracy of the rural population. Between 1990 and 2019, China demonstrated certain successes: Average education length increased by three years and expected education length by five years [17, p. 2].

Changes in the indices of the level of education in China and Russia, 1999-2018*

Index	Russia	China
Index of education length 2018	0.832	0.649
Expected length of education 1990 (years)	12.8	8.8
Expected length of education 2018 (years)	15.5	13.9
Length of education for people over 25 1990 (years)	9.2	4.8
Length of education for people over 25 2018 (years)	12.0	7.9
R&D spending in 2010-2017 (% of GDP)	1.1	2.1
Spending on education 2016 (% of GDP)	3.9	4.2
Military spending 2010-2018 (% of GDP)	3.9	1.9

* Compiled by the author of the basis of [19].

In Russia, the level of education is good; 96.3% of women and 95.7% of men over 25 have complete or incomplete secondary education. In China, the share is lower: 75.4% among women and 83.0% among men [19, pp. 316-317]. China is ahead of Russia when it comes to the pupil/teacher ratio: 17 pupils in China versus 21 per teacher in Russia. With a population of 1.4 billion (ten times more than in Russia), Chinese schools are less overcrowded, probably because of the steadily shrinking number of children, while the number of teachers remains the same.

A more or less detailed analysis of the level of education in these two countries reveals that China, with its average indices, is actively improving the quality of education and its quantitative features, while the Russian Federation is more or less satisfied with its educational system that relies, to a great extent, on the Soviet potential. Today, the public, on the whole, rejects what the government is doing to reform secondary education. The same fully applies to science. In 2016, Russia spent 3.9% of GDP on education; in 2017-2018, the share dropped to 3.5% [2, p. 29]. In China, early in 2016, the state spent 4.22% of GDP [29]. Russia spends less money than China on science and R&D: 1.1% versus 2.1% of GDP in 2010- 2017 [19, pp. 343-344].

The Level of Welfare and Social Inequality

The HDI takes into account the Gross National Income (GNI) calculated by the per capita Purchasing Power Parity (PPP). In 2018, Russia's per capita GNI (PPP) was \$23,036 (with the HDI of 0.679 and the inequality coefficient taken into account). In China, similar indexes were 0.558 and \$16,127, respectively. The gap is wide, but the trends of economic growth of both countries show that China is more successful than Russia (see Table 2).

The higher per capita GDP level is confirmed by the higher incomes of Russians. During 2019, per capita money incomes were about 420,000 rubles, or \$6,488 (the average exchange rate in 2019 being 64.73 rubles to the US dollar) [27]. The highest average monthly incomes were in the Central Federal Okrug (46,939 rubles) and in Moscow (74,011 rubles); the lowest, in the North-Caucasian Federal Okrug (24,660 rubles). According to the World Bank, in 2018, the real disposable incomes of Russia's population did not rise. In 2019, wages grew by 2.4%, and pensions by 1.5% [24]. According to the Federal State Statistics Service [27], real incomes have been slipping in the last five years. In 2019, they dropped, on the whole, by 1.5% (without obligatory payments and corrected by the index of consumption prices) [27]. The per capita annual disposable income in China is 22,882 yuan [16], or \$3,302 (in 2019, the average exchange rate was ¥6,93 to the US dollar). With the index of consumption prices taken into account, the state demonstrated a real growth of income of 5.4% [16]. This means that even if the disposable incomes of the Chinese are much more modest than of Russians, their annual growth corresponds to the general trend of growth of the basic indices of the country's social and economic development. The standard of living in Russia is stalling.

The correlation between wages in Russia and China is another tell-tale issue. The official figures say nothing good about the state of affairs in China. According to Rosstat, in the last two years, the median wage increased by 8-11%. Early in 2020, the average [monthly] wage was 46,700 rubles (about \$720); in Moscow, it was 89,000 rubles [25]. In 2019, in China it was 7,540 yuan a month [11] or \$1,088. According to official sources, Russians, on average, earn less than Chinese by one-third. Real wages in China might be somewhat lower than the official figures; there are certain contradictions between the data supplied by different Chinese organizations. The gap between the level of wages in China and the general disposable income of its population can probably be explained by the high development level of small- and micro-businesses in this country, the somewhat suppressed statistics of

unemployment, and the hardly calculable incomes of villagers who migrate to cities. In 2017, there were 286 million labor migrants or one-fifth of the country's total population [5, p. 92].

Table 2

Changes in basic development indices in Russia and China, 1990-2018*		
Index	Russia	China
HDI 1990	0.734	0.501
HDI 2018	0.824	0.758
Index GDP (PPP) per capita 2018	0.679	0.558
GDP (PPP) per capita 1990 (\$)	20,898	1,530
GDP (PPP) per capita 2018 (\$)	25,036	16,127
Annual per capita incomes in 2019 (\$)	6,488	3,302
Per capita monthly wages 2019-2020 (\$)	720	1,088

* Compiled by the author on the basis of [18; 27; 15].

The Human Development 2019 report paid particular attention to the negative role of inequality in the development of human society. It contains standard ratings specified with statistical data that point to general social inequality, equal development potentials for men and women, and the trends of broader rights and possibilities for women. The Human Inequality Coefficient speaks of a general gap in access to social benefits. In Russia, this index remains at a good level of 9.6%, which is better than in the countries with high HDI [18, p. 5]. In China, the inequality coefficient is higher (15.7%) but nevertheless much lower than the average for Asian-Pacific countries [17, p. 5].

Social inequality is associated, first and foremost, with the income gap. In this respect, Russians are in a much better situation than the Chinese. The Gini Index, accepted in the world when it comes to assessing the gap in the incomes of the poorest and richest citizens in any country, is 46.7 in China and 37.5 in Russia. According to assessments of other countries, inequality in both countries is gradually disappearing: In the last decade, the Gini Index in China was 49.1 [23]. The poverty problem in Russia is not as acute as it is in China. According to international assessments, in China, 7.2 million can be assessed as poor; in Russia, fewer than 348,000 [24]. According to the generally accepted classification, poor people live on less than \$1.90 a day (an equivalent of 85.6 rubles). There are national standards of poverty, which are higher than the international standards. According to the National Bureau of Statistics of China, the poverty level in China is three times higher: In 2018, it was 1.7% or 23 million people. Today, combating poverty is the No. 1 task. In the last six years, the number of poor people in China dropped by 8% [23]. On the whole, villagers are the majority in the group. The government planned to liquidate poverty by 2020, but the COVID-19 pandemic hindered that strategy. According to the classification adopted in Russia (family average per capita income below the subsistence minimum of 11,160 rubles), in Russia, there are over 18 million poor, a huge number for a country with a population of 145 million. According to information supplied by Russian organizations, the level of poverty is shrinking: 12.9% in 2019 versus 13.2% a year earlier. This figure is the lowest in the last five years and points to a positive trend in fighting poverty. The poor strata are evenly distributed by cities and villages; families with children being the weakest category [24].

Starting in 2014, the UN has been using the Gender Development Index (GDI) in its reports based on the HGI spread between the sexes. It reflects gender inequality in three basic dimensions of human development: health (life expectancy of men and women at birth), education (planned years at school for women and men and the average number of years of study for adults 25 and older), and management of economic resources (per capita GDP among men and women.) The GDI is calculated for 166 countries divided into five groups according to degree of gender equality. Russia as well as several countries of the former socialist camp belongs to the leading group with an index of 1.015, which speaks of a much higher level of accumulated human capital among women (0.828 against 0.816 for men). This is undoubtedly caused by high mortality among men and the much longer period of study among women [18, p. 4]. The GDI for China is 0.961, which speaks of a much lower level of human capital development among women (0.741) than among men (0.771) [19, p. 313], which could be expected in a country in which sons are more desirable than daughters. It should be said that the traditional preference for male descendants caused considerable imbalances in the gender structure. The far from perfect policy of a planned birth rate made China a country of bachelors. According to 2019 data, men outnumbered women by 37.5 million [13].

Health Care and Demographics

Health is one of the important gender development indices measured by the development of the health care system and longevity. China with its not very impressive per capita GDP indices and educational level belongs to the countries

with a high human development level thanks to the nation's good health [19, p. 309]. This is one of the strongest sides of the contemporary social-economic development of the country with the world's biggest population. Between 1990 and 2018, 7.6 years were added to life expectancy in China. According to the UN Human Development Report 2019, it has reached 78 years; in Russia, it is slightly over 72 (see Table 3). The current positive dynamics in Russia, however, should not be forgotten. According to the Ministry of Health Care, in 2019, life expectancy achieved its historical maximum of 73.4 years due to much lower mortality, thanks in particular to lower work-related deaths [20].

The social and economic status of any country is closely connected with demographics. The birth and death rates, the institute of the family and its functioning, as well as migration are closely connected with the accumulation of human capital. So far, the situation in both countries is far from simple. Paradoxically, both countries, which follow different paths and have absolutely different population strengths, approached 2020 with similar birth rate trends. In 2018-2019, a very short period of high birth rate was caused by the attempts of the government to defuse, to an extent, the demographic crisis. In Russia, economic methods were used to raise the birth rate; in China, that task was entrusted to legislators.

In 2013, China launched its new two-year long demographic policy. For 35 years, Chinese families could not (with certain exceptions) have two children. Confronted with a dramatic drop of the birth rate and the imbalanced sex-and-age composition of the country's population, Chinese leaders moved away, in two stages between 2013 and 2016, from the "one child" policy. It was expected that China would scramble out of the demographic hole, but after two years of a baby boom, it returned to an incredibly low birth rate. In 2018, there were 15.2 million births, practically 2 million fewer than in 2017. It turned out that the generation of the 1980s satisfied its need for a second child during the several years when second children were allowed. The generation of the 1990s did not need more children, which led to the second period of the lowest birth rate in 2019 – 14.6 million births [13], the lowest figure since 1961, the Great Chinese Famine [6, p. 54].

Table 3

Changes in basic demographic indices in Russia and China, 1990-2030*

Index	Russia	China
GDI 1990	0.734	0.501
GDI 2018	0.824	0.758
Life expectancy 1990 (years)	68.0	69.1
Life expectancy 2018 (years)	72.4	76.7
Coefficient of demographic burden 2019 (per 100 working citizens)	51.2	42.2
Population 2019 (mln)	146.75	1,400.05
Population 2030, forecast (mln)	145.50	1,450.00

*Compiled by the author on the basis of [18; 14; 13].

According to the National Bureau of Statistics of China, at the end of 2019, the country's population (not counting Macao and Hong Kong) topped 1.4 billion for the first time in China's history. The huge figure conceals major contradictions in contemporary Chinese society. The trends observed all over the world – the growing number of lonely people, nuclear families, postponed motherhood – are typical of both China and Russia [22]. Against the backdrop of a rapidly plummeting birth rate and a rapidly aging population, these trends are much more dangerous for the social and economic stability of the world's biggest nation. China is moving, slowly but surely, toward natural population decline, population aging, and a shortage of working-age people.

Throughout the last decades, the demographic picture in the Russian Federation was following the global patterns of socioeconomic transformations without interference from regulators. The birth rate is still on the rise: In 2010, it was at the 1.6 level; in 2020, it was 1.7 births per woman [26]. Despite this, Russia is entering another cycle of lower population growth: One of the smallest generations, the generation of the 1990s, is entering adult life. In the last three years, the country lost 56,000 people. In 2019, the population was 146.76 million [21]. In 2030, according to the UN average forecast, there will be 145.5 million people living in Russia (the figure includes migrants).

In the next 10 years, China's population will continue growing, but according to forecasts, after 2036, India will outstrip it as the world's most populated country [12]. In 2028-2030, China will achieve its historical maximum of 1.45 billion people. Later, its population will shrink to reach the present level of 1.4 billion by 2050 [1, p. 111]. In fact, 10 years later, the population strength will remain the same. Chinese will outnumber Russians by about 10 times. What is important is the quality of the country's population. It is predicted that in 2030, China will become the 41st "oldest" country in the world [12]. By 2050, the cohort of people over 60 will become half a billion strong [1, p. 113]. In other words, by the mid- 21st century, one out of three citizens will be an old man or woman.

In Russia, too, aging is proceeding at a fast pace. It joined the group of the "old" countries according to international classification long ago. In the future, the aging indicator will become even higher. According to official

demographic forecasts, by 2030, the share of people of 65 and older will reach 18-19% [4, p. 22], the situation in which Russia's economy has been functioning for several decades. Today, China is actively using its age composition, which is highly favorable for its economic development. So far, there are still not many old people in China, yet the number of children is relatively small, which gives China huge economic advantages in the condition of a low demographic burden coefficient. Very soon, however, its population will start aging quickly, and the share of working citizens will shrink. The demographic burden coefficient demonstrates the correlation between children and the elderly and the total mass of the able-bodied population. In Russia, the coefficient is 48% (in eight years it rose by 10%), which is fairly high but still lower than the average worldwide level of 53% [10]. In 2010, in China, it was only 36%. In 10 years, the number of dependents increased to 40% [9]. Both countries demonstrate a growing coefficient of demographic burden, yet the children/old people ratio among dependents is different. In China, the share of children is very low; this trend will continue. With a low share of those who reach able-bodied ages, the share of old people will increase. In 10 years, the workforce will lose 40 million [28] while the number of people of 70-79 will increase by 80%.

An increase of the aging population in China requires increased funding of the social insurance sphere; meanwhile, the numerical strength of the younger population groups able to take care of the older generations and pay taxes is shrinking [12]. Longevity continues to grow (78.4 years by 2030), which is another budget challenge. The health care system will have to cope with a heavier burden: The number of overweight people, diabetics, cancer patients and people with heart problems will increase [12]. According to forecasts, between 2000 and 2024, deaths from cardiovascular diseases will grow three times over [8, p. 78]. Here I have outlined the conditions in which human capital is developing in Russia and China. The quoted indices of global ratings demonstrate that the RF prevails in economic and social respects, while the PRC demonstrates amazingly fast growth of all basic values of social and economic development. This suggests that the time of the RF leadership will soon come to an end. The early 1990s – the turning point in the fates of Russians – were selected as the reckoning point. A decade later, all social institutions, while not degraded, did not demonstrate progress. Many advantages of the Soviet era indispensable for the development of human potentials were lost. The standard of living and the demographic, economic, and educational indices resumed their growth after the 2000s. In the last decade, the global financial crisis, the plummeting oil prices, and certain political and economic factors slowed down, to a great extent, Russia's economic growth; reverse trends became obvious primarily in the growth of real incomes of Russia's citizens. By 2020, Russia, nevertheless, managed to return, by the sum-total of human development indices, to abandoned positions and outstrip its own 1990 level. Today, growth has considerably slowed, the rather complex international situation is drawing from the social sphere resources indispensable for development. The military budget is growing at the expense of science and education. In the same period, China demonstrated consistent and simultaneous improvement of all basic indices; the HDI in the country with the world's biggest population increased by one and a half times. The country is moving in the right direction, which is confirmed by the 10 times higher per capita GDP and impressive results of fighting illiteracy and poverty achieved in the last 30 years. Demographics is the highest stumbling block on the road of social and economic progress that in future might slow down. So far, world history has not known a unique combination of demographic issues in the rapidly urbanized country with a critically low birth rate level, a gender imbalance and an aging population. The radical measures taken to contain the birth rate practiced for three decades will require huge resources before the more or less obvious crisis is diverted.

For historical reasons, in Russia, the inequality issue and access to social benefits is less acute than in China, which makes it possible to discuss better conditions for the accumulation of human capital on average across the country. Education as the key stage in the development of human resources is a strong point of Russia's realities. Gary Becker has written that human capital exists in two forms and created by two basic means: common, by the system of education and specific, by the firms that use it. Accumulation of human capital depends on demand, while demand, on the structure of the economy and the quality of its institutions. Efficiency of human capital depends on its full use by the labor market [3, p. 133]. In an unfavorable institutional context, human capital degrades. This is one of Russia's problems.

China has convincingly demonstrated that the level of education and its GDP are not that important. What is important is the proper use of human capital. Back in 2016, having visited Silicon Valley, Hermann Gräf quoted an Uber representative as saying that China's competitiveness had reached the scope at which, having woken up with a new and promising idea of a new product, we discover that by the lunch time meeting at which we wanted to discuss it, the Chinese had already launched its production [16]. The question is: How could a country with a huge population, lower incomes, considerable social inequality, and acute environmental problems find itself at the front line of technological progress, world trade, and economic development rates? The answer requires profound understanding of the functioning of China's economic institutes and, therefore, cannot be found within the frameworks of this study. At least one thing is clear: This paradox points to future problems for Russia in its cooperation with China, the outlines of which are clear.

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